FINAL – Volume 4 of 4

LOS VAQUEROS RESERVOIR EXPANSION PROJECT

Environmental Impact Statement
Environmental Impact Report

State Clearinghouse No. 2006012037

Prepared for
United States Department of the Interior
Bureau of Reclamation
Mid-Pacific Region
Contra Costa Water District
Western Area Power Administration

March 2010



U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

CONTRA COSTA
WATER DISTRICT

Western
AREA POWER
ADMINISTRATION

FINAL ENVIRONMENTAL IMPACT STATEMENT/ ENVIRONMENTAL IMPACT REPORT for the Los Vaqueros Reservoir Expansion Project

This Final Environmental Impact Statement/Environmental Impact Report (EIS/EIR) has been prepared by the U.S. Department of the Interior, Bureau of Reclamation, Mid-Pacific Region (Reclamation) and the Contra Costa Water District (CCWD) in accordance with the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). The Western Area Power Administration (Western) is a cooperating agency under NEPA.

The Los Vaqueros Reservoir Expansion Project involves enlarging the existing 100 thousand acre-foot (TAF) Los Vaqueros Reservoir located in southeastern Contra Costa County, and constructing or modifying related reservoir system facilities to develop water supplies for environmental water management that supports fish protection, habitat management, and other environmental water needs in the Delta and tributary river systems, and to improve water supply reliability and water quality for urban users in the San Francisco Bay Area.

The Final EIS/EIR presents the No Project/No Action Alternative as well as four action alternatives:

- Alternative 1 – Expanded 275-TAF Reservoir, South Bay Connection, Environmental Water Management and Water Supply Reliability Dual Emphasis
- Alternative 2 – Expanded 275-TAF Reservoir, South Bay Connection, Environmental Water Management Emphasis
- Alternative 3 – Expanded 275-TAF Reservoir, No South Bay Connection, Environmental Water Management Emphasis
- Alternative 4 – Expanded 160-TAF Reservoir, No South Bay Connection, Water Supply Reliability Emphasis

The project alternatives would result in significant adverse environmental impacts, after mitigation, to Important Farmland (up to 22 acres; Alternatives 1 and 2) and a potential movement corridor for the San Joaquin kit fox on the west side of the existing reservoir (Alternatives 1-4). The project would result in beneficial effects on Delta fisheries and aquatic resources under Alternatives 1 and 2. Alternative 4 is Reclamation's preferred alternative.

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"The U.S. Department of the Interior protects America's natural resources and heritage, honors our cultures and tribal communities, and supplies the energy to power our future."

"*The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.*"

"The Mission of the Contra Costa Water District is to strategically provide a reliable supply of high quality water at the lowest cost possible, in an environmentally responsible manner."

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Acronyms and Abbreviations

ACWD	Alameda County Water District
AFT	American Farmland Trust
AIP	Alternative Intake Project
BAAQMD	Bay Area Air Quality Management District
BDCP	Bay Delta Conservation Plan
BMP	Best Management Practice
BO	Biological Opinion
CalEMA	California Emergency Management Agency
CALFED	CALFED Bay-Delta Program
Cal-OSHA	California Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CCCDCD	Contra Costa County, Department of Conservation and Development
CCCSD	Central Contra Costa Sanitary District
CCCFB	Contra Costa County Farm Bureau
CCCFC	Contra Costa County, Flood Control and Water Conservation District
CCCPW	Contra Costa County, Public Works Department
CCWD	Contra Costa Water District
CDFG	California Department of Fish and Game, see DFG
CEMC	Chevron Environmental Management Company
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFBF	California Farm Bureau Federation
CFR	Code of Federal Regulations
cfs	cubic foot (feet) per second
CO_2E	Carbon dioxide equivalent
County	Contra Costa County
CRLF	California red-legged frog
CTS	California tiger salamander
CVP	Central Valley Project
CVFPB	Central Valley Flood Protection Board
CVPIA	Central Valley Project Improvement Act
DA 109	Drainage Area 109
DCC	Delta Cross Channel
DDSD	Delta Diablo Sanitation District
Delta	Sacramento-San Joaquin Delta
DFG	California Department of Fish and Game, see CDFG
DHCCP	Delta Habitat Conservation and Conveyance Program

DMV	California Department of Motor Vehicles
DO	Dissolved Oxygen
DOC	California Department of Conservation
DPBC	Delta Pedalers Bicycle Club
DSOD	California Department of Water Resources, Division of Safety of Dams
DSRSD	Dublin San Ramon Services District
DWP	Delta Wetlands Project
DWR	California Department of Water Resources
EBATC	East Bay Area Trails Council
EBBC	East Bay Bicycle Coalition
EBCNPS	East Bay California Native Plant Society
EBMUD	East Bay Municipal Utility District
EBRPD	East Bay Regional Park District
ECCC	East Contra Costa County
ECCCHC	East Contra Costa County Habitat Conservancy
ECCID	East Contra Costa Irrigation District
EDR	Environmental Data Resources, Inc.
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
EWA	Environmental Water Account
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FMMP	Farmland Mapping and Monitoring Program
FWSS	Future Water Supply Study
GHG	Greenhouse Gas
HCP	Habitat Conservation Plan
HM	Habitat Management
IAIR	Initial Alternatives Information Report
ITP	Incidental Take Permit
MAFA	Million acre-feet annually
MMRP	Mitigation Monitoring and Reporting Program
MOU	Memorandum of understanding
MSCS	Multi Species Conservation Strategy
MTBE	Mean time between events
MTC	Metropolitan Transportation District

MWD	Metropolitan Water District of Southern California
NASNF	Native Alliance of the Sierra Nevada Foothills
NCCP	Natural Community Conservation Plan
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOD	Notice of Determination
NOP	Notice of Preparation
NRDC	Natural Resources Defense Council
OCAP	Operations Criteria and Plan
OMR	Old and Middle River
PCBs	Polychlorinated biphenyls
PCL	Planning and Conservation League
PG&E	Pacific Gas and Electric
Preserve	Vasco Caves Regional Preserve
Program	Capital Road Improvement and Preservation Program
PTM	Particle Tracking Model
RCRA	Richmond Community Redevelopment Agency
RD	Reclamation District
RD800	Reclamation District 800
Reclamation	U.S. Department of the Interior, Bureau of Reclamation, Mid-Pacific Region
RMP	Resource Management Plan
ROD	Record of Decision
ROW	right-of-way
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SBA	South Bay Aqueduct
SCVWD	Santa Clara Valley Water District
SFPUC	San Francisco Public Utilities Commission
SMD	Save Mount Diablo
SOM	Soil Organic Matter
SR	State Route
SR4	State Route 4
SRA	State Recreation Area
SRCSD	Sacramento Regional County Sanitation District
SWC	State Water Contractors
SWP	State Water Project
SWRCB	California State Water Resources Control Board

TAF	thousand acre-foot (feet)
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UWMP	Urban Water Management Plan
Western	Western Area Power Administration
WWTP	Waste Water Treatment Plant
Zone 7	Alameda County Flood Control and Water Conservation District, Zone 7 aka Zone 7 Water Agency

CHAPTER 1
Introduction

1.1 Los Vaqueros Reservoir Expansion Project

The Los Vaqueros Reservoir Expansion Project is a multi-agency effort that could provide local, regional and statewide environmental, water supply, and water quality benefits. The project is included in the comprehensive federal/state cooperative program known as the CALFED Bay-Delta Program (CALFED), which is designed to improve the quality and reliability of California's water supplies while restoring the Bay-Delta. Expansion of the Los Vaqueros Reservoir was included as one of five water storage programs identified for further investigation.

The Draft Environmental Impact Statement/Environmental Impact Report (Draft EIS/EIR) evaluated four action alternatives distinguished primarily by the size of the reservoir expansion, the combination of new and expanded conveyance facilities, and the operational emphasis:

- Alternative 1 – Expanded 275-TAF Reservoir, South Bay Connection, Environmental Water Management and Water Supply Reliability Dual Emphasis
- Alternative 2 – Expanded 275-TAF Reservoir, South Bay Connection, Environmental Water Management Emphasis
- Alternative 3 – Expanded 275-TAF Reservoir, No South Bay Connection, Environmental Water Management Emphasis
- Alternative 4 – Expanded 160-TAF Reservoir, No South Bay Connection, Water Supply Reliability Emphasis

Alternative 4 has been identified as the environmentally superior alternative under the California Environmental Quality Act (CEQA). Alternative 4 would be capable of meeting the immediate needs of Contra Costa Water District (CCWD), the lead agency under CEQA, to improve dry year water supply reliability and to protect current and future water quality. The U.S. Department of Interior, Bureau of Reclamation, Mid-Pacific Region (Reclamation), the lead agency under the National Environmental Policy Act (NEPA), has identified Alternative 4 as its preferred alternative at this time. Per NEPA requirements, Reclamation will identify the environmentally preferable alternative(s) in the Record of Decision (ROD).

If an action alternative is approved, CCWD would complete the design, and construct and operate the expanded reservoir. As part of Alternative 4, Reclamation and CCWD have been developing a set of operations for CCWD that would minimize any conflicts between Los Vaqueros filling operations and Reclamation's Central Valley Project (CVP) operations, and would improve overall coordination of Delta water operations.

If selected, implementation of Alternative 4 would not preclude further expansion of the reservoir. Reclamation and other potential state and regional partners would continue to study the larger expansion alternatives in the context of other on-going Delta initiatives and programs. The continuing studies are discussed in Sections 2.4, 3.2.2, and 3.2.3 in this volume. If Reclamation and CCWD select Alternative 4 and later decide to pursue a larger reservoir expansion, then additional NEPA and CEQA analyses and documentation would be undertaken, as necessary.

1.2 Purpose of the Final EIS/EIR

The Final EIS/EIR has been prepared on behalf of CCWD and Reclamation in accordance with the requirements of CEQA and NEPA. This Final EIS/EIR responds to comments received on the Draft EIS/EIR for the Los Vaqueros Reservoir Expansion Project proposed for implementation by Reclamation and CCWD. Western Area Power Administration (Western) is a cooperating agency under NEPA.

The Final EIS/EIR for the Los Vaqueros Reservoir Expansion Project comprises four volumes and consists of the entire Draft EIS/EIR and this response to comments document, as follows:

- Volume 1: Draft EIS/EIR Los Vaqueros Reservoir Expansion Project (Chapter 1 through Section 4.5)
- Volume 2: Draft EIS/EIR Los Vaqueros Reservoir Expansion Project (Section 4.6 through Chapter 10)
- Volume 3: Draft EIS/EIR Los Vaqueros Reservoir Expansion Project (Appendices A – I)
- Volume 4: Final EIS/EIR Los Vaqueros Reservoir Expansion Project (Project Updates and Responses to Comments)

The Draft EIS/EIR describes the proposed Los Vaqueros Reservoir Expansion Project, identifies the environmental consequences associated with implementation of the project, specifies mitigation measures to reduce significant and potentially significant impacts, and analyzes and compares the environmental effects of the four action alternatives listed in Section 1.1, above, along with the No Project/No Action Alternative.

On February 20, 2009, CCWD and Reclamation released the Draft EIS/EIR for public review and comment. Five public hearings to receive public input on the Draft EIS/EIR were held at the following locations: Sacramento (March 23, 2009), Livermore (March 24, 2009), Dublin (March 26, 2009), Concord (March 31, 2009), and Oakley (April 2, 2009). The public hearings were recorded and a transcript was made for each hearing. The comment period closed on April 21, 2009. Written comments were received from federal, state, and local and regional agencies; organizations; and individuals.

The Final EIS/EIR consists of the entire Draft EIS/EIR (Volumes 1, 2, and 3) and Volume 4 with the comments, responses to comments, and revisions to the Draft EIS/EIR included herein. The key differences between the Draft EIS/EIR and the Final EIS/EIR include the following:

- Facility refinements including the reduction of the Eastside Trail (all alternatives), realignment of the Westside Trail for Alternative 4, and addition of a second core borrow area zone for Alternative 4

- Hydrologic modeling updates to reflect the recently issued 2008 U.S. Fish and Wildlife Service (USFWS) Operations Criteria and Plan (OCAP) Biological Opinion (BO) (USFWS, 2008) and 2009 National Marine Fisheries Service (NMFS) OCAP BO (NMFS, 2009), as well as comments on the Draft EIS/EIR

- Changed status of Alternative 3, which, based on the results of the impact analysis, will not be recommended for approval (if a revised version of Alternative 3 is pursued at a later time, additional CEQA and NEPA analyses and documentation would be required)

1.3 CEQA and NEPA Requirements for Responding to Comments

This document, Volume 4 of the Final EIS/EIR, has been prepared to respond to comments received from agencies, organizations, and individuals on the Draft EIS/EIR for the Los Vaqueros Reservoir Expansion Project. The CEQA Guidelines state that written responses to comments received on the Draft EIR must describe the disposition of significant environmental issues. In particular, the major environmental issues raised when the lead agency's position is at variance with recommendations and objections raised in the comments must be addressed. NEPA requires that the Final EIS include and respond to all substantive comments received on the Draft EIS (40 CFR 1503.4). Lead agency responses may include the need to:

- modify the proposed project or alternatives;
- develop and evaluate new alternatives;
- supplement, improve, or modify the substantive environmental analyses;
- make factual corrections to the text, tables, or figures contained in the Draft EIS; or
- explain why no further response is necessary.

Additionally, the Final EIS must discuss any responsible opposing view that was not adequately discussed in the Draft EIS and must indicate the lead agency's response to the issues raised.

1.4 Requirements for Certification and Future Steps in Project Approval

The EIS/EIR is intended to be used by the CCWD Board of Directors and by Reclamation, as well as other agencies, when considering selection and implementation of one of the project alternatives.

Following completion of the Final EIS/EIR, CCWD's Board of Directors will hold a public meeting to consider certification of the Final EIR and to decide whether to approve one of the reservoir expansion alternatives. If the CCWD Board approves a project, it would prepare and adopt written findings of fact for each significant environmental impact identified in the EIS/EIR; a

Statement of Overriding Considerations, if needed; and a Mitigation Monitoring and Reporting Program. A Notice of Determination (NOD) would then be filed.

Reclamation will circulate the Final EIS for at least 30 days prior to taking action on the project and issuing its ROD. The ROD would address the decision, alternatives considered, the environmentally preferable alternative, relevant factors considered in the decision, and mitigation and monitoring.

1.5 Organization and Format of the Final EIS/EIR

This response to comments document (Volume 4 of the Final EIS/EIR) is organized as follows:

- **Chapter 1, Introduction,** describes the purpose, content and organization of the Final EIS/EIR, includes a list of commenters, and provides an overview of the approach to preparing responses to comments.
- **Chapter 2, Project Description Update,** describes refinements to the project alternatives proposed by the lead agencies since publication of the Draft EIS/EIR, and an assessment of potential impacts associated with the project description refinements.
- **Chapter 3, Master Responses,** presents responses to environmental issues raised in multiple comments. These have been termed "master responses". They are organized by topic to provide a more comprehensive response than may be possible in responding to individual comments, and so that reviewers can readily locate all relevant information pertaining to an issue of concern.
- **Chapter 4, Individual Responses to Comments,** contains lists of all agencies, organizations, and individuals who submitted comments on the Draft EIS/EIR during the public review period, cross references to relevant master responses, and individual responses to the comments that are not addressed in master responses.
- **Chapter 5, Revisions to the Draft EIS/EIR,** presents revisions to the Draft EIS/EIR text based on issues raised by comments, clarifications, or corrections. Changes in the text are signified by strikeouts where text is removed and by underline where text is added.
- **Chapter 6, Comments Received,** contains copies of the comments received, organized by commenter category, as well as comments from the public hearings.
- **Chapter 7, References,** includes the references to documents used to support the comment responses.
- **Appendices A through C** contain technical information supporting the comment responses.
- **Appendix D** contains the transcripts from the public hearings.

1.6 Organization of Comments and List of Commenters

In order to facilitate the preparation of responses, each comment set (i.e., a letter, email, or public hearing transcript) received on the Draft EIS/EIR was coded, then broken down into individual comments and bracketed by topic or issue area; individual comments were then numbered. The

individual comments are referenced alphanumerically by comment set code and comment number and are shown in the right-hand margin of each letter or comment set. The coding for the comment sets consists of a prefix indicating the category of commenter (see **Table 1-1**) followed by the initials or acronym of an agency/organization or the individual's last name.

TABLE 1-1
COMMENTER CATEGORIES AND ABBREVIATIONS

Category of Commenter	Coding Abbreviation
Federal Agencies	F
State Agencies	S
Local and Regional Agencies	L
Organizations	O
Individuals	I

Within each comment set, the individual topics or issue areas are bracketed and numbered sequentially. For example, the first comment in the first set of comments from the East Bay Regional Park District (a local agency) is L_EBRPD1-01. Comments submitted via email, via U.S. Postal Service, or during a public hearing are all coded and numbered in the same way; if a single agency, organization, or individual submitted comments more than once, a number is added at the end of the comment ID code to indicate multiple submittals by the same commenter (e.g., L_ EBRPD2 represents a second comment set, received either in a separate letter or as part of the oral comments presented at a public hearing). **Tables 1-2 through 1-6** list all agencies, organizations, and individuals that submitted comments on the Draft EIS/EIR during the comment period (February 20, 2009 through April 21, 2009). Chapters 3 and 4 of this document provide written responses to these comments.

1.7 Overview of Responses to Comments

As required by Section 15132 of the CEQA Guidelines and Section 40 CFR 1503.4(b) of the Council on Environmental Quality's regulations for implementing NEPA, the responses in this volume address significant environmental issues raised by commenters during the review period. They are intended to provide clarification and refinement of information presented in the Draft EIS/EIR and, in some cases, to correct or update information in the Draft EIS/EIR. In some instances, the text of the Draft EIS/EIR has been revised in response to a comment.

Many comments received on the Draft EIS/EIR did not address the adequacy or accuracy of the environmental analysis or did not identify any other significant environmental issue requiring a response; rather, these comments were directed toward the perceived merits or demerits of the Los Vaqueros Reservoir Expansion Project or expressed an opinion without specifying if and why the Draft EIS/EIR analysis was inadequate. CCWD and Reclamation, as the CEQA and NEPA lead agencies, acknowledge the receipt of these types of comments; however, limited responses are provided to such comments as they do not relate to the adequacy or accuracy of the Draft EIS/EIR or otherwise raise significant environmental issues.

TABLE 1-2
FEDERAL AGENCIES THAT SUBMITTED COMMENTS ON THE DRAFT EIS/EIR

Comment Format	Comment ID	Name of Commenter	Title	Organization/ Affiliation	Date of Comment
Email	F_EPA	Kathleen M. Goforth	Manager, Environmental Review Office, Region IX	Environmental Protection Agency	4/21/09

TABLE 1-3
STATE AGENCIES THAT SUBMITTED COMMENTS ON THE DRAFT EIS/EIR

Comment Format	Comment ID	Name of Commenter	Title	Organization/ Affiliation	Date of Comment
Fax	S_Caltrans	Lisa Carboni	District Branch Chief	California Department of Transportation	4/6/09
Mail	S_CVFPB	James Herota	Staff Environmental Scientist	Central Valley Flood Protection Board	4/23/09
Email	S_DFG	Charles Armor	Regional Manager, Bay Delta Region	California Department of Fish and Game	4/20/09
Fax	S_DOC	Dan Otis	Williamson Act Program Manager	California Department of Conservation	4/21/09
Mail	S_DSOD	David A. Gutierrez	Chief	California DWR, Division of Safety of Dams	3/16/09
Mail	S_SWRCB	Katherine Mrowka	Chief Inland Streams Unit	California State Water Resources Control Board	4/9/09

TABLE 1-4
LOCAL AND REGIONAL AGENCIES THAT SUBMITTED COMMENTS ON THE DRAFT EIS/EIR

Comment Format	Comment ID	Name of Commenter	Title	Organization/ Affiliation	Date of Comment
Email	L_ACWD	Paul Piraino	General Manager	Alameda County Water District	4/21/09
Email	L_CCCDCD	John Cunningham	Senior Transportation Planner	Contra Costa County, Department of Conservation and Development	4/21/09
Email	L_CCCFC	Tim Jensen	Senior Civil Engineer	Contra Costa County, Flood Control and Water Conservation District	4/21/09
Email	L_CCCPW	Julia R. Bueren	Public Works Director	Contra Costa County, Public Works Department	4/21/09
Public Hearing	L_CCCSD1	Ann E. Farrell	Director of Engineering	Central Contra Costa Sanitary District	3/31/09
Courier	L_CCCSD2	Ann E. Farrell	Director of Engineering	Central Contra Costa Sanitary District	4/21/09
Fax	L_DDSD	Gary W. Darling	General Manager	Delta Diablo Sanitation District	4/21/09
Mail	L_DSRSD	David A. Requa	Assistant General Manager/District Engineer	Dublin San Ramon Services District	5/5/09
Email	L_EBMUD	Alexander R. Coate	Director of Water and Natural Resources	East Bay Municipal Utility District	4/21/09
Email	L_EBRPD1	Brad Olson	Environmental Programs Manager	East Bay Regional Park District	4/21/09
Mail	L_EBRPD2	Kristin B. Burford and Matthew D. Zinn	Shute, Mihaly & Weinberger LLP	East Bay Regional Park District	4/21/09
Email	L_ECCCHC	John Kopchik	Executive Director	East Contra Costa County Habitat Conservancy	4/21/09

TABLE 1-4
LOCAL AND REGIONAL AGENCIES THAT SUBMITTED COMMENTS ON THE DRAFT EIS/EIR

Comment Format	Comment ID	Name of Commenter	Title	Organization/ Affiliation	Date of Comment
Email	L_RCRA	Craig K. Murray	Development Project Manager II	Richmond Community Redevelopment Agency	4/20/09
Mail	L_RD800	Jeffrey D. Conway	District Manager	Reclamation District 800	5/5/09
Email	L_SCVWD	Sandy Oblonsky	Assistant Officer, Office of Water Utility Enterprise Planning	Santa Clara Valley Water District	4/21/09
Email	L_SRCSD	Stan R. Dean	District Manager	Sacramento Regional County Sanitation District	4/21/09
Email	L_SWC	Terry L. Erlewine	General Manager	State Water Contractors	4/21/09
Email	L_Zone 7	G.F. Duerig	General Manager	Zone 7 Water Agency	4/21/09

TABLE 1-5
ORGANIZATIONS THAT SUBMITTED COMMENTS ON THE DRAFT EIS/EIR

Comment Format	Comment ID	Name of Commenter	Title	Organization/ Affiliation	Date of Comment
Public Hearing	O_CCCFB	John Veitch		Contra Costa County Farm Bureau	4/2/09
Email	O_CEMC	M. Scott Mansholt	Senior Environmental Project Management Specialist	Chevron Environmental Management	4/21/09
Email	O_CFBF	Christian C. Scheuring	Managing Counsel	California Farm Bureau Federation	4/21/09
Mail	O_DPBC1	Richard M. Anderson		Delta Pedalers Bicycle Club	4/13/09
Mail	O_DPBC2	John Diaz Coker		Delta Pedalers Bicycle Club	4/13/09
Mail	O_DPBC3	Connie Davis		Delta Pedalers Bicycle Club	4/16/09
Mail	O_DPBC4	Steve Diputado		Delta Pedalers Bicycle Club	4/13/09
Mail	O_DPBC5	Phil Paulson		Delta Pedalers Bicycle Club	4/16/09
Mail	O_DPBC6	Dave Stoeffler		Delta Pedalers Bicycle Club	4/16/09
Mail	O_DPBC7	Kathryn Thomas		Delta Pedalers Bicycle Club	4/16/09
Email	O_DWP	Anson B. Moran	General Manager	Delta Wetlands Project	4/21/09
Public Hearing	O_EBATC1	Steven Eng		East Bay Area Trails Council	3/26/09
Email	O_EBATC2	Morris Older		East Bay Area Trails Council	4/21/09
Public Hearing	O_EBBC	Bruce D. Ohlson		East Bay Bicycle Coalition	3/31/09
Email	O_EBCNPS	Lech Naumovich	East Bay Conservation Analyst	East Bay California Native Plant Society	4/21/09
Email	O_NASNF	John Eustacio Negrete	Treasurer	Native Alliance of the Sierra Nevada Foothills	4/22/09
Email	O_PCL	Evon Parvaneh Chambers	Water Policy Assistant	Planning and Conservation League	4/20/09
Email	O_SMD	Troy Bristol	Land Conservation Associate	Save Mount Diablo	4/21/09

TABLE 1-6
INDIVIDUALS WHO SUBMITTED COMMENTS ON THE DRAFT EIS/EIR

Comment Format	Comment ID	Name of Commenter	Date of Comment
Email	I_Birnbaum	Mark Birnbaum	4/9/09
Mail	I_Chapman	David and Brenda Chapman	4/21/09
Mail	I_Collier	Gary Collier	4/24/09
Email	I_Desmond	Michael Desmond	4/7/09
Email	I_Fontaine	Dave Fontaine	4/18/09
Email	I_Graham	Betty Lu Graham	4/20/09
Email	I_Gunn	Joyce Gunn	4/14/09
Email	I_Harris	Adrienne Harris	4/19/09
Email	I_Horejsi	Dr. Brian L. Horejsi	4/8/09
Email	I_Mankin	Bob Mankin	4/21/09
Email	I_Navarro	Steven Navarro	4/10/09
Email	I_Netzer	Ralph Netzer	4/13/09
Email	I_Osterling	Ralph Osterling	2/25/09
Email	I_Pilkington	Corin Pilkington	4/21/09
Email	I_Quigley1	Dick Quigley	3/25/09
Email	I_Quigley2	Dick Quigley	4/1/09
Email	I_Saephan	Mey Saephan	3/24/09
Email	I_Sagehorn	Michael Sagehorn	4/7/09
Email	I_Vandeman	Mike Vandeman	4/7/09
Email	I_Vincent	Tammy Vincent	4/10/09

Master Responses

Some issues received a substantial number of comments from numerous commenters, demonstrating common concerns among agencies, special interest groups (organizations), and members of the public (individuals). For these issues, a comprehensive discussion of the issue and related topics is presented as a master response in Chapter 3 of this document. Each master response provides an integrated and comprehensive response to a particular issue and related concerns.

The master responses are listed below:

3.1 Master Response 1: Project Purpose and Description
3.2 Master Response 2: Relationship to Other Initiatives and Projects
3.3 Master Response 3: Project Alternatives
3.4 Master Response 4: Approvals and Permits
3.5 Master Response 5: Delta Hydrology and Aquatic Resources
3.6 Master Response 6: Local Hydrology and Drainage
3.7 Master Response 7: Agriculture
3.8 Master Response 8: Biological Resources
3.9 Master Response 9: Transportation and Circulation
3.10 Master Response 10: Hazardous Materials/Public Health, and Utilities
3.11 Master Response 11: Recreation
3.12 Master Response 12: Cultural Resources
3.13 Master Response 13: Growth-Inducing Effects
3.14 Master Response 14: Climate Change
3.15 Master Response 15: Procedural Issues

CHAPTER 2
Project Description Update

2.1 Introduction

This section describes updates to the project description for the Los Vaqueros Reservoir Expansion Project alternatives that have been made since publication of the Draft EIS/EIR, primarily in response to comments received on the Draft but in some cases made to reflect changes in the regulatory framework within which the project would be operated as well as refinements in project design. Section 2.2 describes how Alternative 3 is addressed in this response to comments document (Vol. 4 of the Final EIS/EIR). Section 2.3 presents refinements that apply to the description of one or more of the project alternatives. Section 2.4 presents an analysis of the environmental consequences associated with a variation on the timing of reservoir expansion implementation. Section 2.5 describes the environmentally superior alternative. Section 2.6 describes Reclamation's preferred alternative.

2.2 Treatment of Alternative 3 in the Final EIS/EIR

Alternative 3 – Expanded 275-thousand acre-feet (TAF) Reservoir, No South Bay Connection, Environmental Water Management Emphasis, as presented in the Draft EIS/EIR (Vol. 1, Chapter 3, Description of Project Alternatives, pp. 3-33 through 3-37), includes expansion of the reservoir but does not include construction of the new South Bay Connection conveyance facilities (i.e., no new Delta Intake and Pump Station or Transfer-Bethany pipeline). The operational scenario proposed for this alternative emphasized environmental water management. The goal of this alternative was to provide Reclamation with greater operational flexibility for the Central Valley Project (CVP) system, increasing water supply available at appropriate times for environmental uses such as cold water releases to support salmon spawning, pulse flow releases to support salmon migration, or water supply for the wildlife refuges. Increasing storage would allow CCWD, as a CVP contractor, to take more of its supply from the expanded reservoir at certain times, allowing Reclamation greater flexibility to use water at key times elsewhere in the CVP system for environmental purposes.

The Draft EIS/EIR impact analysis indicates that while Alternative 3 could provide some of the desired environmental water management benefits, the proposed operation would also result in significant and unavoidable impacts to Delta fisheries resources because of the potential for fish entrainment associated with water diversion from the Delta (see Draft EIS/EIR Vol. 1, Section 4.3, Delta Fisheries and Aquatic Resources, Impact 4.3.7, pp. 4.3-87 through 4.3-94). The modeling experts who prepared the Draft EIS/EIR and Final EIS/EIR considered whether the updated

modeling and operations described in Section 5.3 (Vol. 4) would change these conclusions and determined that the fisheries impacts would remain significant and unavoidable. Based on the results of the impact analysis, implementation of the proposed operations under Alternative 3 will not be recommended for approval by CCWD or Reclamation decision-makers. The proposed operation of this alternative would have to be largely redesigned to avoid this significant unavoidable impact and that redesign effort is not being undertaken at this time. Consequently, updated modeling of the proposed operations for Alternative 3 was not conducted for the Final EIS/EIR and discussion of Alternative 3 is not included in the responses to comments that address questions of project operations or effects on water resources, or Delta fisheries and aquatic resources.

For comments that address the proposed facilities or impacts of the proposed facilities (either construction or operation), the responses do include information about Alternative 3, where appropriate. The Final EIS/EIR continues to analyze the physical features of Alternative 3 because it is possible that a future project could combine these physical features with substantially different operations. If future Delta conditions change and a determination is made to pursue a revised version of Alternative 3, then additional California Environmental Quality Act (CEQA) and National Environmental Policy Act (NEPA) analyses and documentation would be undertaken, as necessary.

2.3 Project Description Update

Since publication of the Draft EIS/EIR in February 2009, the descriptions of select elements of the action alternatives considered in the Draft EIS/EIR have been refined or updated. Refinements have been made to three elements of the proposed facilities and operational assumptions have been updated for Alternatives 1, 2 and 4. This section first describes the facility refinements and then reviews the operational scenario updates.

2.3.1 Facility Refinements

The proposed facility refinements have been made in response to comments received on the Draft EIS/EIR, in consideration of the possible timing variant (described in Section 2.4 below), or as a result of additional technical information developed since publication of the Draft EIS/EIR. Refinements to proposed facilities include: (1) reduction in the trail length of the Eastside Trail Option (Alternatives 1-4); (2) realignment of the Westside Trail replacement (Alternative 4); and (3) identification of an additional borrow area for core dam construction materials for the 160-TAF reservoir (Alternative 4).

Table 2-1 summarizes the three project description elements to be refined and the alternatives that would be affected. Each of the three facility refinements listed in Table 2-1 is described in more detail below, followed by an assessment of whether and how these refinements affect the impact analysis and conclusions presented in the Draft EIS/EIR. Each project refinement was evaluated using an environmental checklist approach to consider each environmental resource and impact category analyzed in the Draft EIS/EIR and determine if and the extent to which there would be any impact difference. **Appendix A** contains the environmental assessment tables for each of the three project refinements listed in Table 2-1 and discussed below. The results of this impact assessment are summarized below.

TABLE 2-1
ALTERNATIVES AFFECTED BY PROPOSED PROJECT DESCRIPTION REFINEMENTS

	Project Alternatives			
Project Description Element to be Refined	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Alternative 4**
Eastside Trail Reduction	Yes	Yes	Yes	Yes
Westside Trail Realignment	No	No	No	Yes
Secondary Core Borrow Area	No	No	No	Yes

SOURCE: ESA, 2009

As demonstrated in the discussion of each of the project refinements below, in some cases these refinements result in small increases or decreases in the amount of area affected by project activities but in no case do these refinements result in new or substantially more severe impacts than those previously disclosed in the Draft EIS/EIR. In some cases, project refinements result in less impact than described in the Draft EIS/EIR. None of these refinements to the proposed alternatives affects the impact conclusions presented in the Draft EIS/EIR. None of these refinements would affect the No Project/No Action Alternative as described in the Draft EIS/EIR and therefore the No Project/No Action Alternative is not discussed further in this section.

Eastside Trail Reduction (Alternatives 1-4)

Description

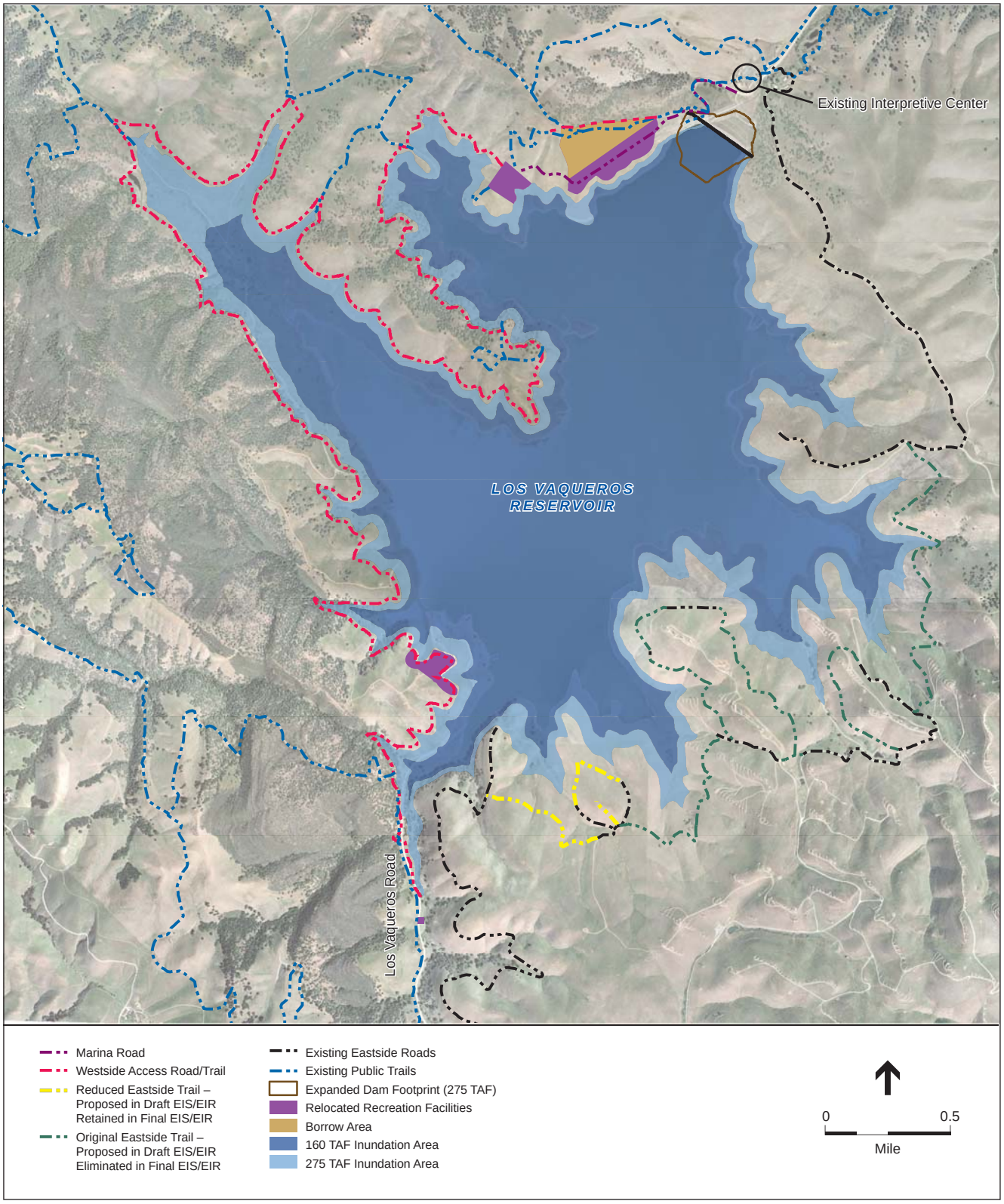
Project Refinement and Reason for Refinement

Some comments received on the Draft EIS/EIR expressed concern that development of the proposed Eastside Trail (Alternatives 1-4) would potentially result in indirect adverse effects to wildlife habitat or cultural resources. Please refer to Section 3.8, Master Response 8, Biological Resources and Section 3.12, Master Response 12, Cultural Resources for more detailed discussion about comments received regarding the Eastside Trail and responses to those comments. In response to comments expressing concern about this project element, the majority of the Eastside Trail has been eliminated from all of the alternatives. Only a short segment of new trail is proposed under this refinement.

Comparison of Original and Refined Proposed Eastside Trail

Figure 2-1 depicts both the original[1] and reduced proposed Eastside Trail in relationship to the 275-TAF reservoir (Alternatives 1, 2 and 3) and the 160-TAF reservoir (Alternative 4). As originally proposed, all action alternatives included the option for the addition of six miles of hiking-only trails connecting 8.5 miles of existing access roads on the east side of the reservoir. The total 14.5-mile Eastside Trail would extend from the south gate on Los Vaqueros Road, near Vasco Road, to the reservoir, then around the south/southeast side of the reservoir eventually meeting up with

[1] As originally proposed in the Draft EIS/EIR.



SOURCE: GlobeXplorer, 2007; and ESA, 2010

Los Vaqueros Reservoir Expansion Project EIS/EIR . 201110

Figure 2-1
Eastside Trail Reduction
(Alternatives 1, 2, 3, and 4)

Walnut Boulevard, north of the dam. As refined, the Eastside Trail would extend from the south gate to the reservoir, then around the south/southeast side of the reservoir to a planned lookout point. The reduced trail would be approximately 5 miles in length, comprised of approximately 4 miles of existing access roads and 1 mile of newly constructed trail. **Table 2-2** provides a comparison of the original Eastside Trail footprint as proposed in the Draft EIS/EIR and as refined for Alternatives 1-4 in the Final EIS/EIR.

TABLE 2-2
EASTSIDE TRAIL FOOTPRINT
COMPARISON OF ORIGINAL[1] AND REFINED PROPOSALS

Resource Impacts	Total Length (feet)	Total Length (miles)	Existing Road Length (feet/miles)	New Trail Length (feet/miles)	Width (feet)	Area of Impact (acres)
Long-term Effects (Original)	76,380.1	14.5	44,936.4/8.5	31,443.7/6.0	17	12.31
Long-term Effects (Refined)	26,770.9	5.1	21,054.7/4.0	5,716.1/1.1	17	2.25
Reduction in Length and Area of Eastside Trail Footprint	**49,609.2**	**9.4**	**23,881.7/4.5**	**25,727.6/4.9**	**0**	**10.06**
Temporary Effects – (Original)	76,380.1	14.5	N.A.	N.A.	6	10.5
Temporary Effects (Refined)	26,770.9	5.1	N.A.	N.A.	6	3.7
Reduction in Area of Temporary Impact (Construction Impact)	**49,609.2**	**9.4**	**N.A.**	**N.A.**	**0**	**6.8**

[1] As originally proposed in the Draft EIS/EIR.

SOURCE: ESA, 2009

Environmental Effects

Reduction of the Eastside Trail from a total of 14.5 miles to 5 miles (including 1 mile of new trail rather than 6 miles) would reduce the total footprint area of the Eastside Trail system, and therefore would result in a reduction in temporary and permanent impacts.

Table A-1, Impact Assessment for the Eastside Trail, shows the impact assessment conducted for the realignment and indicates how the reduced Eastside Trail could result in decreases in adverse effects on some resources along with a corresponding decrease in beneficial effects associated with expanding the hiking trail network within the watershed (see Vol. 4, Appendix A).

Areas of Less Impact

The reduced Eastside Trail would reduce impacts on environmental resources as compared to the analysis of the original Eastside Trail proposed in the Draft EIS/EIR because of the reduced length of trail that would be constructed and open for public use.

Soils. The smaller area of disturbance associated with reducing the trail length would result in slightly reduced potential for impacts associated with soil erosion, loss of topsoil and related cumulative effects.

Local Hydrology. The smaller area of disturbance associated with reducing the trail length would result in slightly reduced potential for effects on water quality, drainage patterns/increased runoff and related cumulative effects.

Biological Resources. Reduction of the Eastside Trail would result in reduced temporary and permanent impacts to habitat and wildlife on the eastside of the reservoir due to the reduced area of disturbance as well as the reduction in the level of public access associated with the trail as originally proposed in the Draft EIS/EIR. As described in Table A-1 (Vol. 4, Appendix A), effects on the following resources would be reduced as a result of less direct and indirect effect: Natural Community Conservation Plan (NCCP) habitat types and associated sensitive plant communities; wetland habitat and waters of the U.S.; California tiger salamander upland habitat and California red-legged frog wetlands and stock ponds located within trail area; western pond turtle populations; vernal pool species and habitat; burrowing owl habitat; San Joaquin kit fox habitat and regional movement; foraging habitat for golden eagle and Swainson's hawk; Alameda whipsnake habitat in scrub habitat areas of the watershed; breeding bird nest sites; habitat for nonlisted special-status reptile species that may occur in the watershed grasslands; nonlisted special-status mammal species; and cumulative biological effects.

Air Quality. Construction of a shorter trail would result in a slight decrease in construction-related air pollution emissions, including dust and construction vehicle emissions.

Hazardous Materials and Public Health. Reducing the length of the Eastside Trail would slightly decrease risks associated with accidental release of hazardous materials during construction, wildland fires and associated cumulative effects.

Cultural Resources. Reducing the length of the Eastside Trail and thereby limiting public access to the east side of the reservoir would avoid the trail passing near two historic properties and would reduce potential indirect effects of public trespass upon areas considered generally high in potential for paleontological resources.

Reduced Beneficial Effects

Recreation. The reduced Eastside Trail would result in fewer new trail miles available for recreational use inside the Los Vaqueros watershed. However, there would be no adverse effects on existing recreational opportunities as a result of this refinement. Further, the long-term benefits to recreation associated with construction of the new lookout would still occur.

Socioeconomics. The reduced Eastside Trail would result in fewer new trail miles and thus a very slight reduction in the overall amount of project construction work, which would reduce beneficial effects upon local income and employment. However, this change would be very minor in the context of the overall reservoir expansion project. There would be no adverse effects on existing employment opportunities as a result of this refinement, and project benefits from construction spending and employment similar to those described in the Draft EIS/EIR would still occur.

Environmental Justice. Reduction of the Eastside Trail would slightly reduce the amount of project construction work. However, this change would be minor. There would be no adverse effects on

existing employment opportunities available locally to minority or low-income populations as a result of this refinement, and project benefits from a temporary increase in employment opportunities similar to those described in the Draft EIS/EIR would still occur.

Summary of Effects

As compared to the analysis of the original Eastside Trail proposed in the Draft EIS/EIR, there would be no substantial change in potential environmental impacts or beneficial effects associated with the reduced Eastside Trail and no changes in level of significance for any impact conclusions. Mitigation measures presented in the Draft EIS/EIR still apply and remain sufficient to reduce related impacts to less than significant levels.

Westside Trail Realignment (Alternative 4 only)

Description

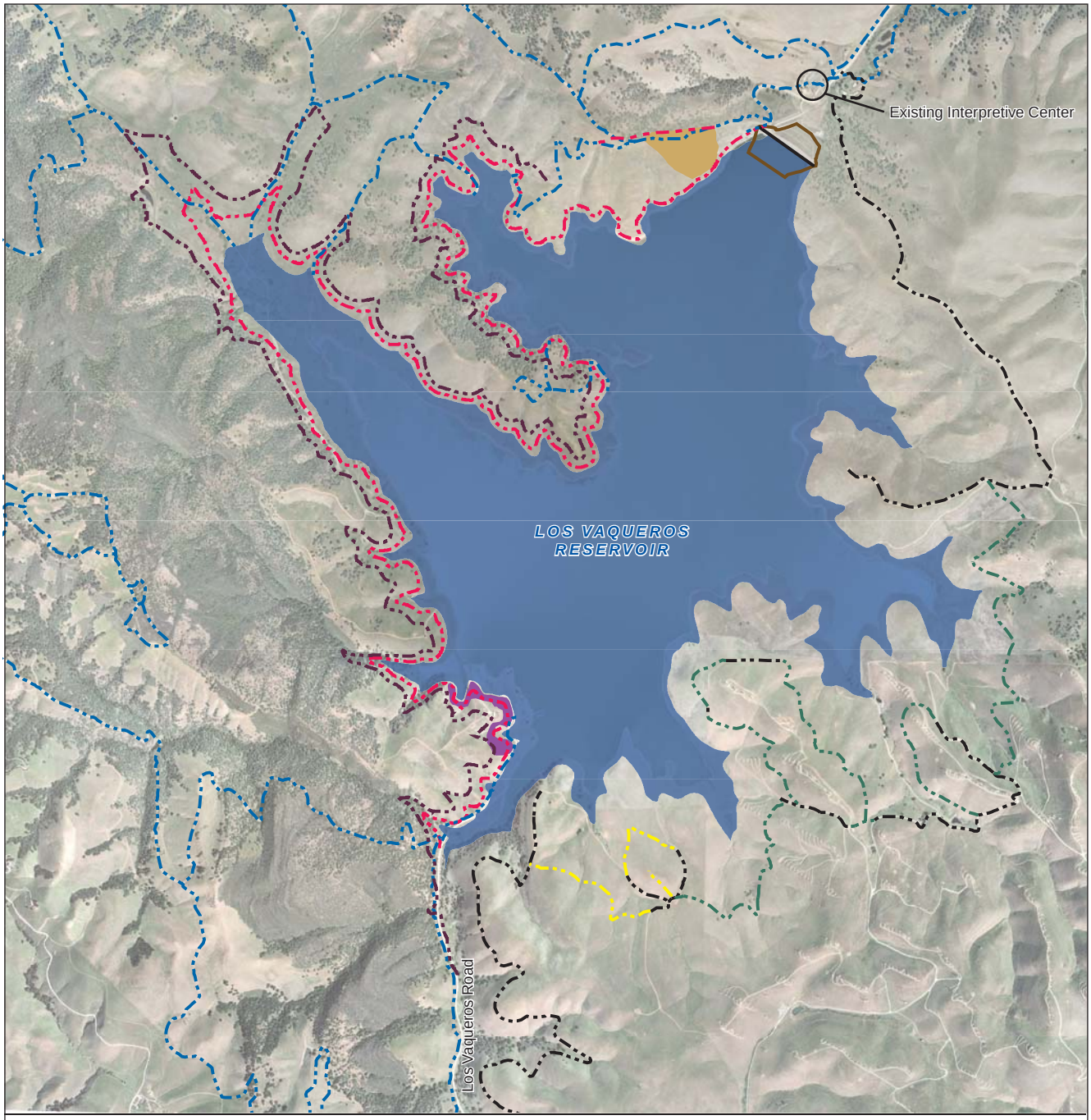
Project Refinement and Reason for Refinement

The Draft EIS/EIR identifies one alignment for the Westside Trail under Alternatives 1, 2 and 3, and a slightly different alignment under Alternative 4. Under the proposed refinement, the Westside Trail to be constructed under Alternative 4 (160 TAF) would be realigned to match the alignment evaluated under Alternatives 1, 2 and 3 (275 TAF) in the Draft EIS/EIR. Several comments raised concerns regarding the uncertainty surrounding future Delta operations. As described in Section 2.2, below, the lead agencies recognize that it is possible that the reservoir could be expanded to 160 TAF, and then the agencies later may consider whether to expand the reservoir further to 275 TAF. Accordingly, the Final EIS/EIR evaluates the potential for changes in impacts associated with such a timing variant (see Section 2.4). Constructing the Westside Trail at a higher location in the watershed under Alternative 4 would minimize or avoid direct, indirect and cumulative environmental impacts associated with relocating and reconstructing this component if the reservoir were expanded in the future from 160 TAF to 275 TAF. **Figure 2-2** shows the approximate location of the realigned Westside Trail, as it would be constructed under Alternative 4, relative to both the 160 TAF and 275 TAF inundation areas.

Comparison of Original and Refined Proposed Westside Trail

Under Alternatives 1, 2 and 3 (275 TAF), as described in the Draft EIS/EIR, the Westside Trail would extend from the southern end of the reservoir near the existing marina to the north side of the dam, pass through the proposed relocated marina complex on the north side of the expanded reservoir, then through the borrow area to the road on the northwest side of the dam, generally following the 580-foot contour line to connect with access roads on the south end of the reservoir. Under Alternative 4 (160 TAF), as described in the Draft EIS/EIR, the trail would pass above the existing marina area to the road on the northwest side of the dam, generally following the 530-foot contour line.

Realigning the Westside Trail under Alternative 4 would include locating the trail at the 580-foot elevation level (as planned for a 275-TAF reservoir) instead of the 530-foot elevation level. Doing so would increase the trail length by approximately two miles. This realignment would



SOURCE: GlobeXplorer, 2007; and ESA, 2010

Los Vaqueros Reservoir Expansion Project EIS/EIR . 201110

Figure 2-2
Westside Trail Realignment
(Alternative 4)

place the Westside Trail about 50 feet in elevation above the 160-TAF reservoir water surface when full. A short segment of the trail would be re-aligned at the southern end of the reservoir to provide access to the marina that, under Alternative 4, would be reconstructed at the southern end of the reservoir, upslope of the existing marina site.

Environmental Effects

Construction of a realigned Westside Trail under Alternative 4 would result in an increase in overall trail length of approximately two miles and an increased footprint area of approximately 4.9 acres. **Table 2-3** provides a comparison of the original Westside access road and trail network footprint as proposed in the Draft EIS/EIR and as refined for Alternative 4.

TABLE 2-3
WESTSIDE TRAIL FOOTPRINT (ALTERNATIVE 4)
COMPARISON OF ORIGINAL[1] AND REFINED PROPOSALS

Resource	Length (feet)	Length (miles)	Width (feet)	Area of Impact (acres)
Long-term Effects (Original)	58,767	11.1	34	45.43
Long-term Effects (Refined)	68,624	13.0	34	50.35
Increase in Length and Area Westside Trail Footprint	**9,857**	**1.9**	**0**	**4.92**
Temporary Effects (Original)	--	--	16[1]	21.34
Temporary Effects (Refined)	--	--	16[1]	23.62
Increase in Area of Temporary Impact	**N/A**	**N/A**	**0**	**2.28**

1 As originally proposed in the Draft EIS/EIR.
N/A – Not Applicable

SOURCE: ESA, 2009

Table A-2, Impact Assessment for the Westside Trail presents the impact assessment conducted for the refinement and indicates how the realigned Westside Trail could result in decreased or increased effects as compared to the analysis of the original Westside Trail proposed for Alternative 4 in the Draft EIS/EIR (see Vol. 4, Appendix A). Temporary construction-related impacts would increase incrementally with the increase in trail length and footprint. However, mitigation measures already included in the Draft EIS/EIR would reduce any potentially significant construction-related impacts to Less-than-Significant.

Areas of Impact Increase

The realigned Westside Trail under Alternative 4 would result in the potential for slightly increased effects on the environmental resources listed below, as compared to the analysis of the original Westside Trail proposed for Alternative 4 in the Draft EIS/EIR. However, these effects would be the same as those described for the Westside Trail as analyzed under Alternatives 1, 2 and 3 in the Draft EIS/EIR. Temporary construction-related impacts would increase incrementally with the increase in trail footprint; however, mitigation measures already included in the Draft EIS/EIR would reduce any potentially significant construction-related impacts to Less-than-Significant.

Soils. The larger area of disturbance would result in slightly increased potential for impacts associated with soil erosion, loss of topsoil and related cumulative effects. With implementation of mitigation measures in the Draft EIS/EIR, these impacts would remain Less-than-Significant with Mitigation. (See Draft EIS/EIR, Vol. 1, Section 4.5, Mitigation Measures 4.5.1a and 4.5.1b, pp. 4.5-19 through 4.5-21; Mitigation Measure 4.5.2, pg. 4.5-29; and Section 4.6, Mitigation Measures 4.6.2a and 4.6.2b, pp. 4.6-102 through 4.6-103).

Local Hydrology. The larger area of disturbance would result in slightly increased potential for impacts to water quality, increased runoff and related cumulative effects. With implementation of mitigation measures in the Draft EIS/EIR, these impacts would remain Less-than-Significant with Mitigation. (See Draft EIS/EIR, Vol. 1, Section 4.5, Mitigation Measures 4.5.1a and 4.5.1b, pp. 4.5-19 through 4.5-21 and Mitigation Measure 4.5.2, pg. 4.5-29).

Biological Resources. Realignment of the Westside Trail would result in some increase in temporary and permanent impacts to habitat and wildlife on the west side of the reservoir due to the increased area of disturbance. As described in Table A-2, effects on the following resources would potentially be greater: NCCP habitat types and associated sensitive plant communities; wetland habitat and waters of the U.S.; burrowing owl & habitat; foraging habitat for golden eagle and Swainson's hawk; breeding bird nest sites; Alameda whipsnake habitat in scrub habitat areas of the watershed; Valley Elderberry Longhorn Beetle habitat; breeding bird nest sites; habitat for nonlisted special-status reptile species that may occur in the watershed grasslands; nonlisted special-status mammal species; and cumulative biological effects.

In addition to the above, realignment of the Westside Trail under Alternative 4 would result in the following increased effects:

- Construction of the Westside Trail at the 580-foot elevation level (as planned for a 275-TAF reservoir) would affect special-status plant species (Brewer's dwarf-flax) on the westside of the reservoir. The trail relocation as originally proposed under Alternative 4 would not impact this plant. Implementation of Mitigation Measures 4.6.3a and 4.6.3b in the Draft EIS/EIR would reduce this impact to Less-than-Significant with Mitigation (Vol. 2, Section 4.6, pp. 4.6-106 through 4.6-107). This impact, mitigation measure and post-mitigation impact conclusion are the same as that for the Westside Trail as proposed under Alternatives, 1, 2, and 3 (275 TAF) (Impact 4.6.3 Special-status plant species).

- Construction of the Westside Trail at the 580-foot elevation level (as planned for a 275-TAF reservoir) would result in increased effects on California tiger salamander habitat (two additional ponds would be impacted and grassland, where the trail would be constructed, is California tiger salamander upland aestivation habitat) and California red-legged frog habitat (wetlands and stock ponds) located within trail area. With implementation of Mitigation Measures 4.6.4a and 4.6.4b in the Draft EIS/EIR (Vol. 2, Section 4.6, pp. 4.6-112 through 4.6-115), this impact would remain the same as for Alternatives 1, 2, and 3 (Less-than-Significant with Mitigation) (Impact 4.6.4 California red-legged frog and California tiger salamander habitat).

- Construction of the Westside Trail at the 580-foot elevation level (as planned for a 275-TAF reservoir) would result in increased effects on San Joaquin kit fox habitat and regional movement due to the increased trail length. With implementation of Mitigation

Measures 4.6.7a-c in the Draft EIS/EIR (Vol. 2, Section 4.6, pg. 4.6-139), impacts to habitat would remain the same as for Alternatives 1, 2, and 3 (Less-than-Significant with Mitigation).

Air Quality. The larger area of disturbance would result in the potential for slightly increased construction-related air pollution emissions. With implementation of mitigation measures in the Draft EIS/EIR, these impacts would remain Less-than-Significant with Mitigation. (See Draft EIS/EIR, Vol. 2, Section 4.10, Mitigation Measure 4.10.1, pg. 4.10-28 through 4.10-29.)

Hazardous Materials and Public Health. Construction of the realigned Westside Trail could potentially result in slightly increased risks associated with accidental release of hazardous materials during construction, wildland fires and associated cumulative effects. With implementation of mitigation measures in the Draft EIS/EIR, these impacts would remain Less-than-Significant with Mitigation. (See Draft EIS/EIR, Vol. 2, Section 4.5, Mitigation Measures 4.5.1a and 4.5.1b, pp. 4.5-19 through 4.5-21; Section 4.13, Mitigation Measure 4.13.2, pg. 4.13-19; Mitigation Measure 4.13.3, pp. 4.13-20 through 4.13-21).

Cultural Resources. As discussed above, the realigned Westside Trail would affect fewer known historic properties. However, because of the larger area of disturbance, there would be an increase in potential to encounter unknown cultural and paleontological resources during excavation. With implementation of mitigation measures in the Draft EIS/EIR, these impacts would remain Less-than-Significant with Mitigation. (See Draft EIS/EIR, Vol. 2, Mitigation Measures 4.16.1a through 4.16.1h, pp. 4.16-48 through 4.16-50; Mitigation Measures 4.16.2a and 4.16.2b, pp. 4.16-50 through 4.16-51; and Mitigation Measure 4.16.3, pg. 4.16-55).

Areas of Less Impact

Cultural Resources. The realigned Westside Trail would pass through or nearby five known historic properties. As originally proposed under Alternative 4, the trail would pass through or nearby six known historic properties.

Increased Beneficial Effects

Socioeconomics. The realigned Westside Trail would slightly increase the amount of construction work under Alternative 4, which could result in slightly increased beneficial effects upon local income and employment. This change would be minor. Project benefits from construction spending and employment would be similar to those described in the Draft EIS/EIR.

Environmental Justice. The realigned Westside Trail would slightly increase the amount of construction work and related employment opportunities available locally to minority or low-income populations under Alternative 4. This change would be minor. Project benefits from a temporary increase in employment opportunities would be similar to those described in the Draft EIS/EIR.

Summary of Effects

Because the realigned Westside Trail would be approximately two miles longer than the trail relocation originally proposed under Alternative 4, this project refinement would result in increased

effects for select impacts related to biological resources, soils, local hydrology, air quality, and hazardous materials and public health compared to the original Westside Trail under Alternative 4 as proposed in the Draft EIS/EIR. However, these impacts would be the same as those described for the Westside Trail under Alternatives 1, 2 and 3, and with mitigation measures already provided in the Draft EIS/EIR, impact conclusions would remain the same as the conclusions for Alternatives 1, 2 and 3. With one exception, the mitigation measures required to address the Westside Trail realignment under Alternative 4 were already proposed in the Draft EIS/EIR for implementation with Alternative 4. The Westside Trail realignment for Alternative 4 would require mitigation for effects on the Brewer's dwarf-flax, a special status species (Mitigation Measures 4.6.3a and 4.6.3b in the Draft EIS/EIR, Vol. 2, Section 4.6, pp. 4.6-106 through 4.6-107).

Secondary 160-TAF Core Borrow Area (Alternative 4 only)

Description

Project Refinement and Reason for Refinement

To minimize truck trip length and associated emissions, and to reduce cost, most of the materials for the Los Vaqueros Reservoir dam raise would be obtained from sites within the watershed. As discussed in Draft EIS/EIR Chapter 3, Description of Project Alternatives, under Alternative 4 alluvial clay deposits on the floor of the existing reservoir would not be available for use in constructing the dam core because the reservoir would not be fully drained under this alternative. Therefore, it was proposed that approximately 270,000 cubic yards of clay be excavated from naturally-occurring alluvial deposits in the valley floor approximately 2.5 miles downstream of the dam. Because the engineering properties of these alluvial deposits are still under investigation, the specific location and size of this borrow area is still to be determined. Therefore, a borrow area siting zone was identified for impact analysis purposes within which the final borrow area would be located (see Draft EIS/EIR, Vol. 1, Chapter 3, Figure 3-18, pg. 3-52). The dimensions and depth of the actual borrow area within this zone will depend on the location, depth, and quality of the clays available. Although excavation of clay materials might not need to occur on all acres within the zone, for purposes of impact analysis it was assumed that the entire 46-acre zone would be disturbed. This is referred to in this discussion as the primary core borrow area zone.

More detailed evaluation completed since publication of the Draft EIS/EIR indicates that the quantity of clay with suitable engineering properties occurring at the proposed primary core borrow area zone evaluated in the Draft EIS/EIR could be less than needed for construction. As a result, an additional core borrow area zone (about 41 acres) has been identified and is referred to as the secondary core borrow area zone. Identification of a secondary core borrow area zone is a conservative approach to provide a supplemental source of core material, if needed. The project will avoid use of the secondary core borrow area zone if feasible. The intent is to ensure that there is adequate, usable material within a reasonable proximity to the dam construction site to minimize the indirect impacts mentioned above. This secondary core borrow area zone is located approximately two miles downstream of the dam. As is the case for the primary zone, the dimensions and depth of the actual borrow area within this secondary zone, if used, will depend on the location, depth, and quality of the clays available.

Comparison of Original and Refined Project Component

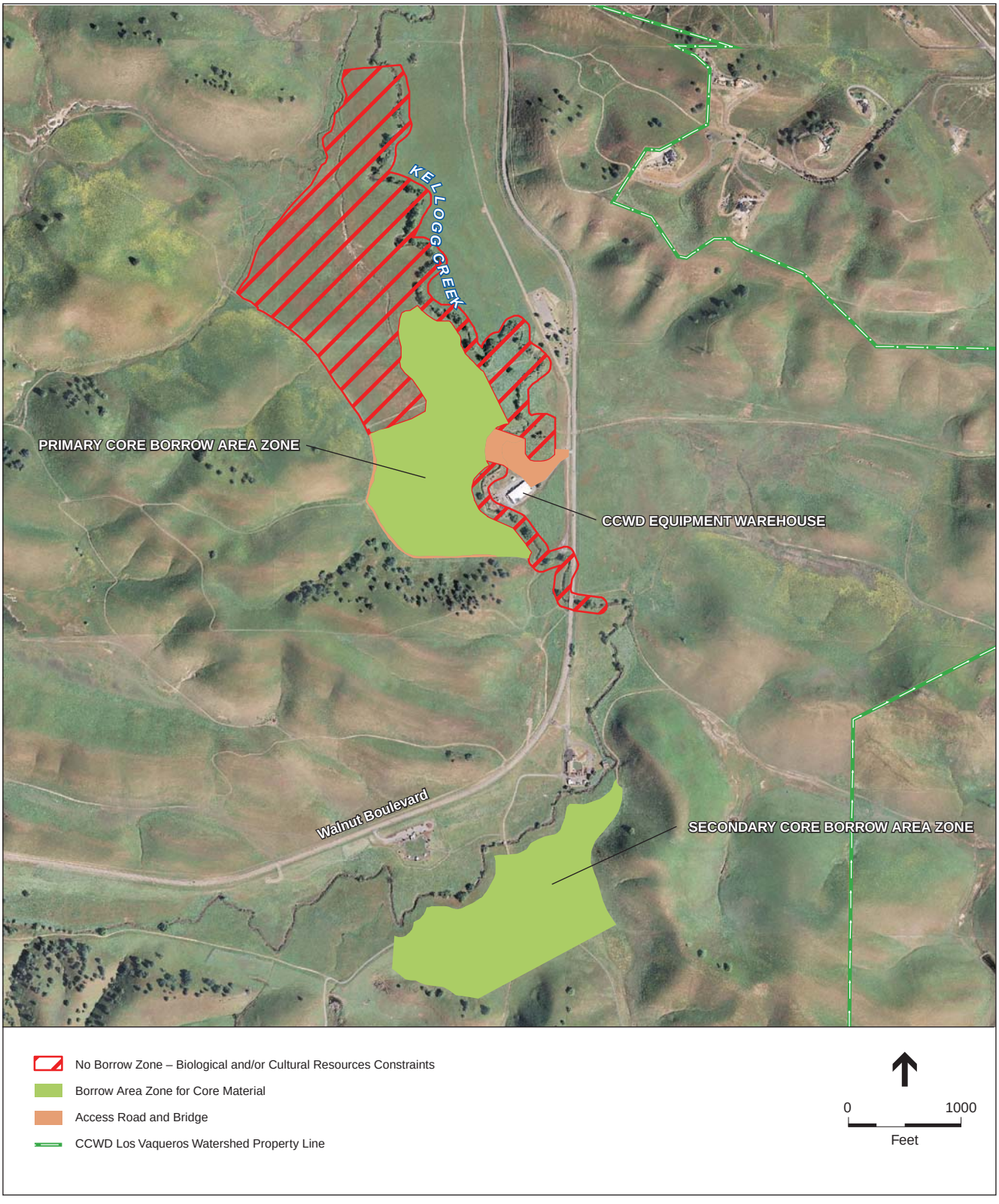
As discussed in the Draft EIS/EIR, the specific location and layout of the primary core borrow area would be determined during construction within a larger borrow area siting zone that was identified for impact analysis purposes in the Draft EIS/EIR. Similarly, the specific location and layout of the secondary core borrow area would be determined during construction within a larger siting zone that has been identified for purposes of environmental analysis. **Figure 2-3** shows the approximate locations of both the primary and secondary core borrow area zones. (The location of the primary core borrow area zone in Figure 2-3 in this chapter is the same as that depicted in Figure 3-18 in the Draft EIS/EIR.) The secondary core borrow area zone is located approximately 2,000 feet southeast (at its closest point) of the primary core borrow area zone, south and on the other side of Walnut Boulevard. The dimensions and depth of the actual borrow area within both the primary and secondary zones will depend on the location, depth, and quality of the clays available for the dam core construction. Both the primary and secondary core borrow area zones were delineated in the field through a joint effort by the engineering and environmental teams to identify areas with the potential for suitable clay materials that avoid sensitive biological resources to the extent possible.

Mitigation measures that apply to use of the primary core borrow area would also be applied to use of the secondary core borrow area. Topsoil would be removed from the borrow area, the underlying clay extracted and the topsoil replaced. As discussed for the primary core borrow area, the secondary core borrow area would be restored and revegetated once borrow activities are completed and would be evaluated as a possible site for creation of compensatory wetlands and/or ponds for California red-legged frog, California tiger salamander and/or vernal pool fairy shrimp as part of the project mitigation program.

Other aspects of the Alternative 4 dam construction would not change. Construction of a 160-TAF dam and its appurtenant facilities would also involve obtaining claystone and sandstone materials to construct the dam shell, which would be obtained from borrow areas adjacent to the existing dam's left abutment. Additional construction materials such as those to be used for gravel drains, sand filters and pipeline segments would be imported to the construction area, as previously discussed in the Draft EIS/EIR (Vol. 1, Section 3.5.1).

Environmental Effects

If material from a secondary core borrow area is needed for construction of Alternative 4, disturbance of this area would result in similar impacts to those identified for disturbance of the primary core borrow area. As shown in **Table 2-4** the total footprint of the core borrow area zones would increase from an estimated 46 acres for the primary core borrow area zone to 87 acres for both core borrow area zones, if the maximum area were disturbed (i.e., if the total acreage within both the core borrow area siting zones were disturbed). The full 87 acres comprising the two core borrow area zones might not need to be disturbed. The secondary core borrow area zone would be used if the primary core borrow area zone can not provide enough suitable clay material for use in rebuilding the dam core. It is possible that not all of the 46-acre primary core borrow area zone would be disturbed. Further, only enough area within the 41-acre secondary core borrow area zone needed to provide the remaining core material would be disturbed. Under this



SOURCE: USAD, 2006; GlobeXplorer, 2007; CCWD, 2007; CCC, 2007; MWH, 2008; and ESA, 2010

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Figure 2-3
160 TAF Primary and Secondary Core Borrow Area Zones (Alternative 4)

TABLE 2-4
TOTAL CORE BORROW AREA ZONE FOOTPRINT
COMPARISON OF ORIGINAL[1] AND REFINED PROPOSALS

Resource	Area of Impact (square feet)	Area of Potential Impact[2] (acres)
Primary Core Borrow Area	2,005,864.8	46
Secondary Core Borrow Area (Increase in Potential Core Borrow Area)	1,786,655.7	41
Total Primary and Secondary Areas	3,792,520.5	87

1 As originally proposed in the Draft EIS/EIR.
2 This is the maximum area of potential impact. Acquisition of the necessary amount of borrow material may not require the disturbance of the entire total area.

SOURCE: ESA, 2009

scenario the total acreage disturbed for borrow material might be the same as evaluated in the Draft EIS/EIR. However, it is also possible that the depth of suitable material in the primary core borrow area zone would be less than anticipated and that at least a portion, if not all, of the secondary core borrow area zone would need to be disturbed as well. In this case, use of the secondary core borrow area zone would result in additional acres of surface disturbance. The total amount of material to be excavated to meet the requirements of building the dam core under Alternative 4 (160 TAF reservoir) would not change.

Table A-3, Secondary Core Borrow Area Zone Impact Assessment (see Vol. 4, Appendix A) shows the impact assessment conducted for the secondary core borrow area zone and indicates how the addition of the secondary core borrow area zone could result in increases, no change, or decreases in effects to some resources as compared to the analysis of impacts assuming only the primary core borrow area zone would be disturbed under Alternative 4 in the Draft EIS/EIR. Mitigation measures already included in the Draft EIS/EIR would reduce any potentially significant construction-related impacts to Less-than-Significant.

Soils. The potentially larger area of disturbance associated with use of the secondary core borrow area zone would result in increased potential for impacts associated with soil erosion, loss of topsoil and related cumulative effects. The secondary core borrow area zone lies near the primary core borrow area zone in an area with similar soils (see Draft EIS/EIR, Vol. 1, Section 4.4, Figure 4.4-2, pg. 4.4-12), such that surface disturbance in this area would result in the same potential soil effects as described in the Draft EIS/EIR for the primary zone (see Draft EIS/EIR, Vol. 1, Section 4.4, Impact 4.4.2, pp. 4.4-22 through 4.4-24). With implementation of mitigation measures in the Draft EIS/EIR, these impacts would remain Less-than-Significant with Mitigation. (See Draft EIS/EIR, Vol. 1, Section 4.5, Mitigation Measures 4.5.1a and 4.5.1b, pp. 4.5-19 through 4.5-21; Mitigation Measure 4.5.4, pg. 4.5-29; and Vol. 2, Section 4.6, Mitigation Measures 4.6.2a and 4.6.2b, pp. 4.6-102 through 4.6-103).

Local Hydrology. The potentially larger area of disturbance associated with use of the secondary core borrow area would result in increased potential for impacts to water quality, drainage patterns/increased runoff, and related cumulative effects. Like the primary core borrow area zone, the

secondary core borrow area zone is located in the Kellogg Creek valley, downstream of Los Vaqueros Reservoir. Both borrow area zones are located in proximity to the Kellogg Creek channel. Use of the secondary core borrow area would have erosion effects and effects on local drainage similar to those described for the primary core borrow area. If use of this second borrow area is needed, then the project would result in additional acreage of surface soil disturbance that could result in additional erosion leading to water quality effects. With implementation of mitigation measures in the Draft EIS/EIR, these impacts would remain Less-than-Significant with Mitigation. (See Draft EIS/EIR, Vol. 1, Section 4.5, Mitigation Measures 4.5.1a and 4.5.1b, pp. 4.5-19 through 4.5-21 and Mitigation Measure 4.5.4, pg. 4.5-29). These storm water pollution prevention measures apply to each and every construction area where surface disturbance occurs and thus would effectively mitigate the site-specific effects at the secondary core borrow area.

With respect to effects on local drainage, use of the secondary core borrow area would result in short-term disturbance of drainage across the active borrow site. Following removal of required borrow materials, the area would be restored. The local area would continue to drain to Kellogg Creek. As discussed in the Draft EIS/EIR (Vol. 1, Section 4.5, Impact 4.5.3, pp. 4.5-24 through 4.5-26), the effect of project construction under all alternatives on local drainage was found to be less than significant. In accordance with the impact significance criteria, the project would not substantially alter the existing drainage pattern of the site or project area in a manner that would cause substantial erosion and sedimentation and/or flooding onsite or offsite. Short-term disturbance of up to an additional 41 acres of grassland within the secondary core borrow area zone would not alter the impact conclusion of less than significant.

Biological Resources. As shown on Figure 2-3, above, the secondary core borrow area zone is located near the primary core borrow area zone (within approximately 2,000 feet) in similar grassland habitat. The boundaries of both the primary and secondary core borrow area zones were delineated in the field through a joint effort by the Los Vaqueros Reservoir Expansion Project engineering and environmental teams to identify areas with the potential for suitable clay materials that avoid sensitive biological resources to the extent possible. The secondary core borrow area zone was sited to minimize impacts to biological resources; the site avoids trees, wetlands, and existing mitigation ponds.

Use of the secondary core borrow area could increase the amount of grassland affected by the project by up to 41 acres. As discussed in the Draft EIS/EIR for the primary core borrow area zone, these grasslands may provide habitat for various special status species within the watershed, including California tiger salamander habitat (upland aestivation habitat); western pond turtle populations that may occur in the uplands along Kellogg Creek; San Joaquin kit fox (foraging habitat and movement corridor); burrowing owl (nesting and foraging habitat); golden eagle and Swainson's hawk (foraging habitat); Alameda whipsnake non-scrub habitat; breeding birds (grassland provides nesting and foraging habitat for some bird species); nonlisted reptile special-status species; nonlisted special-status mammal species (grassy open areas could provide habitat for badger and pocket mouse burrows). No special status plants occur in this area. Following use of this area, grassland vegetation would be restored.

With implementation of mitigation measures in the Draft EIS/EIR, impacts to these resources would remain Less-than-Significant with Mitigation. (See Draft EIS/EIR, Vol. 2, Section 4.6, Mitigation Measures 4.6-1a and 4.6.1b, pp. 4.6-91 through 4.6-92; Mitigation Measures 4.6.2a and 4.6.2b, pp. 4.6-102 through 4.6-103; Mitigation Measures 4.6.4a and 4.6.4b, pp. 4.6-112 through 4.6-115; Mitigation Measure 4.6.5, pg. 4.6-119; Mitigation Measures 4.6.7a, 4.6.7b and 4.6.7c, pp. 4.6-139 through 4.6-140; Mitigation Measure 4.6.8a and 4.6.8b, pp. 4.6-145 through 4.6-146; Mitigation Measures 4.6.9a and 4.6.9b, pp.4.6-151 through 4.6-153; Mitigation Measures 4.6.10a and 4.6.10b, pp. 4.6-157 through 4.6-158; Mitigation Measure 4.6.11, pp. 4.6-160 through 4.6-161; Mitigation Measures 4.6.12a, 4.6.12b and 4.6.12c, pp. 4.6-162 through 4.6-164; Mitigation Measure 4.6.14, pg. 4.6-168; and Mitigation Measures 4.6.15a and 4.6.15b, pp. 4.6-170 through 4.6-172). Cumulative impacts would remain Less-than-Significant with Mitigation with the implementation of the mitigation measures listed above. These measures provide for site restoration to restore grassland habitat on site and provide for additional offsite habitat enhancement, at appropriate ratios, to compensate for project effects.

Use of the secondary core borrow area would also result in short-term impacts to regional movement opportunities for the kit fox. As shown in Draft EIS/EIR Figure 4.6-24, the secondary core borrow area zone is located northeast of the dam in an area that includes the land to east and north of the reservoir that provides a potential movement corridor for the kit fox in moving through and around the reservoir watershed up to Round Valley. Use of the secondary core borrow area would contribute to construction activities in this area north of the reservoir that could result in short-term disturbance of kit fox movement. Following borrow activities, the site would be restored and there would be no permanent effects on potential kit fox movement through the area. With implementation of mitigation measures in the Draft EIS/EIR, impacts to these resources would remain Less-than-Significant with Mitigation. (See Draft EIS/EIR, Vol. 2, Section 4.6, Mitigation Measures 4.6.7a and 4.6.7b, pp. 4.6-139 through 4.6-140).

Air Quality. Use of the secondary core borrow area has the potential to slightly increase construction-related air pollution emissions. The total quantity of material to be excavated for use in construction of the dam core does not change with the addition of the secondary core borrow area. However, if the secondary core borrow area is needed, some additional surface area clearing would occur, which would result in a slight increase in equipment operation and associated construction equipment emissions. At the same time, the haul distance to the dam is slightly shorter from the secondary core borrow area zone than from the primary core borrow area zone (the two zones are approximately one quarter mile apart), which would result in a slight decrease in emissions from construction activities. Use of the secondary core borrow area, if necessary, would result in only a slight increase in construction equipment emissions, if any. As discussed in the Draft EIS/EIR (see Vol. 2, Section 4.10 Air Quality, Impact 4.10.1, pp. 4.10-23 through 4.10-29), total construction period emissions for all criteria air pollutants, except fugitive dust, were found to be less than significant because they would be well below the regulatory thresholds. Even with the slight increase in equipment activity that might occur at the secondary core borrow area, total project construction emissions would remain below the regulatory thresholds. However, fugitive dust emissions were considered significant without implementation of Bay Area Air Quality Management District (BAAQMD) construction control measures. With implementation of

mitigation measures in the Draft EIS/EIR, the potential increase in fugitive dust emission associated with use of the secondary core borrow area would remain Less-than-Significant with Mitigation. (See Draft EIS/EIR, Vol. 2, Section 4.10, Mitigation Measure 4.10.1, pg. 4.10-28 through 4.10-29).

Visual/Aesthetic Resources. The Draft EIS/EIR states that use of the primary core borrow area zone under Alternative 4 would substantially degrade the existing visual character and quality. Use of a secondary core borrow area zone would increase those effects; however, unlike the primary core borrow area zone, there are no public trails upslope of the area that would provide views down to the site. The public recreation areas in the vicinity include the Kellogg Creek picnic area but that is located on the west side of the creek, opposite the borrow site such that views of the site are obscured by the vegetation along the creek corridor as well as topography. The same mitigation measures required for the primary core borrow area would be required at the secondary core borrow area to provide for site restoration in a manner that minimizes long-term visual effects. With implementation of mitigation measures in the Draft EIS/EIR, these impacts would remain Less-than-Significant with Mitigation. (See Draft EIS/EIR, Vol. 2, Mitigation Measure 4.14.2a, pg. 4.14-33).

Cultural Resources. There are no known historical, archaeological or paleontological resources within the secondary core borrow area zone. This zone was located to avoid or minimize effects to sensitive cultural resources. Like the primary core borrow area zone, the secondary zone lies within an area that has low potential for buried cultural resources or human remains and a moderate potential for paleontological resources. Use of the secondary core borrow area would not change the extent of impact to known cultural resources, but because of the potential to disturb more surface area, there would be an increase in potential to encounter unknown cultural and paleontological resources during excavation. With implementation of mitigation measures in the Draft EIS/EIR, these impacts would remain Less-than-Significant with Mitigation. (See Draft EIS/EIR, Vol. 2, Mitigation Measures 4.16.1a through 4.16.1h, pp. 4.16-48 through 4.16-50; Mitigation Measures 4.16.2a and 4.16.2b, pp. 4.16-50 through 4.16-51; and Mitigation Measure 4.16.3, pg. 4.16-55).

Summary of Effects

The addition of a secondary core borrow area zone under Alternative 4 would potentially result in increased impacts to soils, local hydrology, biological resources, air quality, visual/aesthetic resources, and cultural resources as compared to the analysis of impacts assuming only the primary core borrow area zone would be disturbed under Alternative 4 in the Draft EIS/EIR. However, there would be no new or substantially more severe environmental impacts associated with this addition under Alternative 4 and no changes in level of significance for any impact conclusions. The mitigation presented in the Draft EIS/EIR still applies and remains sufficient to reduce core borrow area related impact levels to Less-than-Significant with Mitigation.

Summary of Environmental Consequences Associated with Facilities Description Refinements

In summary, the project description refinements would result in both increases and decreases in environmental effects in select resource areas in comparison to the project alternatives evaluated in the Draft EIS/EIR. Under Alternative 4, the Westside Trail Realignment and the addition of the secondary core borrow area zone would both result in increased impacts to select resources, as described above. However, all of the potentially significant impacts associated with the refinements are similar to those already discussed in the Draft EIS/EIR and would be reduced to less than significant with existing mitigation measures presented in the Draft EIS/EIR. None of the refinements would result in new significant impacts.

2.3.2 Operations Update

CCWD and Reclamation, with assistance from the California Department of Water Resources (DWR), have reviewed the assumptions regarding Delta water supply operations used in the Draft EIS/EIR in light of recent changes in the regulatory environment affecting Delta resources and in light of comments on the Draft EIS/EIR. In response to these factors, analysis of Delta water resources, water quality, fisheries and aquatic resources conducted for the Draft EIS/EIR has been updated for the Final EIS/EIR to incorporate regulations influencing the affected environment and project assumptions that have occurred since the analysis presented in the Draft EIS/EIR was completed, as well as other modifications made in response to comments on the Draft EIS/EIR. The updates from the Draft EIS/EIR analysis that have been included in the modeling analysis performed for the Final EIS/EIR include:

- **An updated presentation of the 2008 U.S. Fish and Wildlife Services (USFWS) Operations Criteria and Plan (OCAP) Biological Opinion (BO) (USFWS, 2008) effects on Delta operations is included in the updated modeling analysis.** On December 15, 2008, USFWS issued an OCAP BO for delta smelt and its critical habitat governing the coordinated operations of CVP and State Water Project (SWP). The terms of the USFWS OCAP BO require changes to the prior operation of the CVP and SWP in the Delta. While this Biological Opinion was released prior to publication of the Draft EIS/EIR, the resulting changes in CVP and SWP operations had not yet been incorporated into the CalSim II model; instead two sets of assumptions were used in the Draft EIS/EIR (moderate restrictions and severe restrictions) to bracket the potential effects of the BO. To ensure that the modeling analysis of the Los Vaqueros Reservoir Expansion Project more precisely captures any effects of the project alternatives resulting from the operation of the CVP and SWP under the OCAP BOs, the analyses performed for this Final EIS/EIR have been updated to reflect the 2008 USFWS BO using CalSim II studies completed in August 2009 that incorporate the requirements of the OCAP BOs.

- **The effects of the 2009 National Marine Fisheries Service (NMFS) OCAP BO (NMFS, 2009) on Delta and upstream reservoir operations are included in the updated modeling analysis.** On June 4, 2009, the NMFS issued an OCAP BO for listed anadromous fish and marine mammal species and their critical habitats, including the Delta. The terms of the NMFS OCAP BO require changes to the prior operation of the CVP and SWP in the Delta. These changes to background conditions are now incorporated into the CalSim II model, and have been included in the updated modeling analysis presented in this section.

- **Assumptions about regulation of Old and Middle River (OMR) flow have been updated to reflect the terms of the USFWS and NMFS OCAP BOs.** The modeling analysis for the Draft EIS/EIR included restrictions on CVP and SWP exports from the Delta that were based on terms in the December 2007 court order in *NRDC vs. Kempthorne* (NRDC, et al, 2007), as modified to include further OMR flow requirements anticipated to be required for protection of longfin smelt. Due to uncertainty about future implementation of OMR flow restrictions at the time the Draft EIS/EIR analysis was performed, a bracketed approach was used in that analysis in which the best available information was used to predict the likely high and low bounds for OMR flow restrictions (moderate and severe restrictions). The analysis performed for the Final EIS/EIR incorporates updated modeling of CVP and SWP operations under the USFWS and NMFS OCAP BOs, which both include restrictions on OMR flows. Diversions at the CCWD Old River and AIP Intakes are included in the calculation of OMR net flow within the CalSim II model. The bracketed approach was not used in the CalSim II modeling for the Final EIS/EIR. Remaining uncertainty regarding the implementation of OMR flow restrictions, which are adaptively managed based on real-time Delta water quality and fishery monitoring, is addressed in the Final EIS/EIR analysis through the use of multi-year model simulations, which capture a range of operations and potential effects.

- **Operations of the Los Vaqueros Reservoir Expansion Project were modified in response to comments received on the Draft EIS/EIR.** Both of the OCAP BOs described above contain new regulations on flow in OMR that are designed to protect the Delta fisheries. The studies include modeling assumptions that capture the export restrictions based on OMR flow. Operational assumptions have been updated for Alternatives 1 and 2 of the Los Vaqueros Reservoir Expansion Project so that increased diversions for Delta Supply Restoration or Dedicated Storage of Environmental Water are not made for those project alternatives when the new OMR flow regulations are controlling CVP and SWP exports from the Delta. Operations for Delta Supply Restoration and additional Dedicated Storage for Environmental Water are not included in Alternative 4; therefore, this updated assumption did not affect the analysis of Alternative 4.

- **Operational requirements from the new CCWD California Department of Fish and Game (CDFG) Incidental Take Permit (ITP) (CDFG, 2009) are included in the updated analysis.** In connection with permitting for the CCWD Alternative Intake Project (AIP), on November 5, 2009, the CDFG issued an ITP for CCWD operations. This permit governs all CCWD operations in the Delta, and includes an extension to the no fill period for Los Vaqueros Reservoir. This modification is included in the updated analysis presented in this section.

- **The Rock Slough Fish Screen is assumed to be implemented under 2005 level of development with-project conditions and under 2030 level of development with- and without-project conditions.** As described in 3.1.3 of the Final EIS/EIR (Vol. 4, Section 3.1, Master Response 1: Project Purpose and Description), the Rock Slough Fish Screen is under construction; operation is scheduled to begin in 2011. Accordingly, the operation of the Rock Slough Fish Screen is included in model simulations of the project alternatives, and is also included in the Future Without Project condition. The Rock Slough Fish Screen is not included in model analysis of the Existing Condition because it was not approved when environmental review commenced.

- **Operational coordination between CCWD, Reclamation and DWR is included in the updated analysis based upon recent agency consultations.** CCWD, Reclamation and DWR have reviewed Delta water supply operations in light of the recently issued OCAP BOs and in light of comments on the Draft EIS/EIR, and have developed a potential set of

modified operations for CCWD that improve overall coordination of Delta water operations, while maintaining water supply and water quality for CCWD, CVP and SWP. Operations include:

- The 75 to 90 day no fill period for Los Vaqueros Reservoir would be implemented in half or all of February and all of March and June, and the 30-day CCWD no diversion period would be implemented in March. This reduces the potential influence of filling Los Vaqueros Reservoir when OMR flow restrictions govern Delta operations. This operational modification is subject to consultation with USFWS, NMFS, and CDFG.

- During periods when OMR flow restrictions occur, the screened Rock Slough Intake would be used to the maximum extent possible for direct diversions to CCWD customers while maintaining the chloride delivery goal.

- Releases from Los Vaqueros Reservoir would be minimized from October through December, while still maintaining the chloride delivery goal for CCWD customers. Los Vaqueros Reservoir also would be filled during this period when water quality allows.

- When diversions from the Freeport Intake are available to CCWD pursuant to the agreement with the East Bay Municipal Utility District (EBMUD) for shared use of this intake, these diversions would be used to fill Los Vaqueros Reservoir whenever other Delta water quality and CCWD operational conditions allow. This minimizes the potential effect of filling Los Vaqueros Reservoir on OMR flow.

These modified operations are included in the updated analysis of Alternatives 1, 2 and 4 conducted for the Final EIS/EIR that resulted in updates to the Draft EIS/EIR Sections 4.2 and 4.3 which are presented in Section 5.3 of this Final EIS/EIR (Vol. 4). The updated Section 4.2 presents modeling methodology and results of the analysis of potential effects on Delta hydrology and water quality, based on the updated modeling analysis performed for the Final EIS/EIR. The updated Section 4.3 presents modeling methodology and results of impacts analysis for Delta fisheries and aquatic resources. Additional information on modeling methodology and results for these updated analyses are presented in the updated Appendix C (Vol. 4 on CD).

The results of the updated analysis indicate that the analysis used in the Draft EIS/EIR captured the environmental impacts associated with the project alternatives. The updated modeling does not indicate any new or substantially more severe significant impacts on Delta water quality and aquatic resources. The coordinated operations evaluated in the Final EIS/EIR would further minimize the potential for the expansion project to adversely affect other CVP and SWP operations.

2.4 Variant to the 275-TAF Reservoir Alternatives

2.4.1 Overview

Although the Draft EIS/EIR evaluates project alternatives to either expand the reservoir to 275 TAF *or* 160 TAF, current circumstances surrounding water system operations and habitat conservation in the Delta raise the need to consider and disclose the effects that might occur under a variant to the 275-TAF reservoir alternatives (timing variant) such that the reservoir could first be expanded

to 160 TAF and then the lead agencies may later consider whether to further expand the reservoir to 275 TAF. Because such a scenario is reasonably foreseeable, an evaluation of the potential effects of this timing variant is presented in this document (Final EIS/EIR, Vol. 4). This analysis recognizes that CCWD has immediate and urgent needs to take actions that protect its water supply quality and reliability, while Reclamation and other potential partners in a 275-TAF reservoir need to complete studies on broader Delta water system evaluations, including potential new Delta conveyance projects under the BDCP, before they determine whether and which Los Vaqueros Reservoir expansion alternative best meets their needs and objectives.

Current conditions in the Delta have affected CCWD's ability to maintain reliable, high-quality water supplies for its customers during dry years. Anticipated future limitations on dry year water transfers and declines in Delta water quality create immediate needs for CCWD to improve its dry year water supply and water quality reliability (see Draft EIS/EIR, Chapter 1, pg. 1-8). At the same time, Reclamation is in the midst of studying long-term solutions to water supply conveyance through the Delta and habitat restoration and protection. The results of these studies could affect the federal interest in the larger expansion alternatives for the Los Vaqueros Reservoir for statewide and national benefit.

Expansion of Los Vaqueros Reservoir to 160 TAF would not preclude further expansion of the reservoir to 275 TAF. Expansion of Los Vaqueros Reservoir to 160 TAF would address water supply reliability and water quality needs of CCWD and potentially one or more local partners. If the lead agencies subsequently decide to further expand the reservoir, a 275-TAF reservoir could provide regional water supply reliability and statewide environmental benefits in partnership with appropriate federal, state, and/or local agencies. **Table 2-5** summarizes the key assumptions associated with implementation of such an enlargement; these assumptions are discussed in more detail below. For evaluation purposes, the minimum time period anticipated between completion of a 160 TAF reservoir and initiation of construction of a possible further expansion to 275 TAF is estimated to be seven years or more.

2.4.2 Expansion to 160 TAF

Design, construction, and operation of the 160-TAF reservoir expansion would be the same as Alternative 4 as described in the Draft EIS/EIR, as refined and described in Section 2.3, above. Construction of the 160-TAF reservoir expansion would be expected to commence as early as 2011 and continue for 18 to 24 months through 2012, with operation beginning in 2013.

2.4.3 Expansion to 275 TAF

The facilities constructed to expand the 160-TAF reservoir to 275-TAF would be the same facilities described in the Draft EIS/EIR under Alternative 1, but less dam construction would be needed because the dam would already have been raised for the 160-TAF reservoir. Further expansion of the dam facility from the 160-TAF reservoir to the 275-TAF reservoir would largely involve activity at the top and upstream side of the dam. The downstream outer shell of the dam would not need to be modified. The top shell of the dam would be removed to allow expansion of the core and then the shell would be rebuilt over the top and upstream side of the dam. As a

TABLE 2-5
KEY ASSUMPTIONS FOR TIMING VARIANT

Project Element	160-TAF expansion (same facilities and operations as Alternative 4)	Expansion from 160 TAF to 275 TAF (same facilities and operations as Alternative 1)
Construction period	2011 – 2012	2019 – 2022
Begin Operation	2013	2023
Reservoir Capacity	160 TAF	275 TAF
Dam Modification	Raise existing dam for 160-TAF reservoir Requires only partial water level drawdown in reservoir	Raise dam for 275-TAF reservoir Requires complete draining of reservoir Would use most of 160-TAF dam structure, with some modification at the top of the dam
Borrow Area	Acquire clay from within Los Vaqueros watershed from one or both of two borrow areas	Acquire additional clay materials from within drained reservoir area
Dam Spillway	Construct for 160-TAF capacity	Reconstruct during dam reconstruction for 275-TAF capacity
Inlet/Outlet Facilities	Modify existing outlet facility to extend above the 160-TAF reservoir maximum storage elevation	Construct new inlet and outlet facilities
Old River Intake and Pump Station	No Action	No Action
New Delta Intake and Pump Station	No Action	Acquire land, construct
Delta – Los Vaqueros Pipeline	No Action	Acquire additional right-of-way where needed; construct new parallel pipeline
Transfer Station	Upgrade likely (install new pumps to support a 160-TAF reservoir)	Construct expanded facility
Transfer – Los Vaqueros Pipeline	No Action	Construct new parallel pipeline
Transfer – Bethany Pipeline/Bethany Reservoir Connection	No Action	Acquire ROW; construct new pipeline
Los Vaqueros Reservoir Marina	Keep on south end of reservoir; move facilities upslope	Relocate to north end of reservoir and construct new facilities
Interpretive Center	No Action	Construct second new center
Picnic areas, Restrooms	Replace/increase in accordance with Alt. 4 project description	Replace/increase in accordance with Alt. 1 project description
Trails	Replace/increase in refined project description	No additional action anticipated
Habitat Impact Mitigation	Mitigate/compensate for 160-TAF reservoir impacts inside and outside watershed	Mitigate for additional habitat impacts of expanding from 160 TAF to 275 TAF
Agricultural Impact Mitigation	No Action	Mitigate for farmland loss at the new Delta Intake Facility
Power Facilities	No Action	Construct new substation and power lines under either the Western Only or Western – PG&E scenarios
Water Rights Modifications	For 160 TAF, as needed	For 275 TAF, as needed

SOURCE: ESA, 2009

result, most of the additional construction activity and disruption would occur upstream of the dam within the reservoir bed. For the purposes of this analysis, construction of a possible further expansion to 275 TAF is assumed to commence in 2019 (or later) and continue for approximately 3 to 4 years and commence operation in 2023 (or later) after reservoir refill. The reservoir would be out of operation and closed to public access for an additional period of approximately four years during construction.

2.4.5 Environmental Assessment of Possible Timing Variant

Expansion of the Los Vaqueros Reservoir from the current 100 TAF first to 160 TAF and subsequently to 275 TAF (if later approved) was evaluated to determine if and how environmental impacts might be different from those described in the Draft EIS/EIR for the 275-TAF expansion represented here by Alternative 1. While the types of environmental impacts associated with reservoir expansion would not be different under the timing variant from those described in the Draft EIS/EIR for Alternative 1, the following discussion evaluates the potential for the extent of some impacts to change as a result of two rounds of construction to implement expansion of the reservoir first to 160 TAF and then (possibly) to 275 TAF. Note that impacts associated with the timing variant also are detailed in Appendix B (Vol. 4). Under a timing variant, the only two locations where two rounds of construction activity would occur would be at the dam site (including at the inlet/outlet facilities) and at the marina facilities. When expanding the reservoir to 160 TAF, the existing marina facilities would be relocated upslope from their current location on the southern reservoir shoreline in order to move out of the inundation footprint of the 160-TAF expansion. If the reservoir were further expanded to 275 TAF, the marina facilities would be moved to a new location at the northern end of the reservoir.

for Alternative 1, the following discussion evaluates the potential for the extent of some impacts to change as a result of two rounds of construction to implement expansion of the reservoir first to 160 TAF and then (possibly) to 275 TAF. Note that impacts associated with the timing variant also are detailed in Appendix B (Vol. 4). Under a timing variant, the only two locations where two rounds of construction activity would occur would be at the dam site (including at the inlet/outlet facilities) and at the marina facilities. When expanding the reservoir to 160 TAF, the existing marina facilities would be relocated upslope from their current location on the southern reservoir shoreline in order to move out of the inundation footprint of the 160-TAF expansion. If the reservoir were further expanded to 275 TAF, the marina facilities would be moved to a new location at the northern end of the reservoir.

Construction of conveyance pipelines and a new Delta intake would only occur if the reservoir were expanded from 160 TAF to 275 TAF. Impacts associated with construction of the conveyance and intake facilities under the timing variant would be the same as those described under Alternative 1.

Finally, a timing variant would necessitate use of the borrow area sites required for the 160-TAF expansion and also use of the borrow sites required for the 275-TAF expansion. For the 160-TAF expansion, clay materials for use in expanding the dam core must be taken from borrow sites located about two miles downstream of the dam in the Kellogg Valley corridor. If the 160-TAF reservoir were later expanded to 275 TAF, additional clay materials to further expand the dam core would be

taken from the bed of the reservoir once it was drained. The timing variant would affect more total acreage for borrow materials than reservoir expansion under either Alternative 4 or Alternative 1 alone.

In summary, there are three circumstances in which a timing variant might have impacts that are the same type but somewhat greater than those described for Alternative 1 in the Draft EIS/EIR: 1) areas at the dam site and at the southern marina location where ground disturbance would occur twice; 2) effects associated with two rounds of construction activity (e.g., construction traffic at two different periods, and closure of the watershed twice to recreational use); and 3) additive footprint impacts associated with the need to use borrow area sites associated with both the 160-TAF expansion and, if later approved, the 275-TAF expansion.

Areas Disturbed Twice

By conducting construction activities twice at the dam and at the southern marina, the vegetation affected in these two areas (primarily grassland, which supports a variety of special status and common wildlife species) would be disturbed twice.

For Pacific Flyway species, including waterfowl and shorebirds, only the second phase of reservoir expansion to 275 TAF would require draining the reservoir. Effects on these species under the timing variant would be the same as those analyzed for Alternative 1.

As described in the Draft EIS/EIR, impacts to habitat lost or disturbed in these two facility areas would be mitigated to less than significant through a combination of measures to reduce impact to the habitat and the species during construction, to restore grassland vegetation in these onsite areas following construction and to compensate with land acquisition, protection and enhancement outside the watershed for habitat that supports sensitive species, such as the San Joaquin kit fox. With a minimum seven-year period between completion of the 160-TAF reservoir expansion and the possible later start of the further expansion to 275 TAF, these grassland areas would have sufficient time to revegetate. Thus, a timing variant would not result in effects to more land, but it would result in two rounds of impact. Therefore, under the timing variant, habitats disturbed twice by construction would be mitigated for twice, applying the compensation ratio for temporary habitat disruption of sensitive species habitat, which is 1.1:1, to both rounds of construction. This would provide additional compensatory acreage to address the additional temporary habitat disruption resulting from a timing variant and reduce this impact to less than significant. All other mitigation measures identified in the Draft EIS/EIR to minimize construction impacts to biological resources would also be implemented during each period of reservoir expansion.

Under the timing variant direct and indirect construction-related impacts on listed vernal pool fairy shrimp and their habitat, and on the non-listed midvalley fairy shrimp and curved-foot hygrotus diving beetle or designated critical habitat for listed species (vernal pool fairy shrimp and Contra Costa goldfields) would only occur during expansion of the reservoir from 160 TAF to 275 TAF as analyzed under Alternative 1. There would be no change in effects relative to Alternative 1 and therefore no change in impact conclusions or mitigation requirement for the timing variant.

Other impacts associated with earthwork and ground disturbance in these two areas, such as erosion or temporary effects on local drainage patterns during earthwork, would occur twice under the timing variant but would not result in additive impacts that are greater or more severe than those analyzed and addressed in the Draft EIS/EIR. Mitigation measures identified to reduce these short-term impacts to less than significant would be implemented in both periods of reservoir expansion.

Other Impacts from Two Construction Periods

With respect to the impacts associated with two periods of construction activity, no substantial increase in effects would occur because the two construction periods are expected to be a minimum of seven years apart in time. Construction traffic associated with a 160 TAF reservoir expansion would be of a relatively short duration because most of the construction activity would occur within the watershed. If the 160-TAF reservoir were later expanded to 275 TAF, construction impacts, (both in general and insofar as they affect communities of concern as described in Section 4.18 of the Draft EIS/EIR), would generally be as described for Alternative 1, with slightly less construction traffic associated with the dam component because the dam would have been partially raised to construct the 160-TAF reservoir. The project region would experience construction traffic congestion over the 18 to 24-month construction period for the 160-TAF expansion after which the project's contribution to traffic congestion would end. Seven years or more later the project would contribute to another period of traffic congestion associated with construction of a further expansion to 275 TAF. Mitigation measures identified in the Draft EIS/EIR to reduce the effects of project construction traffic would be applied during each stage. This situation would be similar for effects associated with construction and construction traffic, specifically air quality emissions (including greenhouse gas emissions) from construction vehicles and equipment, dust, and noise. These effects would occur twice in the project area but given the time separation of at least seven years between the two construction periods, the effects would not be additive.

A timing variant would require two periods of closure of public recreation activities at the watershed during the two separate construction periods, a minimum of seven years apart. As discussed in the Draft EIS/EIR, because there are numerous alternative recreation opportunities in the project region available to the public, such closures would not result in significant impacts on recreational facilities after mitigation. A timing variant would not alter this impact conclusion.

Borrow Areas

A timing variant would increase the extent of area affected for borrow materials for dam modification. For the 160-TAF reservoir expansion, clay material for the dam core would be taken from sites downstream of the dam in the Kellogg Creek valley. Total area to be excavated for borrow materials will be determined based on testing of the subsurface clay materials, but two borrow areas have been identified and the surface area affected during the construction of a 160-TAF reservoir expansion could range from 46 to 87 acres. If the 160-TAF reservoir were later expanded to 275 TAF, additional core material would be excavated from the bed of the reservoir once it is drained. By contrast, if the reservoir were expanded to 275 TAF in the first instance, then all of the dam core borrow materials could come from the reservoir bed, which would have fewer

biological resource impacts than excavating the materials from borrow areas downstream of the reservoir in the valley. Material for the shell still would be obtained from the borrow area adjacent to the left abutment. The shell material for the 160-TAF expansion would remain in place for a later expansion to 275 TAF so the volume needed for the subsequent expansion would be reduced by the amount already used to construct the 160 TAF. There would be no increase in the area disturbed under the timing variant.

As a result, a timing variant results in about 46 to 87 acres of additional grassland disturbance within the watershed than would Alternative 1. In this case, a timing variant would increase the acreage of project impact, but this additional acreage does not represent a substantial increase in the severity of project impact from that described in the Draft EIS/EIR. Alternative 1 would result in loss of about 1,500 acres of grassland, primarily associated with the expanded reservoir inundation area, but also including the siting effects of all other facilities inside and outside the watershed. The additional 46 to 87 acres of grassland impact that would result from a timing variant represents an increase in the acreage of grassland affected of less than six percent. The physical impact to the grassland at the borrow areas used to construct a 160-TAF expansion would be mitigated at the time the 160-TAF expansion is implemented. Because possible later expansion to 275 TAF would not result in a new physical disturbance of these areas, additional mitigation would not be required.

In addition, use of these additional borrow areas could also result in impacts to cultural resources, biological resources, and aesthetics that were described as part of the impacts associated with Alternative 4 but would not have occurred under Alternative 1. For construction of the 160-TAF reservoir both primary and secondary core borrow area zones have been identified (See Section 2.3.1, above for a description of the secondary borrow area). Both borrow areas are located downstream of the dam in the Kellogg Creek valley where clay material necessary to construction of the expanded dam core occurs. Both borrow areas were located so as to avoid known cultural resources sites and both are located in areas considered to have low potential for such resources. Thus there would no increase in impacts to known cultural resources but some potential for additional discovery and impact to unknown resources as a result of construction activity in these additional borrow areas under the timing variant.

With respect to visual resources, both core borrow areas for the 160-TAF expansion are located on the other side of Kellogg Creek from Walnut Boulevard and adjacent public use areas where views of the sites are screened by vegetation along the creek and topography. The primary core borrow area zone, however, can be viewed from a public trail upslope of the site, and consequently, disturbance of this area would affect visual resources from this viewpoint. There is no public access or trails that provide similar views of the secondary core borrow area zone. Mitigation measures are presented in the Draft EIS/EIR to reduce impacts in both these areas to less than significant, and these measures would be implemented with implementation of the 160-TAF expansion.

2.5 Environmentally Superior Alternative and Environmentally Preferable Alternative

CEQA directs an EIR to identify an environmentally superior alternative from among the alternatives evaluated. Alternative 4 represents the smaller option for reservoir expansion, increasing storage capacity from the existing 100 TAF to 160 TAF, rather than the larger expansion to 275 TAF proposed under Alternatives 1, 2 and 3. Implementing the smaller reservoir expansion results in less inundation of habitat and less disruption of the watershed. Alternative 4 also does not involve construction or modification of facilities outside the CCWD watershed as do the other three alternatives; specifically, Alternative 4 does not include construction of major new facilities such as the new Delta Intake and Pump Station, the Delta-Transfer Pipeline, the Transfer-LV Pipeline, the expanded Transfer Facility, or the South Bay Connection. Consequently, Alternative 4 results in less environmental impact than the other three alternatives evaluated. As a result, Alternative 4 represents the environmentally superior alternative.

Alternative 4 does not meet the project objectives as fully as the other alternatives, particularly Alternatives 1 and 2, and it does not provide the same level of benefit as these alternatives. However, it does achieve the project objectives of improving water supply reliability and water quality for CCWD's customers, who face existing and growing threats to both water supply reliability and quality. Alternative 4 also provides some environmental water management improvement as the additional storage capacity provides greater operational flexibility for CCWD.

Section 1505.2(b) of the 40 CFR requires that the environmentally preferable alternative be identified in the Record of Decision (ROD). Reclamation will identify the environmentally preferable alternative when it issues the ROD for this action.

2.6 Reclamation Preferred Alternative

In the context of broader water system modifications now under evaluation, Reclamation may ultimately decide that a 275-TAF Los Vaqueros Reservoir best meets its needs and objectives. The ongoing water system evaluation involves other potential project partners and other potential new Delta conveyance projects, and requires additional time to evaluate. Based on the assessment in this Final EIS/EIR, and recognizing that implementation of Alternative 4 would not preclude subsequent approval of a 275-TAF reservoir, Reclamation's preferred alternative is Alternative 4.

CHAPTER 3
Master Responses

3.1 Master Response 1: Project Purpose and Description

3.1.1 Introduction

Overview

This master response addresses comments received on the purpose, need and objectives of the project, as well as requests for additional background information on the existing Los Vaqueros Reservoir, clarification of the project benefits and further explanation of certain project elements. This master response does not include responses to technical questions related to the benefits analysis which are covered in **Master Response 5, Delta Hydrology and Aquatic Resources**. Other related Master Responses include **Master Response 2, Relationship to Other Initiatives and Projects**, and **Master Response 3, Project Alternatives**.

This master response is organized by the following subtopics:

- 3.1.2 Purpose, Need and Objectives
- 3.1.3 CCWD's Original Los Vaqueros Reservoir Project
- 3.1.4 Project Description

Commenters

Commenters that addressed this topic include:

Federal Agencies

- None

State Agencies

- None

Local and Regional Agencies

- Contra Costa County, Public Works Department – L_CCCPW
- East Bay Municipal Utility District – L_EBMUD
- East Bay Regional Park District – L_EBRPD
- Richmond Community Redevelopment Agency – L_RCRA
- Santa Clara Valley Water District – L_SCVWD

Organizations

- California Farm Bureau Federation – O_CFBF
- East Bay California Native Plant Society – O_EBCNPS
- Planning and Conservation League – O_PCL

Individuals

- Betty Lu Graham – I_Graham
- Bob Mankin – I_Mankin
- Steven Navarro – I_Navarro
- Corin Pilkington – I_Pilkington

Draft EIS/EIR Section Reference

The Draft EIS/EIR, Vol. 1, addresses this topic area in the following locations: Executive Summary, Chapter 1, Purpose, Need and Objectives for the Los Vaqueros Reservoir Expansion Project; Chapter 2, Project Background, and; Chapter 3, Description of Project Alternatives.

3.1.2 Purpose, Need and Objectives

Comment Summary

This section of this master response responds to all or part of the following comments:

L_SCVWD-08	O_EBCNPS-03	O_PCL-02	O_PCL-03
I_Graham-06	I_Graham-07		

Summary of Issues Raised by Commenters

- More detail should be provided in the EIS/EIR to document the term “environmental water management” benefits.
- The Purpose and Need statement should recognize that there are sufficient quantities of water available, but the water is not accessible due to operating constraints imposed by the Endangered Species Act.
- Limitations on water availability may affect the project’s ability to meet the stated goals.

Response

Environmental Water Management. One of the two primary objectives of the Los Vaqueros Reservoir Expansion Project is to “Develop water supplies for environmental water management that supports fish protection, habitat management, and other environmental water needs.” The emphasis of the objective is on the broader goal of managing water for environmental benefit, which includes but is not limited to developing environmental water supplies. The Draft EIS/EIR explains how the project could be operated to achieve environmental water management benefits and how the different alternatives result in different levels of achievement. As explained in the Draft EIS/EIR (Vol. 1, Chapter 3, pg. 3-3), there are four project operations that result in environmental water management benefits: Improved Fish Screening, No Diversion Period,

Multiple Delta Intake Locations and Dedicated Storage for Environmental Water. These operations, together with the physical elements of the project (i.e., expanded reservoir, screened intakes, and the South Bay Connection), provide the means to manage water in the system—for a variety of end users—for environmental benefit. As one commenter points out (O_PCL-02), the environmental water management benefit is similar in some ways to the CALFED Environmental Water Account (EWA) program. However, the Los Vaqueros Reservoir Expansion Project is distinct from the EWA program because unlike the EWA program, the Los Vaqueros Reservoir Expansion Project provides the facilities, operations and water to improve fishery protection while maintaining water supplies, whereas the EWA relies upon purchase of supplies with limited funding and use of existing facilities, both of which have constrained the program. The Los Vaqueros Reservoir Expansion Project would provide conveyance with positive barrier screens and storage not currently available to the EWA, and operational mechanisms that reduce the constraints that are currently limiting provision of environmental benefits.

Comment O_EBCNPS-03 requests more specific information on environmental water management benefits, and misunderstands a statement in the Draft EIS/EIR (Vol. 1, Executive Summary, pg. ES-9 and Chapter 3, pg. 3-15) to mean that the project benefits are not defined. Environmental Water Management benefits are described both quantitatively and qualitatively in Draft EIS/EIR Vol. 1, Chapter 4.2, Delta Hydrology and Water Quality, at pages 4.2-34 through 4.2-41 and in Chapter 4.3, Delta Fisheries and Aquatic Resources, at pages 4.3-87 through 4.3-94. Current supplies available for environmental water management are discussed in Sections 1.4.2, 1.4.3 and 1.4.4, the change in environmental water management with the project is discussed in Sections 1.5.1 and 4.2 (see in particular the section entitled “Environmental Water Management”, starting on page 4.2-36 of the Draft EIS/EIR), and Section 4.2, set forth in Section 5.3 herein, where the measures and amounts are also discussed. Species benefited and the impacts to all species are the subject of Chapter 4.3.

The paragraph that led to this misunderstanding reads:

> The evaluation of benefits described in this report is intended to provide information for the potential project participants and to provide a basis for evaluating potential environmental impacts. If the lead agencies decide to pursue the project following this environmental analysis, additional analyses of the extent of these benefits will be necessary for potential project partners, including state and federal government agencies, to determine their level of interest and willingness to make a financial commitment to the Proposed Project.

This language was added at the request of potential partners to provide assurance that additional analyses of benefits and costs would be made available before a financial commitment had to be made to participate in the project. This is particularly important to the potential partners because their needs and their options differ. Additionally, through adaptive operations, the benefits of the expansion project can be tailored to meet specific needs while remaining consistent with the impact analysis. This is discussed in the Draft EIS/EIR (Vol.1, Chapter 3, pg. 3-2). Decisions to participate and commit financially to the expansion would be made after completion of the ongoing federal and state feasibility studies.

Purpose and Need. As required under the National Environmental Protection Act (NEPA), a Purpose and Need statement is provided for the project (Draft EIS/EIR, Vol. 1, Chapter 1, pg. 1-3). The need for the project is driven by three conditions: the Delta ecosystem is in a state of serious decline; insufficient quantities of water and lack of storage and flexibility contribute to the decline; and ecosystem decline has put other beneficial uses of water supplies conveyed through the Delta at risk. Taken together, these three conditions describe the context in which an expanded Los Vaqueros Reservoir system would function to improve Delta ecosystem conditions and reduce conflict among beneficial users of Delta water supplies. Comment L_SCVWD-08 states that the second condition, insufficient quantities of water, is a mischaracterization of the problem because sufficient supplies exist but are not accessible due to "operating constraints imposed by the Endangered Species Act." This concept is captured by the third driver — ecosystem decline has put other beneficial uses at risk due to court-ordered limits on Delta pumping. The lead agencies believe, however, that there are currently insufficient quantities of water available to meet all demands on the Delta, including environmental and municipal demands, at the times and places that the water is needed for multiple reasons, including operating constraints, conveyance capacity and storage availability.

Water Availability and Goals. One commenter (I_Graham-06 and I_Graham-07) observes that if water is not available, or if certain elements of the project are not built, the goals of the project would not be met. This is true in an absolute sense, that is, if water was not available, and facilities were not built, then there would be no benefits. However, as discussed in the Draft EIS/EIR (Vol. 1, Chapter 3, Section 3.1.2, pp. 3-1 through 3-5) the alternatives are distinguished by different combinations of facility options and water system operations, and these combinations result in different levels of achievement of the primary goals of the project. As detailed in the Draft EIS/EIR (Vol.1, Section 4.2, pp.4.2-34 through 4.2-41), the analysis of benefits and impacts for each of the alternatives takes into account known restrictions on water availability, and estimates future restrictions using the best available information. Implementation of any of the alternatives is dependent on participants determining that the benefits of the project to their agency are worth the costs.

3.1.3 CCWD's Original Los Vaqueros Reservoir Project

Comment Summary

This section of this master response responds to all or part of the following comments:

I_Graham-05 I_Navarro-02

Summary of Issues Raised by Commenters

- The document does not acknowledge that Rock Slough intake has not been screened as was required under the Biological Opinions for the Los Vaqueros Reservoir.
- Why was the Los Vaqueros Reservoir not constructed with more capacity?

Response

The Rock Slough Intake is described on pages 2-5 and 2-6 in the Draft EIS/EIR (Vol. 1, Chapter 2). The information provided includes the fact that a screen is required at the Rock Slough Intake under both the Central Valley Project Improvement Act and the 1993 United States Fish and Wildlife Services (USFWS) biological opinion for the Los Vaqueros Project, and discussion of the current status of the intake as "unscreened." The Draft EIS/EIR states that Reclamation is seeking an extension to 2018 to complete the screening because screen design requirements will change when CCWD completes its project to encase the earth-lined portion of the Contra Costa Canal. However, since publication of the Draft EIS/EIR, Reclamation and CCWD have determined that it is urgent, given the serious decline in the Delta ecosystem, to go forward with the screening project, and in 2009 federal stimulus funds were appropriated for this screen. Construction of the Rock Slough Fish Screen began in September 2009 and is scheduled to be completed and on line by the end of 2011. The Final EIS/EIR will reflect this change in the status of the Rock Slough Fish Screen with the language shown below to replace the last sentence of the first full paragraph on page 2-6 of the Draft EIS/EIR (Vol. 1, Chapter 2). This text change is included in Chapter 5, Revisions to the Draft EIS/EIR, in this document (Vol. 4).

> ~~Reclamation has received an extension on fish screen construction until December 2008, and is preparing a request for further extension until 2018 because the requirements for screen design will change when CCWD completes the ongoing project to encase the earth-lined portion of the canal.~~ Construction of the Rock Slough Fish Screen commenced in September 2009; the screen is expected to be operational by the end of 2011.

The analyses of impacts and benefits related to Delta Hydrology and Water Quality and Delta Fisheries and Aquatic Resources in the Draft EIS/EIR were conducted assuming Rock Slough remained unscreened in the future (Section 4.2 and Section 4.3, respectively). Now that screening is underway, that assumption has been changed in the modeling conducted for the Final EIS/EIR. Having a screen in place at the Rock Slough Intake would result in less entrainment at Rock Slough, greater flexibility in the use of intakes, and lower overall impacts from the expansion project. See Chapter 2, Section 2.3.2 Operations Update, and Section 3, updated Draft EIS/EIR Sections 4.2 and 4.3, set forth in Section 5.3 in this document (Vol. 4) for more information.

The Los Vaqueros Reservoir was sized at 100 thousand acre-feet (TAF) to provide water quality and emergency storage benefits to existing and planned future CCWD customers. Larger reservoirs providing regional, state and federal benefits were evaluated during the planning phase for the Los Vaqueros Reservoir, and extensive outreach to potential partners was conducted. However, no partners committed to the reservoir at the time so CCWD built the facility at its own cost to meet its own needs. Through the CALFED Storage Program, CCWD together with federal, state and local agencies are evaluating whether expanding the Los Vaqueros Reservoir is a cost-effective way to meet their water needs. The expansion to 275 TAF would provide environmental water management and water supply reliability benefits on a regional and statewide scale (see Response 3.1.4 below) while the expansion to 160 TAF would provide water supply reliability and water quality benefits to CCWD and other potential local partners. CCWD is evaluating increased storage because with the deterioration of the Delta, and with increased uncertainty in water supply

reliability due to climate change, the 100-TAF reservoir is not anticipated to provide enough storage to sustain CCWD's water quality and water supply reliability goals.

3.1.4 Project Description

Comment Summary

This section of this master response responds to all or part of the following comments:

L_CCCPW-05	L_EBMUD-02	L_EBMUD-04	L_RCRA-02
L_SCVWD-07	O_CFBF-01	O_CFBF-02	O_CFBF-03
O_CFBF-04	O_EBCNPS-03	I_Graham-10	I_Mankin-01
I_Pilkington-03			

Summary of Issues Raised by Commenters

- The interests of CCWD ratepayers in the 100-TAF Los Vaqueros Reservoir Project need to be protected and the citizens of Contra Costa County should be given priority when using water stored in an expanded Los Vaqueros Reservoir during emergencies and droughts.
- CCWD Board Principles and the advisory vote of CCWD ratepayers limit the potential statewide benefits of the expansion project.
- What performance standards will be used for supplying Environmental Water Management; will there be a "cap" placed on available water; how will CCWD adjust for global warming impacts if they are "more significant" than modeled?
- The description of emergency water supply benefits in the Draft EIS/EIR should include operational and logistical constraints that may affect the use of existing interconnections between water agencies.
- Expand the discussion of impacts related to taking the reservoir out of service during construction and how these impacts will be mitigated; clarify the logistical issues related to using the intertie with EBMUD during this period.
- Develop a reservoir with "green" features.
- Provide comprehensive cost estimates.
- Clarify construction schedule

Response

Distribution of Benefits. Benefits of the existing 100 TAF of storage in an expanded Los Vaqueros Reservoir would remain with CCWD ratepayers under all expansion alternatives. In analyzing the alternatives to expand beyond 100 TAF, existing water quality blending operations were considered priority operations that had to be accomplished prior to operations for other benefits. The assumptions used in the modeling analyses of the alternatives are discussed in detail in Appendix C to the Draft EIS/EIR. CCWD's Board of Directors adopted Principles for Expansion in 2003 that protect the investment of CCWD ratepayers in the Los Vaqueros Reservoir. Among the principles for CCWD to participate in an expansion are requirements that water quality must be improved for CCWD customers beyond that available from the existing Los Vaqueros Project, water supply reliability during a drought must be improved for CCWD

customers, and CCWD must be reimbursed for the value of the existing Los Vaqueros Project assets shared, replaced, rendered unusable or lost with the expansion project. Additionally, CCWD must continue as the operator of the Los Vaqueros Reservoir system. The full set of Principles is set out in Section 2.2.2 of the Draft EIS/EIR (Vol.1, Chapter 2).

Benefits related to the expansion would be provided to participants in the expansion project according to the nature and level of their investment. Dry-year water supply benefits are part of the reliability improvements an expanded Los Vaqueros Reservoir would provide, and would be allocated according to the agreement with the participant(s). The State of California does not have any rights to water currently stored in Los Vaqueros Reservoir; entitlement to water in an expanded reservoir would correspond to the State's investment in the expansion and would be memorialized in an operating agreement. In a non-drought emergency, stored water could potentially be provided to agencies (both inside and outside Contra Costa County) that are not participants in the expanded reservoir, but how much water would be available, how it would be allocated, and at what cost cannot be determined at this time. As is CCWD's current practice, with expansion, requests for assistance during a water supply emergency from agencies that are not served by the reservoir would be considered on a case by case basis. There is not currently, and would not be with expansion, a preference or obligation to provide emergency supplies to any particular agency or region that was not a participant in the reservoir.

CCWD Board Principles. Both the California Farm Bureau Federation (CFBF) and Santa Clara Valley Water District (SCVWD) accurately note that there are constraints on the use of the expansion based on the CCWD Board of Directors Principles for Expansion and the advisory vote of CCWD ratepayers. CFBF further states that while the Los Vaqueros Reservoir Expansion Project as proposed appears to have some regional and local water supply benefits, it lacks potentially greater statewide benefits due to constraints placed by the CCWD Board of Directors through their Principles for Expansion and the advisory vote by CCWD customers. The Principles are set forth in the Executive Summary (Vol.1, pg. ES-7) and Chapter 2 (Vol. 1, pp. 2-12 through 2-13) of the Draft EIS/EIR. The ballot language for the advisory vote read:

> Shall Contra Costa Water District work with public water agencies to expand Los Vaqueros Reservoir, at no cost to District ratepayers, to: (1) increase water supplies for drought protection; (2) improve drinking water quality; and (3) protect endangered fish in the Delta, on condition that: (a) CCWD water rates will not increase; (b) no water will be exported to Southern California or a peripheral canal; and (c) CCWD will still operate the expanded reservoir?

While the Principles and the advisory vote place some policy limitations on the ultimate use of water stored in an expanded Los Vaqueros Reservoir, the limitations do not preclude operations that yield state and federal benefits. As part of the Federal Feasibility Study, Reclamation published the 2006 Initial Economic Evaluation for Plan Formulation Report (Reclamation, 2006) which concluded that, at a concept level, there appeared to be federal interest in expansion of Los Vaqueros Reservoir and that the expansion could be implemented while meeting the CCWD Board Principles. That study looked at expansion to both 500 TAF and 275 TAF and determined that the 275-TAF reservoir project appeared to be more cost effective than the larger expansion.

Federal and state interests in the expansion project are summarized at page ES-6 of the Executive Summary of the Draft EIS/EIR (Vol. 1).

The CFBF also expresses concern that going forward with the Los Vaqueros Reservoir expansion project might foreclose other opportunities to provide even greater water supply benefits and could result in cumulative loss of agricultural land if these other opportunities do not proceed. Both Reclamation and DWR continue to evaluate the feasibility of the expansion project in light of other potential storage projects and Delta programs. A decision by Reclamation and/or the State of California to invest in expansion of the Los Vaqueros Reservoir would be part of an overall solution to Delta and water supply issues and would not be made in a way that foreclosed other cost effective options. See Chapter 2, Project Description Update, of this Final EIS/EIR (Vol. 4) for a description of a potential implementation approach that allows CCWD to move forward with Alternative 4 to meet urgent local needs while Reclamation, DWR and other potential partners continue to study the feasibility of a subsequent reservoir expansion to 275 TAF in the context of other Delta initiatives including potential future storage and conveyance projects.

CFBF suggests further that the Draft EIS/EIR should have considered the indirect effects to statewide agriculture from Reclamation acquiring up to 150 TAF of refuge water. The refuge water supply program is a requirement of the Central Valley Project Improvement Act (CVPIA) which is discussed in Section 2.3.1 of the Draft EIS/EIR (Vol. 1). The Los Vaqueros Reservoir Expansion Project could help Reclamation meet the refuge water supply requirements of the CVPIA by providing dedicated storage for environmental water. Other environmental water demands could also be met from the dedicated environmental storage as described in Section 3.4.3 of the Draft EIS/EIR (Vol. 1). In the hydrological analysis for the expansion project, the water in dedicated environmental storage is either surplus water or water acquired through exchange or transfer. Having dedicated storage for this purpose provides the system flexibility to ensure that environmental water needs are met with no or minimal impacts to other water users.

Performance Standards, "Caps" on Water and Future Changes due to Climate Change. The Native Plant Society asked about performance standards that will be used for supplying Environmental Water Management; will there be a "cap" placed on available water; and how will CCWD adjust for global warming impacts if they are "more significant" than modeled? (O_EBCNPS-03). Chapter 4.2 describes the amounts and ranges of water that can be made available for Environmental Water Management. As the EBCNPS comment notes, these amounts are subject to change as conditions change from, for example the impacts of global warming. The quantities, measures and necessary adjustments to changing conditions would be, like any water project, described in the contractual arrangements for the operation of the expanded reservoir and its facilities. Such contractual arrangements would likely include ranges (depending on hydrological conditions) that would be expected, and operational procedures to ensure delivery of water supplies and Environmental Water Management benefits.

Emergency Water Supply. EBMUD comments that there are operational, regulatory and environmental constraints that may affect the ability of EBMUD to take emergency supplies from an expanded Los Vaqueros Reservoir, and that EBMUD cannot at this point quantify an

emergency supply benefit from the expansion project. The quantity of water that could be available during emergencies under different alternatives is included in the discussion of project benefits in the Draft EIS/EIR (Vol.1, Section 4.2, pp. 4.2-35 through 4.2-42).

Because the nature and location of emergencies are difficult to predict, specific beneficiaries are not identified and allocations are not assumed. It is anticipated that emergency supplies would be available to participants in the expansion project through project facilities, or other existing facilities, and could be available to some non-participants depending on the availability of water supplies and conveyance capacity at the time of the emergency. Terms of use of the emergency supplies and conveyance facilities for non-participants would be negotiated on a case by case basis. The EIS/EIR for this project does not cover any new facilities, or modifications to existing facilities, that might be needed to convey emergency water to non-participants. It does cover Delta impacts related to use of the emergency water for any end user.

Taking the Los Vaqueros Reservoir Out of Service. Three comments (L_EBMUD-04, I_Graham-10, and I_Pilkington-03) raise concerns with the impacts of taking the Los Vaqueros Reservoir out of service during construction of the reservoir expansion. As discussed in pages 3-53 through 3-54 of the Draft EIS/EIR (Vol. 1, Chapter 3, Section 3.5.1,), for Alternatives 1, 2, and 3, the reservoir would be out of service for about 4 years, from the time the reservoir was completely drained until it was refilled. The Los Vaqueros Reservoir is owned and operated by CCWD for the benefit of CCWD customers. The two primary purposes of the Los Vaqueros Reservoir are to provide high quality water for blending with lower quality water in the Contra Costa Canal during periods when Delta water quality is low, and to provide water during emergencies when Delta water may be unavailable. Although non-customers could potentially be served through existing interties or through exchange during an emergency, CCWD does not have any agreements in place to provide such an emergency benefit to non-customers.

During the period when the reservoir is out of service, CCWD water quality goals could be met in all but short portions of the driest years through use of CCWD's Alternative Intake Project (AIP) and through strategic use of the existing intertie with EBMUD. In a catastrophic emergency, CCWD would utilize interties with other agencies and alternative technologies such as mobile reverse osmosis units to reduce chlorides in Delta water and would institute emergency demand management as identified in CCWD's planning for seismic reliability. Another strategy during an emergency is to temporarily relax water quality goals which would allow greater use of lower quality water such as that available at CCWD's Mallard Slough Intake. Treated water delivered to customers would still meet all federal and state water quality standards but taste and odor could be affected. The Mallard Slough Intake was designed and built as part of CCWD's seismic reliability program.

For Alternative 4, the reservoir would be only partially drained and would remain in operation through the majority of construction (Draft EIS/EIR, Vol. 1, Section 3.4.5, pp. 3-37 through 3-41). There would be reduced stored water available for blending during construction, but the AIP and the intertie with EBMUD would enable CCWD to meet its water quality goals under most circumstances. The water remaining in the reservoir would be available during emergencies, as would the other strategies described above.

Any use of the EBMUD intertie, whether for water quality purposes or during an emergency, would be consistent with the agreement between CCWD and EBMUD. Additional "back-up" water from EBMUD has not been identified as necessary at this time, but if CCWD decides to seek water supplies beyond those specified in the CCWD-EBMUD agreement, CCWD would start discussions at the earliest possible time as requested by EBMUD.

Develop a Reservoir with "Green" Features. To the extent feasible, CCWD has committed to developing an energy efficient project (Draft EIS/EIR, Vol. 1, Chapter 3, pg. 3-65 and pg. 3-84 and Section 4.10, Air Quality, pg. 4.10-7). Existing operating practices designed to maintain and enhance CCWD's environmental stewardship, such as increasing water use efficiency within the service area and within CCWD's facilities, increasing fuel efficiency of CCWD's fleet, and requiring safe handling and encouraging reduced use of pesticides at CCWD facilities, would be extended to any new facilities constructed as part of the expansion project.

Provide Comprehensive Cost Estimates. As noted in comment L_EBMUD-02, cost estimates are not required to evaluate environmental effects of the project and are not provided in the Draft EIS/EIR. Comprehensive cost estimates are being developed for purposes of the state and federal feasibility reports currently estimated to be completed in 2011.

Clarify the Construction Schedule. EBRPD's comment on the construction schedule (L_EBRPD2-09) is addressed in Master Response 11, Recreation, Section 3.11.2. See Master Response 11 and Chapter 5, Revisions to the Draft EIS/EIR, in this document (Vol.4), for text changes to Chapter 3, Project Description, in the Draft EIS/EIR to clarify the anticipated closure of the reservoir due to construction.

3.2 Master Response 2: Relationship to Other Initiatives and Projects

3.2.1 Introduction

Overview

This master response addresses comments received on the relationship between the Los Vaqueros Reservoir Expansion Project and other Delta initiatives including the Bay Delta Conservation Plan (BDCP), the Delta Habitat Conservation and Conveyance Program (DHCCP) and Delta Vision Strategic Plan. It also addresses comments related to the expansion project in the context of the overall CALFED Storage Program, and in relationship to specific projects such as the Delta Wetlands Project. Related information can be found in **Master Response 3, Alternatives**, and **Master Response 5, Delta Hydrology and Aquatic Resources**.

This master response is organized by the following subtopics:

- 3.2.2 Coordination with and Relationship to BDCP, DHCCP, Delta Vision and CALFED Storage Program
- 3.2.3 Federal and State Feasibility Studies

Commenters

Commenters that addressed this topic include:

Federal Agencies

- Environmental Protection Agency – F_EPA

State Agencies

- None

Local and Regional Agencies

- Santa Clara Valley Water District – L_SCVWD
- Sacramento Regional County Sanitation District – L_SRCSD
- State Water Contractors – L_SWC
- Zone 7 Water Agency – L_Zone7

Organizations

- Contra Costa County Farm Bureau – O_CCCFB
- California Farm Bureau Federation – O_CFBF
- Delta Wetlands Project – O_DWP
- Planning and Conservation League – O_PCL

Individuals

- Gary Collier – I_Collier
- Bob Mankin – I_Mankin
- Corin Pilkington – I_Pilkington

Draft EIS/EIR Section Reference

The Draft EIS/EIR addresses this topic area in the following locations: Vol. 1, Executive Summary, pp. ES-7 through ES-8; Vol. 1, Chapter 2, Project Background, generally, and pp. 2-22 through 2-23; Vol. 1, Section 3.7.1, Decisions by Participating Parties, pp. 3-89 through 3-91; Vol. 1, Section 4.1, Introduction: Approach to Environmental Analysis, pp. 4.1-5 through 4.1-10.

3.2.2 Coordination with and Relationship to BDCP, DHCCP, Delta Vision and CALFED Storage Program

Comment Summary

This section of this master response responds to all or part of the following comments:

L_SCVWD-06	L_SCVWD-09	L_SRCSD-02	L_SWC-03
L_Zone7-01	L_Zone7-02	L_Zone7-03	O_CCCFB-01
O_CFBF-03	O_CFBF-04	O_DWP-01	O_DWP-02
O_DWP-03	O_PCL-05	I_Collier-03	I_Mankin-01
I_Pilkington-01			

Summary of Issues Raised by Commenters

- Los Vaqueros Reservoir Expansion should be coordinated with the BDCP, DHCCP and the Delta Vision Strategic Plan.
- The EIS/EIR should evaluate affects on LVE operations and benefits from implementation of the BDCP, DHCCP and Delta Vision Strategic Plan.
- Decision-makers need to be able to compare the Los Vaqueros Reservoir Expansion Project to other Delta initiatives and the storage options in the CALFED storage program in determining how to accomplish the long-term goals of improving water supply reliability and restoring the Delta.
- The BDCP and DHCCP should be included in the cumulative impacts analysis.
- The Delta Wetlands Project should be included in the cumulative analysis in the Final EIS/EIR.

Response

A number of comments state that the Los Vaqueros Reservoir Expansion Project should be coordinated with the BDCP, DHCCP, and Delta Vision Strategic Plan. Section 2.5 Other On-going Planning Processes in the Draft EIS/EIR (Vol. 1, Chapter 2) includes discussion of the relationship between the expansion project and both BDCP and Delta Vision Strategic Plan. The DHCCP is not specifically discussed in the Draft EIS/EIR because at the time of publication, the program had not been defined in public documents. The DHCCP is now defined on the BDCP website as "a partnership between the California Department of Water Resources and the Bureau of Reclamation to evaluate the ecosystem restoration and water conveyance alternatives identified by the BDCP. DHCCP activities include an environmental review of the BDCP." Throughout this

master response, except where specifically stated otherwise, "BDCP" should be read to include the companion DHCCP.

The BDCP is being developed to promote the recovery of endangered, threatened and sensitive fish and wildlife species and their habitats in the Sacramento-San Joaquin Delta in a way that will also protect and restore water supplies. As mentioned above, the DHCCP will evaluate the ecosystem restoration and water conveyance alternatives identified by the BDCP and prepare NEPA and CEQA documents for the BDCP. The Delta Vision Strategic Plan is a recommendation to the Governor on how to manage the Delta for the long term and is not a project under CEQA or NEPA.

Coordination with BDCP. The Los Vaqueros Reservoir Expansion Project is coordinating with the BDCP during project development to the extent information has been made available. It is not yet possible, however, to include the BDCP in future with or without project conditions. Assumptions related to the capacity and operations of proposed new conveyance being analyzed in the BDCP are only beginning to be formulated and the preliminary analyses (which use a broad range of possible operational scenarios), acreages of tidal marsh restoration and Delta flow requirements are not yet available. The BDCP official schedule anticipates a draft plan in the fall of 2010. Currently, BDCP is examining three sets of flow criteria and a recommended primary set to use for initial analysis is scheduled for the winter of 2010. However, the Sacramento-San Joaquin Delta Reform Act of 2009 requires the California State Water Resources Control Board (SWRCB) to develop new flow criteria by August 2010. This Act states: "For the purpose of informing planning decisions for the Delta Plan and the Bay Delta Conservation Plan, the board shall, pursuant to its public trust obligations, develop new flow criteria for the Delta ecosystem necessary to protect public trust resources." These flow criteria may result in changes to the draft BDCP. In any event, the BDCP and DHCCP that is producing the EIS/EIR for the BDCP must examine the full range of alternatives. Consequently, given the August 2010 input to the BDCP from the SWRCB, the flows that will be proposed for the final BDCP will not be known for some time. It also bears noting that published schedules to date have proven to underestimate the time actually needed to accomplish the tasks. The range of possible scenarios for the BDCP include different levels of inflow, outflow, floodplain flows, bypass flows and Old and Middle River flows corresponding to different levels of Delta protection, The scenarios also include different levels of new tidal habitat. Each of these factors results in a wide range of salinity and flow conditions, with numerous permutations possible, depending on which arrays are combined.

Reclamation and DWR have indicated a current preference to wait to make a decision on implementing a 275-TAF Los Vaqueros Reservoir Expansion Alternative until a preferred alternative has been selected for the BDCP. A 275-TAF expansion alternative would have broad regional and statewide benefits that may be affected, either positively or negatively, by the BDCP alternative selected. However, as described in Chapter 2 of this Final EIS/EIR (Vol. 4), CCWD is considering implementing Alternative 4 in the near term to help meet immediate local needs for drought reliability and water quality improvement while Reclamation and other potential partners may choose to continue to study the feasibility of a 275-TAF expansion alternative in the context of other Delta initiatives including, specifically, BDCP.

Although the BDCP cannot be quantitatively analyzed at this point, based on the qualitative analysis described below, CCWD has determined that the additional storage provided by Alternative 4 will continue to provide local water quality and drought reliability benefits regardless of the BDCP alternative implemented and can thus make an independent decision in advance of the BDCP.

Evaluation of Potential Effects of BDCP on Los Vaqueros Expansion. Without definitive operations and flow requirements, estimations of the quantitative effects of the BDCP on Delta flows and salinity remain uncertain. Qualitatively, new conveyance could result in reduced water quality at CCWD intakes at some times of the year and approximately the same water quality at other times, which could combine to affect operation of the expanded reservoir. However, this result is based on preliminary evaluations that have not yet considered potential water quality improvements from tidal marsh restoration in the Delta interior, the effect of mitigation measures that might be required, nor operational changes that can be made to offset water quality degradation. Water quality degradation can occur when outflow is reduced, or when exports from the south Delta are reduced to such low levels that agricultural drainage predominates in the south Delta, or when tidal marsh areas are established in the west Delta in a way that increases salinity intrusion. Water quality improvements occur when outflow is increased, exports in the south Delta remain at modest to high levels, or when tidal marsh areas are established in the Delta in a way that reduces salinity intrusion. Since the flows, tidal marsh areas and export operations remain undefined, it would be speculative to try to determine the exact effects of the BDCP on operations of a Los Vaqueros Reservoir expansion.

The extent of this potential water quality change cannot be determined without a more precise description of the new conveyance system, the restoration areas and the operations. It is clear though, that having additional storage in an expanded Los Vaqueros Reservoir, in combination with the flexibility of having three screened intakes at different locations in the Delta (Old River, AIP and Rock Slough), would enable CCWD to operate in a way that lessens the effects of water quality degradation from new conveyance or any other source. The reason for this is that the additional storage and the additional intakes allow additional flexibility to capture high quality water in periods with reduced impacts on fisheries for the project purposes. If water quality is degraded at times, the need for additional storage increases and the need for additional pumping capacity to refill the reservoir increases; in the absence of either, the ability to meet the project purposes are reduced. On the other hand, if BDCP activities improve water quality, the ability to meet the project purposes would also be improved beyond those already found.

The purpose of the BDCP is to restore Delta fisheries while restoring export water supplies. The BDCP has already determined that restoring export water supplies is not possible by taking all export water from the Sacramento River and that a “dual conveyance” system that retains a substantial amount of water pumped from existing facilities is needed. Preliminary studies indicate that the amount pumped from the south Delta would be about half of current pumping, with somewhat lower levels in fish sensitive periods necessary to reduce take. Under a general scenario, an expanded 275 TAF Los Vaqueros Reservoir would be able to increase the fishery protection because of its screened intakes and the ability to allow for further reductions in south

Delta export pumping while maintaining water supplies. Alternative 4 impacts, though already small, would likewise be reduced because of the decreased likelihood of fish being in the vicinity of the intakes during filling operations when export pumping in the south Delta is reduced. Consequently, the use of an expanded Los Vaqueros Reservoir (for all Alternatives) under the general operational parameters being discussed in the BDCP would be unlikely to increase, and would likely decrease, any adverse effects and environmental impacts when the alternatives and the BDCP are considered together.

Relationships to the Delta Vision Strategic Plan. The regional and statewide benefits identified for a 275-TAF expansion alternative could be either increased or decreased with new Delta conveyance depending on capacity and operations of the new conveyance and whether the operations of the new conveyance can be optimized with operations of an expanded Los Vaqueros Reservoir. The most important factors will be water quality and limitations on south Delta exports; screening diversions under Alternatives 1 and 2, for example could have added value if the south Delta export facilities continue to use salvage facilities rather than positive barrier fish screens.

As noted in the Draft EIS/EIR, the Los Vaqueros Reservoir Expansion Project is consistent with the Delta Vision Strategic Plan. The primary objectives of the reservoir expansion project – developing water supply for environmental water management and increasing water supply reliability for the Bay Area – are consistent with the two co-equal goals for managing the Delta set forth in the Strategic Plan. The Strategic Plan is described in the Delta Vision Committee Implementation Report as a document "that will serve as an important guide and reference as California moves forward to make improvements in the Delta". Additional storage was recognized as one of the priorities for a sustainable Delta; completion of all the CALFED storage program feasibility studies was listed as a near-term action. The possible timing variant implementation approach proposed for the expansion of the Los Vaqueros Reservoir (see Vol. 4, Chapter 2, Section 2.4) also remains consistent with the Delta Vision Strategic Plan.

Decision-Making in the Context of Other Delta Initiatives. The Delta Vision Strategic Plan, BDCP and the CALFED storage program all propose integrated, comprehensive approaches to solving Delta water issues. The latest legislation approved at the end of 2009 takes a similar approach. It is contemplated in these programs that individual components will be implemented consistent with the program goals and objectives as institutional and financial factors allow. The Los Vaqueros Reservoir Expansion Project has been developed within an integrated, comprehensive resource management program and implementation of any of the alternatives, now, or under the timing variant described in Chapter 2 of this document, remains consistent with the intent of these programs.

Cumulative Effects - BDCP. In analyzing cumulative impacts for Delta hydrology and aquatic resources in the Los Vaqueros Reservoir Expansion Project Draft EIS/EIR, all the projects in the "common assumptions" modeling package were considered as well as the Stockton Delta Water Supply Project. (See Draft EIS/EIR, Vol. 1, Section 4.1 Approach to the Environmental Analysis and Section 4.2 Delta Hydrology and Water Quality, pp. 4.2-68 through 4.2-70.) The common

assumptions modeling package was developed by Reclamation and DWR to facilitate comparison among modeling-based analyses performed by different entities and/or for different projects. The common assumptions modeling package does not currently include the new Delta conveyance being developed in the BDCP because details on capacity and operations have not been sufficiently defined and a preferred alternative has not been selected for those projects.

The BDCP continues to explore operations that minimize impacts, so the extent or direction of the impacts is not yet known (for example, Delta water quality could improve or degrade depending upon how the BDCP features are designed or operated). It is not possible to determine at this point in the planning of the BDCP how those projects would impact the Delta, much less how those projects would interact with the effects of the Los Vaqueros Reservoir Expansion Project. Therefore, the BDCP has not been included in the quantitative cumulative analysis performed for the Los Vaqueros Reservoir Expansion Project.

Cumulative Effects – Delta Wetlands Project. The Delta Wetlands Project (DWP) was not included in the cumulative impact analysis for the Los Vaqueros Reservoir Expansion Project Draft EIS/EIR because project operations had not been defined to the extent that they could be incorporated into the quantitative analysis. Up until issuance of the Notice of Preparation (NOP) in November 2008, the DWP was not considered "reasonably foreseeable" due to the outcome of the lawsuit over water rights referenced in the comment letter. While issuance of the NOP documented that a revised project proposal is moving forward again, it also states that additional analysis is necessary. The DWP NOP states "the scope of this California Environmental Quality Act (CEQA) analysis focuses primarily on the changes to the Project description proposed in the petitions for change regarding specific places of use for Project water, estimated diversion amounts, beneficial uses, means of transfer, and storage of water in groundwater banks. This CEQA update will also update the 2001 Final EIR to consider new information or changed circumstances, including new listings and changes in the status of threatened and endangered species." DWP issued a revised NOP in July 2009 that again states that the CEQA analysis would update the 2001 Final EIR to consider new information and changed circumstances. Without an updated model for the DWP that includes this new project information and accounts for the significantly changed circumstances in the Delta, DWP could not be included in the quantitative cumulative impacts analysis in the Draft EIS/EIR or Final EIS/EIR.

Based upon a qualitative assessment of the potential for cumulative impacts associated with this project, no cumulative impact based on future operation of Los Vaqueros Reservoir Expansion Project and DWP is anticipated. The terms of a settlement agreement between DWP, State Water Contractors and CCWD will preclude impacts to Delta water quality. In addition, the environmental analysis performed for the updated DWP should limit operations to those that are safe for the Delta ecosystem.

3.2.3 Federal and State Feasibility Studies

Comment Summary

This section of this master response responds to all or part of the following comments:

F_EPA-04 L_SCVWD-10

Summary of Issues Raised by Commenters

- Federal and State Feasibility Reports should be included in the Final EIS/EIR.
- Reclamation and CCWD should coordinate with CVP and SWP Contractors in the financial assessments being conducted as part of the Federal Feasibility Report.

Response

The Federal and State Feasibility Reports will not be completed until after this Final EIS/EIR is published and thus will not be included in the Final EIS/EIR. As described in the Draft EIS/EIR (Vol. 1, Chapter 3, Section 3.7 Permits and Approvals Needed for Alternatives, pg. 3-90), the Federal Feasibility Report analyzes engineering, economic, environmental and financial aspects of project alternatives, determines their costs and benefits and determines if there is a federal interest in implementation of the Los Vaqueros Reservoir Expansion Project. The state feasibility study is a parallel process. As explained in Chapter 2 of this Final EIS/EIR, CCWD is considering implementing Alternative 4 to help meet immediate local needs while Reclamation and other potential partners continue to study the feasibility of Alternatives 1, 2 and 3 in the context of other Delta initiatives including specifically the BDCP. Federal and state decisions on whether to participate in the Los Vaqueros Reservoir Expansion Project will be made after the feasibility studies are completed.

The federal decision process includes consideration of input from other federal, state, and local agencies, concerned stakeholders, tribes and the general public, obtained during development of both the Federal Feasibility Report and the Final EIS/EIR.

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3.3 Master Response 3: Project Alternatives

3.3.1 Introduction

Overview

Comments about project alternatives generally fall into three categories: 1) questions regarding why certain alternatives, such as recycled water, desalination, and water use efficiency, were not carried forward for review in the Draft EIS/EIR; 2) requests for consideration of additional alternatives; and 3) requirements under CEQA to identify the Environmentally Superior Alternative.

This master response is organized by the following subtopics:

- 3.3.2 Alternatives Development
- 3.3.3 Additional Alternatives
- 3.3.4 Identification of the Environmentally Superior Alternative and Overriding Public Considerations

Commenters

Commenters that addressed this topic include:

Federal Agencies

- None

State Agencies

- None

Local and Regional Agencies

- Central Contra Costa Sanitary District - L_CCCSD
- Delta Diablo Sanitation District - L_DDSD
- Dublin San Ramon Services District - L_DSRSD
- East Bay Municipal Utility District - L_EBMUD
- East Bay Regional Park District - L_EBRPD
- Santa Clara Valley Water District - L_SCVWD
- Zone 7 Water Agency - L_Zone7

Organizations

- California Farm Bureau Federation - O_CFBF
- Planning and Conservation League - O_PCL

Individuals

- Betty Lu Graham - I_Graham
- Corin Pilkington - I_Pilkington

Draft EIS/EIR Section Reference

The Draft EIS/EIR addresses this topic area in the following locations: Vol. 1 Chapter 3, Description of Project Alternatives, Section 3.2 (pp. 3-5 through 3-14) and Section 3.4 (pp. 3-15 through 3-41); and Vol. 3, Appendix B Alternatives Development.

3.3.2 Alternatives Development

Comment Summary

This section of this master response responds to all or part of the following comments:

L_CCCSD1-01	L_CCCSD1-02	L_CCCSD2-01	L_CCCSD2-02
L_CCCSD2-03	L_DDSD-01	L_DDSD-02	L_DDSD-03
L_DDSD-04	L_DSRSD-02	L_EBMUD-03	O_PCL-01
O_PCL-03	O_PCL-04		

Summary of Issues Raised by Commenters

- Justifications for not including water use efficiency, recycled water, and desalination alternatives in the Draft EIS/EIR are inaccurate, insufficient or unclear.
- The Draft EIS/EIR should acknowledge the potential of local and regional recycled water and desalination projects to improve water supply reliability and provide other benefits.
- CCCSD's proposed industrial recycled water project should be integrated into the Los Vaqueros Reservoir Expansion Project to increase benefits without increasing environmental impacts.
- Recycling all of CCCSD's effluent would have less impact on Delta outflow than the Los Vaqueros Reservoir Expansion Project.

Response

Alternatives development is described in the Draft EIS/EIR, Vol. 1, Chapter 3, Description of Project Alternatives, Section 3.2 (pp. 3-5 through 3-14) and Vol. 3, Appendix B Alternatives Development. The descriptions of the early screening process are based on the Initial Alternatives Information Report (IAIR) issued by Reclamation in September 2005 (Reclamation, 2005). The IAIR is referenced in the Draft EIS/EIR, and is available on the Los Vaqueros Reservoir Expansion Project website. The primary purpose of the IAIR is to document the first phase of feasibility studies for the expansion project, specifically describing the formulation of initial alternative plans to address the problems, opportunities and planning objectives identified for the Los Vaqueros Reservoir Expansion investigation. Table B-1 in Appendix B is a summary of the outcome of the initial alternatives formulation process. The screening process that is reflected in Table B-1 is discussed in Chapter VI of the IAIR. Responses to comments related to consideration of conservation, recycled water and desalination alternatives reference the IAIR.

Conservation. PCL comments (O_PCL-01 and O_PCL-03) that conservation, storm water capture and the adoption of all best management practices (BMPs) should be included as a means

to achieve project objectives. Water use efficiency, which generally includes these activities, was considered during project alternatives development. Specifically, demand management and wastewater reclamation (discussed further below) were evaluated and eliminated from further study as alternatives to meet the project objectives. As shown in Table B-1, demand management was eliminated because it had a low potential to significantly address dry-year water supply reliability over and above existing/planned conservation programs, and there was little potential to contribute to the other planning objectives of the Los Vaqueros Reservoir Expansion Project. This rationale is further explained below.

For purposes of alternatives development, water demand management is defined as

> [I]mprovements in urban water use efficiency through technological or behavioral changes in indoor and outdoor residential, commercial, industrial, and institutional water use, leading to reduced demand, and reduced per capita water use. This measure would consist of *additional* [emphasis added] demand management programs *beyond* [emphasis added] the current programs and plans being actively pursued by Bay Area water agencies (ACWD, CCWD, SCVWD, and Zone 7) (Reclamation, 2005, page VI-20).

Current conservation programs are described in the Draft EIS/EIR in Chapter 2, Background (Vol. 1, pg. 2-21) and Appendix B (Vol. 3, pp. B-13 through B-14). CCWD and the South Bay water agencies all have aggressive and successful conservation programs that are integral parts of their water supply management plans. These programs would continue with or without implementation of any of the project alternatives. With the passage of Senate Bill (SB) X7 7 in November 2009 that requires reductions in urban use of 20 percent by 2020, some agencies may need to increase their conservation programs (Steinberg, 2009); however, CCWD and some other Bay Area water agencies have been implementing conservation programs for years and under SBX7 7 requirements, these agencies will, at most, be making modest changes to programs already in place. For example, CCWD believes that continuing its present programs will achieve most if not all of the SBX7 7 requirements. In any event, implementing programs to meet the 20 percent by 2020 goal does not change the assessment of the water demand management alternative evaluated here. There is still a low potential for conservation to significantly improve dry-year reliability and little potential to contribute to the other planning objectives of the Los Vaqueros Reservoir Expansion Project.

Analysis for the 2004 Los Vaqueros Reservoir Expansion Studies Planning Final Draft Report (CCWD, 2004) showed that CCWD and the South Bay water agencies had developed water management plans to meet current and future demands that included conservation and recycling in all years, but still required supplemental supplies in shortage years. As conservation and recycling increase, demand hardens and the ability of water users to cut back in shortage years decreases since the “slack” is already taken (for example, once an ultra-low flush toilet is installed or an irrigation system is converted to drip-irrigation, further savings are difficult to make). Agencies have made shortage-year water supply investments including groundwater storage and long-term transfers, but demand management and spot market purchases are still required in many shortage years, including dry and multiple dry years.

Additionally, as explained in the IAIR, current and planned conservation programs contain the more economically-efficient conservation measures (Reclamation, 2005). To the extent that other measures could be implemented, they would have lower cost effectiveness and consequently, higher incremental costs.

Since the IAIR was completed, Delta conditions have precipitously deteriorated leading to legal decisions and new biological opinions that reduce Central Valley Project (CVP) and State Water Project (SWP) exports, including exports to the South Bay water agencies, to protect fish. Supply reliability is not just a dry-year issue any longer for many agencies. Without alternatives like an expanded Los Vaqueros Reservoir, the frequency that South Bay water agencies have to acquire supplemental supplies and enforce rationing programs will increase.

Recycled Water. Several comments question the "low" rating given to recycled water in Table B-1 (see page B-11 of the Draft EIS/EIR, Vol. 3, Appendix B) and the decision to eliminate recycled water from further study as an alternative to meet the project objectives (L_CCCSD2-02, L_DDSD-01, L_DDSD-02, and L_DSRSD-02). O_PCL-04 asserts that recycling could meet all project objectives and should be included in the EIS/EIR as a viable alternative.

The alternatives analysis presented in the Draft EIS/EIR (see Vol. 1 Section 3.2.2 and Vol. 3. Appendix B) explains that recycled water was evaluated as an alternative to reservoir expansion and eliminated from further study for a variety of reasons including low ability to address project objectives. One of the underlying documents supporting the alternatives analysis is the IAIR. The subsection of the IAIR (Reclamation, 2005) on Water Use Efficiency, starting on page VI-19, includes more information on why the resource management measure "Implement Additional Wastewater Reclamation" was not carried forward for further study.

The recycling measure considered in the IAIR consists of "the increased use of reclaimed wastewater from Bay Area wastewater treatment plants (WWTPs), beyond the recycling projects that are currently planned, to offset potable water demands and to increase water supply reliability, particularly in dry years." Facilities to accomplish this would include filtration and disinfection treatment systems, pump stations, distribution systems and reservoirs to ensure system reliability. Existing reclaimed water programs are acknowledged, and the projected future potential for recycled water identified in the Bay Area Water Recycling Master Plan is noted.

Factors that led to the "low" rating for potential to address project objectives are described in the IAIR as follows:

> Because recycled water is limited to non-potable applications, facilities are ideally located near end-users to reduce the cost of distribution. Further, the yield of wastewater recycling is limited by the size of the WWTP with which it is associated, and facilities are most efficient when operated continuously, such as for a base-supply. To provide meaningful water supply reliability benefits during a drought, a wastewater recycling program likely would fall under one of the following scenarios:
>
> 1. A large recycling facility would continuously serve a consumer with a high demand for non-potable water who is willing to accept recycled water in lieu of their existing supply, which would be reserved for use during dry periods, or

2. A smaller recycling facility would continuously deliver water to surface or groundwater storage, for later use during dry periods.

The substitution of recycled water as a base-supply would mean supplies that currently fill that need, such as less-costly SWP contract water, would be forgone in most years. It is likely that the most cost-effective recycling project—those located at existing, large-sized WWTPs—already are planned and/or will be included as a future condition. Consequently, it is believed that volume and efficiency of wastewater recycling projects which could be implemented as part of this measure would be very low. In addition, this measure would not contribute to other study objectives, and may result in degraded water quality to some water users. It also could be implemented independently by individual utilities or agencies. Accordingly, this measure was deleted from further consideration (Reclamation, 2005, pp. VI-19 through VI-20).

PCL further states that CCWD has the capacity and much of the infrastructure in place to recycle 44 TAF annually (CCCSD's current annual average treated wastewater discharge) working with CCCSD. CCCSD does not, however, have the plant capacity to recycle its full discharge; the permitted capacity of its recycled water plant is 3.8 MGD (about 4.3 TAF). Neither CCCSD nor CCWD has the conveyance capacity to move 44 TAF of recycled water, and demand for that quantity of recycled water has not been identified. The cost to expand CCCSD's recycled water plant capacity and extend conveyance infrastructure to recycle 44 TAF would be in the hundreds of millions of dollars.

Summary. While conservation and recycling can stretch supplies, they cannot substitute for storage of water for shortages or emergencies. The CALFED Bay-Delta program specifically created both a water use efficiency (including conservation and recycling) and a storage program. The reasons for this are discussed in detail in the CALFED Record of Decision and supporting documents (CALFED, 2000). Recently, the Public Policy Institute of California published a document correcting myths about California water that simply reiterates what the CALFED program found: water use efficiency and storage each have their own independent benefits and one cannot be substituted for the other (Hanak, et al., 2009). L_CCCSD2-02 quotes from the CALFED ROD a statement that cost effective recycling is a way to address the growing mismatch between water supply and demand due to rapidly growing urban populations and static supplies. Serving growth is not one of the purposes of the Los Vaqueros Reservoir Expansion Project. Because it is recognized that there are many cost effective recycled water projects underway or planned within the Bay Area, the recycled water alternatives considered in the alternatives development process for the expansion project looked at recycled water projects beyond those already planned by local water agencies. Likewise, none of the alternatives identified for further study would preclude completion or diminish the benefits of planned recycled water projects.

The ability of conservation and recycling to achieve the other project objectives, developing water supplies for environmental water management and improving water quality is likewise limited (see Draft EIS/EIR, Vol. 3, Appendix B, Table B-2 and Table B-3, respectively). Because environmental water is needed during the sensitive periods for aquatic species (at particular times, that cannot be predicted in advance, during winter and spring, primarily), storage, with its

inherent flexibility, can provide water during those periods when pumps must be shut down. Conservation and recycling reduce demand for water supplies either during the irrigation season (summer and fall) or uniformly over the year, but not necessarily during the "fish-sensitive periods" which limits their ability to produce environmental water at the correct time. Water quality improvement from conservation and recycling could occur for CCWD to the extent water is retained in the reservoir as a result of such programs and that water can later be used for blending. The amount of water that could be retained for blending is about 2 TAF per year (Gartrell, 2010). However, increased storage provides greater and more certain increases in the amount of water available for blending; under Alternative 4, the 160 TAF reservoir results in a 100% increase in the average amount of water available to CCWD for meeting its water quality goals during droughts. Therefore, implementing water use efficiency on a large scale is not a viable substitute for additional storage.

Refinery Project. CCCSD's comments on the Draft EIS/EIR include a proposal to integrate an industrial recycled water project (Refinery Project) into the Los Vaqueros Reservoir Expansion alternatives (see comments L_CCCSD1-02 and L_CCCSD2-03). CCCSD suggests that integrating the projects would provide water supply yield that would increase project benefits of one or both projects. As discussed above, recycled water reduces demand and stretches supplies, but it does not substitute for storage.

CCCSD has previously discussed industrial recycling with CCWD, and CCWD has elected to not participate in such a project for myriad reasons including lack of cost effectiveness. When compared to the cost effectiveness of storage, the lack of cost effectiveness of recycled water is further underscored by the additional benefits that can be obtained with storage that are not part of the Refinery Project such as operational flexibility. Increased storage provides reliability and water quality benefits across customer classes and provides resources to adapt to the uncertainties of climate change. CCWD and Reclamation also met with CCCSD on June 15, 2009 to discuss recycled water generally and CCCSD's comments on the Draft EIS/EIR, and suggested ways that CCCSD might pursue funding for the Refinery Project under Reclamation's Title XVI program.

Yield of a Recycled Water Project. CCCSD makes several references to the water yield of the Refinery Project that apparently have used incorrect assumptions. Simply substituting recycled water for surface water does not necessarily create new yield when the water being recycled is currently discharged in or above the Delta system. For example, substitution of recycled water for Delta surface water when Delta outflow exceeds the minimum requirements (i.e., when there is surplus water) does not create new yield at all unless additional water can be pumped as a result of the substitution. However, under surplus flow conditions, there is already more water in the system than can be pumped or stored, so in general there is no water yield from the project in these conditions. Surplus flow conditions occur about 50 percent of the time (more in wet years, less in dry); consequently, the yield of a recycled water project will be greatly reduced if the recycled water is provided during surplus flow conditions in the Delta.

Furthermore, no yield is created if pumping or other restrictions prevent capture of new water. Under current flow restrictions, new water, whether created by fallowing or substitution of

recycled water for Delta surface water even when there is no surplus water (balanced conditions), may not create new yield if other restrictions limit the ability of water users to divert the extra water (DWR, 2009). This occurs about 40% of the time and the combined effect with surplus flow conditions limits generation of yield to about 43% of the time (i.e., 7 months per year have either surplus flow or pumping restrictions).

Yield is only created when recycled water is substituted for *consumed* water that is not returned to the system. Water that is diverted, but not consumed, but instead returned to the system is, in essence, already "recycled" as it can be put to further beneficial use. Under CVP contracts and water rights, CVP water that is returned to the system remains in the control of Reclamation for further beneficial use. Consequently, reducing diversions and simultaneously reducing water returned to the system does not create new yield.

As a consequence of these factors, yield from a recycled water project may be much smaller than the actual amount of water recycled, just as reduced diversions due to fallowing a crop in or upstream of the Delta system seldom produces yield equal to the water consumed by the crop (DWR, 2009). As shown below, CCCSD has overstated the potential yield of the Refinery Project.

Added Benefit of Combining Projects. CCCSD further states that integrating or combining projects, such as a recycled water project and Los Vaqueros Reservoir Expansion, would increase the benefits of the Los Vaqueros Reservoir Expansion. Because of the factors discussed above (surplus flows and diversion restrictions), combining the projects does not create any new benefit beyond those achieved with the projects done separately. This is explored in more detail in the following discussion. CCWD has again considered and assessed CCCSD's Refinery Project in light of CCCSD's comments on the Los Vaqueros Reservoir Expansion Project and does not find it to be viable for the following reasons:

1. Low Water Supply Yield. CCCSD states that the proposed industrial recycled water project would yield 22 TAF of water supply. As explained generally above, and in more detail here, yield of a recycled water project does not directly correspond to recycled water use, and the yield of the Refinery Project is far less than stated.

   In order to create "yield" or "transferrable water" in the Delta, a recycled water project must 1) replace water that is consumed or lost to further beneficial use and 2) replace that water during periods in which surplus flows are not otherwise available and the water saved is available for capture. The refineries take in about 18 to 22 TAF per year on a uniform schedule over the year (CCWD, 2009) (they also discharge back to the Delta system about 60 percent of what they take in). The substitution of recycled water for water consumed during surplus flow conditions (or during conditions when water diversions are restricted) does not create new water that could be considered "yield" or "transferrable" (DWR, 2009). Since surplus flow conditions predominate about half the time (more in wet years, less in dry years), the real yield is less than half the amount suggested by CCCSD.

   When there is no surplus water available, about 60 percent of the water taken by the refineries is discharged back to the Delta. The water discharged back during non-surplus flow periods can provide a beneficial use of aiding in salinity repulsion to meet regulations

and this occurs about 25 percent and 50 percent of the time (wet years and dry years, respectively). Under CVP contracts and water rights, CVP water that is returned to the system remains in the control of Reclamation for further beneficial use.

Consequently, the amount of yield is considerably less than the 22 TAF per year suggested by CCCSD; it is generally in the range of 3 TAF to 9 TAF per year of new water, depending on the conditions for a given year (Gartrell, 2010), and averages about 5 TAF per year.

Potential yield of the Refinery Project if integrated with Alternatives 1 and 2 could also be affected by uncertainty in the availability of infrastructure to transfer the water to South Bay water agencies. With this uncertainty, the added yield of integrating the Refinery Project with Alternatives 1 and 2 would likely be less than the 3 to 9 TAF per year identified above as potential yield. There would be no additional transfer capacity to SBA agencies under Alternative 4 since there is no South Bay Connection.

The benefit to CCWD would be the same with or without implementation of any of the reservoir expansion alternatives, since the benefit would be to reduce demands in shortage periods; CCWD already has adequate water rights (over 95,000 acre-feet per year) and contract rights (195,000 acre-feet per year) to fill its share of the reservoir and adding a few thousand acre-feet in a few shortage years does not add a substantial filling benefit. Since filling is limited in most months by water quality or environmental restrictions, only a small fraction of the 3 to 9 TAF of yield could be used for filling. Consequently, adding the Refinery Project to any of the alternatives provides no added benefit to CCWD or any project partners beyond that of doing the projects separately.

CCCSD presents tables that are stated to compare yield of the Refinery Project with those of the reservoir expansion alternatives. The table incorrectly uses 22 TAF per year for the Refinery Project (it should be much less for Alternatives 1 and 2, and essentially zero added benefit when combined with Alternative 4) and then compares that figure with pieces of the yield of the alternatives instead of the overall yield. None of the information presented by CCCSD demonstrates an added benefit to integrating the projects beyond that which could be achieved through implementing them separately.

Additional Outflow for Environmental Purposes. CCCSD states that the proposed Refinery Project could provide a yield of 22 TAF per year of water that could provide additional outflow. The water that would be recycled to the refinery is currently discharged into the Delta system and already provides 22TAF per year of water flow to the system. The Refinery Project would reduce up to 22TAF of Delta diversions, but would at the same time reduce return flows back to the system by the same amount, so the net flow out the Carquinez Strait remains unchanged.

2. Limited Drought Supply Reliability Benefit. One of the primary objectives for the Los Vaqueros Reservoir Expansion Project is to improve water supply reliability, including during drought periods, for Bay Area water agencies. CCWD's interest in the expansion is primarily to improve drought supply reliability. The Refinery Project would provide only limited drought reliability.

   Under the CVP Municipal and Industrial Shortage Policy, for the most extreme shortage situation (Health and Safety), allocations include 50 gallons per person per day plus 80 percent of average commercial demand and 90 percent of average industrial demand. With the industrial recycling project, CCWD's CVP shortage allocation would also be

reduced because the average industrial demand would be less by the amount of recycled water provided to the refineries. The recycled water would meet industry demands, but would benefit other CCWD customers only marginally, if at all, under such circumstances. In other shortage periods, the recycled water may provide a benefit to the extent that it provides water supply yield that translates into increased supply, but that benefit is not substantially changed or enhanced by integrating it with Los Vaqueros Reservoir Expansion (i.e., the benefits are independent and do not increase if the projects are done together as opposed to separately).

In CCWD's experience, industries need a back-up supply to minimize production losses if the recycled water system cannot deliver for any reason. If recycled water could not be delivered during a shortage period, and CCWD received a reduced allocation based on a lower average industrial demand, the recycled water project could result in reduced drought supply reliability.

The water supply reliability benefits of a recycled water project accrue largely to one customer. The water supply reliability benefits of the reservoir expansion alternatives accrue to all customers, including the benefits of emergency storage, water availability when pumps are shut down to protect fisheries or because of an emergency, and improved water supplies in droughts.

3. Limited Water Quality Benefit. Water quality benefits from CCCSD's industrial recycled water project to CCWD's customers are limited to the small amount of water (about 2 TAF per year) that would not have to be released from the reservoir in some years, and could be used for additional water quality blending (essentially stretching the stored supplies). However, this is a benefit that is not unique to recycling but a benefit from any water use efficiency measure.

   CCCSD makes the statement (L_CCCSD2-01) that the Refinery Project would improve water quality for the industrial customers it serves because the supply of water is steady, reliable and has predictable quality. It also makes a general comment that one of the objectives of the Los Vaqueros Reservoir Expansion Project is to improve the quality of water deliveries to municipal and industrial customers in the San Francisco Bay Area, but the background of the need for the project addresses only drinking water quality for municipal customers. Chapter 1 of the Draft EIS/EIR Purpose, Need and Objectives (Vol. 1, Chapter 1, sections 1.4.6 and 1.5.2) does discuss the decline of Delta water quality and related impacts on drinking water quality without specifying impacts on industrial water supplies. The focus on drinking water quality in this section of the document is because the need for water agencies to meet increasingly stringent water quality regulations is a driving force on capital investments. However, improving drinking water quality through improving source water quality benefits all customers, including industrial customers, whether they use treated or untreated water.

   One of CCCSD's comments stated that the reservoir expansion project has a greater impact on net Delta outflow than from recycling all CCCSD's effluent (L_CCCSD2-03), and that therefore, any water quality impact related to the industrial recycled water project was not significant. This comparison is not valid and the conclusions CCCSD draws are not meaningful. In this instance, changes in outflow in one or two months under surplus flow conditions (when salinity intrusion is at a low level and not a concern), were compared with steady and continuous decreases in outflow under balanced conditions for significant periods (when outflow is already low and salinity intrusion is a concern).

4. High Costs. CCCSD states in the background section of their comment letter that they are seeking $100 to $150 million in funding for the Refinery Project. Based on past discussions with CCCSD, these funds are estimated to cover the capital costs to implement the Refinery Project, and do not include other costs such as capital and operating costs at the refineries or costs of stranded assets, all of which add to the stated capital costs. However, the stated $100 to $150 million is used in the analysis as a minimum level of required funding. Given the low level of benefit associated with the Refinery Project, adding $100 to $150 million to the estimated cost of the expansion project (ranging from approximately $985 million for Alternative 1 to approximately $120 million for Alternative 4) for a potential increase in yield of less than 9 TAF in Alternatives 1 and 2, has limited cost-effectiveness, and a very small, if any, additional yield in Alternative 4, is not cost effective.

   CCCSD states (L_CCCSD1-01) that CCWD has maintained that the cost of the Refinery Project is too great because of "lost revenues from the refineries". This is incorrect: CCWD's revenues for stranded assets are protected under existing law. CCWD has not invested in this project for the same reason that CCCSD withdrew from the project in the 1980's after significant investments had been made—it is not cost effective.

   Finally, the refineries have indicated to CCWD that they may consider, as the result of potential regulatory requirements, cutting in half the amount of water they use (CCWD, 2007). If they proceed with that water use reduction, any investment in a large 22-TAF recycled water project could result in a significantly underutilized capital asset. The actual yield would be further reduced but the capital costs would remain the same, further reducing the cost effectiveness.

   The Refinery Project as presented is neither cost effective in its own right nor as an integrated project with the Los Vaqueros Reservoir Expansion, nor does it make the Los Vaqueros Reservoir Expansion Project more cost effective.

   As presented in Chapter 2 of this document, CCWD is considering implementing Alternative 4 to address urgent water supply reliability and Delta water quality issues while potential state, federal and regional participants continue to study a larger expansion in parallel with the BDCP. Alternative 4 is preliminarily estimated to cost approximately $120 million. Integrating the Refinery Project with Alternative 4 would not result in any reduction in costs for either project, nor will it increase the effectiveness of the additional storage. Therefore, integrating the Refinery Project into Alternative 4 could more than double the cost, for little or no additional benefit.

Desalination. Two desalination alternatives (with and without new storage) were considered during both the initial alternatives development phase and the initial plan development phase, but neither was carried forward for further development as a comprehensive alternative. The assessment of these alternatives can be found in the Draft EIS/EIR at pages 3-7 through 3-11, and pages B-17 and B-25 through B-26, as well as the IAIR at pages VI-16 through VI-18 and VI-25 through VI-26. In summary, the reason for eliminating desalination from further study was lack of cost effectiveness and challenges related to brine disposal and energy use which could translate to potential greenhouse gas issues. Both DDSD (L_DDSD-02) and EBMUD (L_EBMUD-03) requested clarity regarding the assessment of desalination alternatives.

DDSD suggests that the logic used to eliminate desalination alternatives is inconsistent with the findings from their own studies and the studies of the Bay Area Regional Desalination Project. In this regard, DDSD cites the discussion on page B-27. However, the discussion cited is not about desalination, but is related to a Conveyance-only Plan introduced on page B-26. CCWD and Reclamation recognize that desalination continues to be studied by other entities and as technology advances, desalination could be a viable option to meet regional needs. The information provided by DDSD on its desalination studies is incorporated into the administrative record for the Los Vaqueros Reservoir Expansion Project, but nothing in the information provided changes the assessment of the desalination alternatives defined here. Likewise, CCWD participates in the Bay Area Regional Desalination Project which could result in implementation of a regional desalination project. DDSD has recently proposed a variant on that project. Such projects would not be an alternative to the Los Vaqueros Reservoir Expansion Project, but would be complementary to any of the alternatives to expand Los Vaqueros Reservoir.

L_DDSD-03 requests clarification of a purported statement that regional desalination is not consistent with the management objectives set forth in the CALFED ROD. Such a statement is not made about desalination; a statement on page B-27 of the Draft EIS/EIR (Vol. 3, Appendix B) says that a Conveyance-only plan is not consistent with the management objectives set forth in the CALFED ROD. Desalination is described, however, in Table B-6 as "Consistent with goals of CALFED".

EBMUD, referencing the Draft EIS/EIR page 3-11 (Vol. 1, Chapter 3), states that the summary statement of why the Desalination with Storage alternative for Bay Area Water Supply Reliability was not carried forward does not provide sufficient context and could be misinterpreted by readers to mean desalination in general should not be considered. A broader context and more detail on the evaluation of this alternative are provided in the Draft EIS/EIR Appendix B. The Bay Area Regional Desalination Project is described in Appendix B (Draft EIS/EIR, Vol. 3, pp. B-25 through B-26) as follows:

> Although desalination facilities were not carried forward as an alternative for the reservoir expansion project, the Bay Area water agencies continue to evaluate a regional desalination facility at this location to meet long-term dry-year water supply reliability needs. This project, the Bay Area Regional Desalination Project, is a cooperative effort of East Bay Municipal Utility District, SFPUC, SCVWD, and CCWD. While not yet shown to be potentially feasible, such a project may prove feasible in the future, and could complement an expanded Los Vaqueros Reservoir.

EBMUD also suggests that advancements in technology, such as ultra-efficient energy recovery devices, and engineering could resolve desalination issues related to energy use and brine disposal. The potential for such advancements to improve the feasibility of desalination is generally acknowledged in the statement above that desalination may prove feasible in the future and could complement an expanded Los Vaqueros Reservoir.

3.3.3 Additional Alternatives

Comment Summary

This section of this master response responds to all or part of the following comments:

L_SCVWD-06	L_Zone7-03	O_CFBF-01	O_CFBF-02
O_CFBF-03	O_CFBF-04		

Note: although the CCCSD comments discuss the concept of an additional alternative that combines their refinery project with an expanded reservoir, that option is considered a variation of the recycled water alternative that was eliminated from further study during project planning and is discussed above in Section 3.3.2 Alternatives Development.

Summary of Issues Raised by Commenters

- Additional alternatives should be considered to achieve broader statewide benefits.
- Evaluate a new Los Vaqueros Reservoir Expansion Project alternative that could be integrated with the new facilities being proposed in the BDCP and DHCCP.

These and related comments are also addressed in Master Response 1, Project Purpose and Description and Master Response 2, Relationship to Other Initiatives and Projects.

Response

CFBF comments that the alternatives as presented in the Draft EIS/EIR are artificially constrained by the CCWD Board Principles and the 2004 advisory vote and thus have limited statewide benefits. CFBF goes on to recommend consideration of a larger expansion (at least 500 TAF), combined with improved Delta conveyance and utilized for water supply, water quality and environmental benefits for CVP and SWP contractors as well as Bay Area water agencies. SCVWD and Zone 7 both suggest that the project should be coordinated with the new conveyance facilities being proposed in the BDCP and DHCCP, and SCVWD calls for consideration of a new integrated alternative.

As stated in Master Response 1, Project Purpose and Description (Vol. 4, Chapter 3, Section 3.1.4), while the Principles and the advisory vote recognize some policy limitations on the ultimate use of water stored in an expanded Los Vaqueros Reservoir, the limitations do not preclude operations that yield state and federal benefits. As part of the Federal Feasibility Study, Reclamation published the 2006 Initial Economic Evaluation for Plan Formulation Report which concluded that, at a concept level, there appeared to be federal interest in expansion of Los Vaqueros Reservoir and that the expansion could be implemented while meeting the CCWD Board Principles. That study looked at expansion to both 500 TAF and 275 TAF and determined that the 275-TAF reservoir project appeared to be more feasible and cost effective than the larger expansion. Based on recent engineering analysis, the existing 100-TAF dam can be raised to allow a 275-TAF reservoir using the existing dam structure (Draft EIS/EIR, Vol. 1, Chapter 2, pg. 2-3). Federal and state interests in the expansion project are summarized in the Executive Summary of the Draft EIS/EIR (Vol. 1, pg. ES-6).

The Los Vaqueros Reservoir Expansion Project is being coordinated with the BDCP and DHCCP (referred to collectively here as "BDCP") to the extent information is available. However, insufficient information is known about the capacity and operation of the potential new conveyance facilities to quantitatively analyze the effects of such conveyance on operation of the Los Vaqueros Reservoir Expansion alternatives, or to define and analyze a new integrated alternative. For example, the size of facilities and the parameters for operating the facilities are still not determined. The Final EIS/EIR analyzes a timing variant approach to implementation (see Vol. 4, Chapter 2, Section 2.4) where Alternative 4 is implemented to help meet immediate local needs while Reclamation and other potential partners continue to study the feasibility of Alternatives 1, 2, and 3 in the context of other Delta initiatives including specifically BDCP. As the BDCP progresses and new information on Delta conveyance becomes available, it will be considered in the federal feasibility process. Implementing Alternative 4 does not preclude implementing any of the other alternatives. For more information on this potential implementation sequence, see Section 2.4 (Vol. 4, Chapter 2). For more information on the relationship between the Los Vaqueros Reservoir Expansion Project and the BDCP, see Master Response 2, Relationship to Other Initiatives and Projects (Vol. 4, Chapter 3, Section 3.2.2).

3.3.4 Identification of Environmentally Superior Alternative and Overriding Public Considerations

Comment Summary

This section of this master response responds to all or part of the following comments:

L_EBRPD2-43 I_Graham-01 I_Pilkington-02

Summary of Issues Raised by Commenters

- The Draft EIS/EIR did not include identification of an environmentally superior alternative.
- Overriding public considerations for the action alternatives are not identified; only the No Action Alternative avoids significant adverse environmental impacts.

Response

EBRPD and Pilkington both commented that an environmentally superior alternative should be designated. CEQA Guidelines section 15126.6(e)(2) requires an EIR to identify an environmentally superior alternative from among the action alternatives, but the section does not specify at what point in the CEQA process such identification is required. CCWD has designated Alternative 4 as the environmentally superior alternative for the Final EIS/EIR, which is described in Chapter 2 of this Response to Comments document (see Section 2.5). The CCWD Board of Directors and other decision-makers will have this designation when considering approval of one of the project alternatives.

Even though an "environmentally superior" alternative is not identified in the Draft EIS/EIR, information on impacts and benefits are laid out in comparative tables and explained

comparatively in the text enabling the reader to understand the differences among the alternatives. The public has not been deprived of the opportunity to have meaningful input into the CEQA process because an alternative has not been designated as environmentally superior in the Draft EIS/EIR.

Graham states that overriding considerations are not included in the Draft EIS/EIR and that only the No Project/No Action Alternative avoids environmental impacts. CEQA requires decision-making bodies to make findings of overriding considerations when approving a project that has significant impacts that cannot be avoided or mitigated. All the action alternatives have significant impacts, most of which can be avoided or mitigated to less than significant levels. Each of the four action alternatives also has at least one significant impact that cannot be mitigated or avoided. When the CCWD Board considers approving one of the alternatives, it will also consider a Statement of Overriding Considerations pursuant to CEQA that balances the benefits of the project against the significant unavoidable impacts. The No Project/No Action Alternative would potentially avoid these significant unavoidable impacts, but would not meet any of the project objectives and might result in future actions that have impacts of their own.

3.4 Master Response 4: Approvals and Permits

3.4.1 Introduction

Overview

This master response addresses comments received regarding coordination with these state and local agencies and their respective permits, fees and approvals potentially needed to implement the Los Vaqueros Reservoir Expansion Project.

This master response is organized by the following subtopics:

- 3.4.2 State and Local Agency Permits
- 3.4.3 Local Agency Drainage Fee

Commenters

Commenters that addressed this topic include:

Federal Agencies

- None

State Agencies

- California Department of Transportation – S_Caltrans
- California DWR, Division of Safety of Dams – S_DSOD
- Central Valley Flood Protection Board – S_CVFPB

Local and Regional Agencies

- Contra Costa County, Flood Control and Water Conservation District – L_CCCFC
- Contra Costa County, Public Works Department – L_CCCPW
- Reclamation District 800 – L_RD800

Organizations

- None

Individuals

- None

Draft EIS/EIR Section Reference

The Draft EIS/EIR addresses this topic area in the following locations: Vol. 1, Chapter 3, Project Description, Section 3.7, Permits and Approvals Needed for Alternatives, pp. 3-89 through 3-93; Vol. 1, Section 4.5, Local Hydrology, Drainage and Groundwater; and Vol. 2, Section 4.9, Transportation and Circulation.

3.4.2 State and Local Agency Coordination and Permits

Comment Summary

This section of this master response responds to all of the following comments:

S_Caltrans-01	S_Caltrans-03	S_CVFPB-02	S_DSOD-01
L_CCCFC-04	L_CCCPW-10	L_RD800-01	L_RD800-07
L_RD800-08			

Summary of Issues Raised by Commenters

- Coordination with Caltrans regarding transportation and encroachment permits.
- Coordination with California Department of Water Resources, Division of Safety of Dams (DSOD) for review and approval of enlarged dam and modifications to dam appurtenances.
- Coordination with Central Valley Flood Protection Board for necessary permits prior to commencement of construction.
- The Draft EIS/EIR should discuss the need for a permit under Contra Costa County's 1010 Drainage Ordinance related to the construction of a temporary bridge across Kellogg Creek and pipelines across Kellogg Creek, Brushy Creek and other drainages.
- RD800 proposes that all activities related to the reservoir expansion that take place within the boundaries of RD800 would be subject to the terms of the 1994 agreement between CCWD and RD800, and that the agreement would be amended as appropriate.

Response

These comments identify potential permits or approvals that might be required for the project. Draft EIS/EIR Table 3-8 (Permits and Approvals Potentially needed for Implementation of the Los Vaqueros Reservoir Expansion Alternatives) in Chapter 3, Project Description (Vol. 1, pp. 3-92 through 3-93) lists federal, state, and local permits and regulatory approvals that are expected to be necessary for project implementation, including from Caltrans, Central Valley Flood Protection Board (formerly known as the State of California Reclamation Board), DSOD, and Contra Costa County. After selection of a project alternative and prior to commencement of construction, the need for any and all permits, including those listed in Table 3-8 and those identified by the commenting agencies, above, will be determined in coordination with those agencies.

Caltrans

The Draft EIS/EIR does not identify a need for improvements to state highways or improvements that would encroach into a Caltrans right-of-way as a result of project construction or operations, and no such improvements are anticipated. Alternative 4, in particular, would not require such a permit from Caltrans as all facility improvements would occur within the CCWD watershed under this alternative; there would be no new conveyance or power utility facilities needed outside of the watershed for Alternative 4.

In the unlikely event that any needed improvements to state highways and any related work in the State's right-of-way may be identified during project design, the Caltrans encroachment permit process will be followed. It is noted that the proposed Delta-Transfer Pipeline would be constructed adjacent to (but not within) portions of State Route 4 in the reach west of Old River to Bixler Road. The Caltrans transportation permit process will be followed if project work requires the movement of oversized or excessive load vehicles on state roadways.

DSOD

As discussed in Section 4.5, Local Drainage, Hydrology and Groundwater of the Draft EIS/EIR (Vol. 1, pp. 4.5-2 through 4.5-3), DSOD would be involved in various points in the design, plan review and construction process, including review and approval of construction documents for the enlarged dam (and appurtenances) and issuance of a certificate of approval to operate the dam prior to refilling of the Los Vaqueros Reservoir. Relevant project actions will be coordinated with DSOD throughout the design and approval process to obtain the appropriate approvals and permits.

Central Valley Flood Protection Board

As acknowledged in Section 4.5, Local Drainage, Hydrology and Groundwater of the Draft EIS/EIR (Vol. 1, pg. 4.5-5), "any project encroaching into rivers, waterways, and floodways within and adjacent to federal-and state-authorized flood control projects or within designated floodways must receive approval from the state Reclamation Board," now known as the Central Valley Flood Protection Board. Relevant project actions (e.g., Delta Intake and Pump Station under Alternatives 1 and 2) would be addressed in consultation with the Board. No permit from the Board is expected to be necessary for implementation of Alternative 4, since it does not involve construction activities along Old River or otherwise affect adjacent levees.

County Permits

Table 3-8 acknowledges that the proposed project may be subject to encroachment permits from Contra Costa and/or Alameda County(s) and cities or local jurisdictions. As discussed in the Draft EIS/EIR, Section 4.7, Land Use (Vol. 2, pg. 4.7-3), under Government Code Section 53091 et seq., CCWD's water storage and transmission facilities are exempt from local zoning and building ordinances. The project's need for a permit from Contra Costa County under County Ordinance 1010 (Drainage), (related to protection of watercourses, drainages and riparian vegetation) would be determined in consultation with CCCFC upon selection of a project alternative, and determination of the type and amount of drainages and vegetation to be affected. Protection of some resources that County Ordinance 1010 seeks to protect (watercourses, drainages and riparian vegetation) would be addressed through the acquisition of federal and state resource agency permits (Clean Water Act 404/401 permits; California Fish and Game Code Section 1601 permit; and a State Water Pollution and Prevention Plan, which are listed in Table 3-8).

Reclamation District 800

CCWD agrees that Los Vaqueros Reservoir Expansion Project activities within the boundaries of RD800 would be subject to the 1994 Agreement between CCWD and RD800, as it may be

amended, or a new agreement with RD800 that specifically addresses the project, as determined appropriate by the parties. CCWD proposes to meet with RD800 prior to initiating any reservoir expansion activities within RD800 boundaries.

3.4.3 Local Agency Drainage Fee

Comment Summary

This section of this master response responds to the following comment:

L_CCCFC-06

Summary of Issues Raised by Commenters

- The project site is located within Drainage Area 109 (DA 109) and the proposed reservoir and transfer facility expansions would require drainage fees.
- The Contra Costa County, Flood Control and Water Conservation District (CCCFC) will consider waiving the drainage area fee for the reservoir water surface, provided the project includes improvements and operational criteria that mitigate the downstream flood impacts.
- Fees from the previously constructed Interpretive Center and adjacent parking lot have not been paid and are due to the CCCFC.

Response

Per CCCFC Formed Drainage Area map, the proposed reservoir and transfer facility expansions are located within Contra Costa County's DA 109 (CCCFC, 2008). The applicability of drainage fees would be determined in consultation with CCCFC upon selection of a project alternative, including the determination of the type and amount of additional impervious surface, if any, that would result from project implementation. However, the reservoir—a water storage facility that also provides flood storage capacity for the Kellogg Creek watershed and flood control benefits for areas downstream of the reservoir—and, more specifically, the reservoir water surface, does not constitute an impervious surface – neither for the purposes of the EIS/EIR analysis nor for the purposes of the County's Drainage Fee Ordinance. Drainage area fees are collected when the property owners develop a parcel or increase runoff by adding to the impervious surface of the property; CCCFC then uses these fees to construct drainage improvements (CCCFC, 2003). Expansion of reservoir surface area would not constitute development of the parcel, nor would expansion of reservoir surface area increase runoff. The existing reservoir retains runoff from areas upstream from the dam which results in attenuated flows in Kellogg Creek by doing so (Draft EIS/EIR, Vol. 1, Section 4.5, pg. 4.5-29). The expanded reservoir would provide the same function at the same capacity as the existing dam (Draft EIS/EIR, Vol. 1, Section 4.5, pg. 4.5-29 and pg. 4.5-31).

The previously constructed Interpretive Center and adjacent parking lot are not part of the proposed project. CCWD did not pay fees for the Interpretive Center and parking lot because those facilities were found to be exempt under Flood Control Ordinance Number 94-75.

3.5 Master Response 5: Delta Hydrology and Aquatic Resources

3.5.1 Introduction

Overview

This master response addresses comments on the Delta hydrologic analysis conducted for the project, including comments on modeling assumptions, project benefits and project impacts.

Additional modeling analysis was performed for the Final EIS/EIR. This analysis is described in Section 5.3 and Appendix C of the Final EIS/EIR (Vol. 4). The additional modeling was performed to update the analysis presented in the Draft EIS/EIR so that it includes the changes in Delta operations associated with the OCAP BOs issued on December 15, 2008 and June 4, 2009. Additional modifications were made in updating the model analysis for the Final EIS/EIR in response to comments received on the Draft EIS/EIR. The responses to comments presented below provide clarifying information on the analysis performed for the Draft EIS/EIR, along with description of updates in the model analysis for the Final EIS/EIR. Conclusions regarding project effects are based on the updated modeling performed for the Final EIS/EIR.

Alternative 3 was found to have significant and unavoidable fisheries impacts in modeling analysis performed for the Draft EIS/EIR, as explained in Section 4.3, Delta Fisheries and Aquatic Resources, of that document (Vol. 1). As a result of this significant and unavoidable impact, Alternative 3 would not be recommended for approval and thus was not included in the updated modeling analysis performed for the Final EIS/EIR. For more information on the status of Alternative 3, see Section 2.2 in this volume.

This master response is organized by the following subtopics:

- 3.5.2 Modeling Assumptions
- 3.5.3 Assurances
- 3.5.4 Effects on Delta Hydrology and CVP/SWP Operations
- 3.5.5 Water Quality Effects
- 3.5.6 Fisheries/Aquatic Species Effects

Comments on climate change assumptions are addressed separately in Master Response 14 Climate Change (Vol. 4, Section 3.14); legal and technical questions on water rights are discussed in the individual responses to comments from the State Water Resources Control Board (S_SWRCB) and Delta Wetlands Project (O_DWP).

Commenters

Commenters that addressed this topic include:

Federal Agencies

- Environmental Protection Agency – F_EPA

State Agencies

- State Water Resources Control Board – S_SWRCB
- California Department of Fish and Game – S_DFG

Local and Regional Agencies

- Alameda County Water District – L_ACWD
- East Bay Regional Park District – L_EBRPD
- Reclamation District 800 – L_RD800
- Santa Clara Valley Water District – L_SCVWD
- Sacramento Regional County Sanitation District – L_SRCSD
- State Water Contractors –L_SWC

Organizations

- Delta Wetlands Project –O_DWP
- Planning and Conservation league –O_PCL

Individuals

- Betty Lu Graham –I_Graham
- Corin Pilkington –I_Pilkington
- Dick Quigley –I_Quigley1

Draft EIS/EIR Section Reference

The Draft EIS/EIR addresses this topic area in the following locations: Chapter 3, Project Description, Section 4.2, Delta Hydrology, Section 4.3, Delta Fisheries and Aquatic Resources and Appendix C, Delta Water Resources – Modeling Analysis.

3.5.2 Modeling Assumptions

Comment Summary

This section of this master response responds to all or part of the following comments:

F_EPA-01	S_SWRCB-02	S_SWRCB-07	S_SWRCB-09
L_ACWD-01	L_SCVWD-02	L_SRCSD-01	L_SRCSD-02
L_SCVWD-03	L_SWC-01	O_DWP-03	O_DWP-05
O_DWP-06	I_Pilkington-05	I_Quigley1-02	

Summary of Issues Raised by Commenters

A number of comments address the assumptions used in modeling the benefits and impacts of the Los Vaqueros Reservoir Expansion Project, suggesting additional or alternative assumptions or seeking more information on the assumptions. These comments can be organized into three

categories: 1) water operations, including where water comes from and how it moves through the system; 2) Old and Middle River reverse flows; and 3) projects included in the cumulative impact analysis. These comments are summarized in more detail in the sections below.

3.5.2.1 Water Operations

Summary of issues raised by commenters

- Identify sources of water supply, including when and how the particular sources would be used, impacts of acquiring the water supply and water right issues associated with the supplies.
- The operations model is inconsistent with Decision 1629 (SWRCB, 1994); all diversions should be limited by X2 and the impact of filling the expanded reservoir on X2 and other water quality parameters should be analyzed.
- Quantify the amount of water CCWD intends to divert through water transfers on an annual basis and assess the feasibility of acquiring this amount under current regulatory conditions.
- Clarify how Delta water surplus used in the model is quantified.
- Confirm that most of the water in Los Vaqueros Reservoir is from the CVP with only 5 to 7 percent from the local watershed.
- Use experienced Los Vaqueros and other Delta operators to help interpret the model results and translate monthly averages into daily operational implications.

Response

The modeling analysis performed for the Final EIS/EIR is presented in Chapter 5 and Appendix C of the Final EIS/EIR. Model assumptions are presented in updated Section 4.2, Delta Hydrology and Water Quality, and the updated Section 4.3, Delta Fisheries and Aquatic Resources, and in the updated Appendix C. The models used to evaluate the Los Vaqueros Reservoir Expansion Project for the Draft EIS/EIR are described in these sections. The modeling analysis for the Draft EIS/EIR is described in Appendix C3 of the Draft EIS/EIR. The models used to estimate the effects of the project alternatives are the best available tools for estimating the operations of the CVP and SWP and the Los Vaqueros Reservoir in the Sacramento-San Joaquin Delta. The modeling analyses for both the Draft EIS/EIR and the Final EIS/EIR evaluate and disclose the project effects on X2 and other water quality parameters.

The model results have been reviewed by staff in the CCWD Water Resources Group, CVP Central Valley Operations and the SWP Operations Planning Branch, which collectively have substantial expertise in water project operations in the Delta and Los Vaqueros Reservoir. The model limitations considered most important for this analysis were described in the Draft EIS/EIR, Section 4.2, pages 4.2-31 through 4.2-34. In each analysis that relied on model estimates of project operations, the results were reviewed by these experienced system operators with the model limitations in mind. The interpretation of model results in the analysis of potential impacts associated with the project alternatives included the results of this review by water system operators.

CCWD diverts water to storage in the existing Los Vaqueros Reservoir under SWRCB Decision 1629 (D1629), which includes terms and conditions for CCWD's Los Vaqueros water rights and also the Reclamation water rights associated with CCWD's CVP contract supply. These water rights are described in the individual responses to SWRCB comments (Vol. 4, Chapter 4, Section 4.2). The terms and conditions of D1629 were applied in the analysis of all alternatives under all circumstances.

The water rights associated with D1629 include a permit to divert Kellogg Creek flows to storage in Los Vaqueros Reservoir. The contribution to storage in Los Vaqueros Reservoir from the Kellogg Creek watershed is approximately 2 percent of CCWD's annual deliveries. The remainder of the stored water in Los Vaqueros Reservoir is diverted from the Delta under CCWD's CVP contract supply or CCWD's Los Vaqueros water right permit.

The water rights used for the project alternatives are described in the individual responses to SWRCB comments. In modeling performed for the Final EIS/EIR, for all project alternatives, the timing of the no fill and no diversion periods included in D1629 was modified to better coordinate water supply and fishery protection operations with CVP and SWP under the OCAP BOs, as described in the updated Section 4.2 (Vol. 4, Chapter 5). These modifications would require consultation with SWRCB, USFWS, NMFS and CDFG.

Decision 1641 of the SWRCB (D1641) imposes water quality objectives for the San Francisco Bay and Sacramento-San Joaquin Delta Estuary for the operation of the SWP and CVP, including requirements for the benefit of aquatic species on the location of X2, the 2 part per thousand isohaline (SWRCB, 1999). SWP and CVP operations to meet the X2 requirements are included in the CalSim II modeling for the Base Case and all alternatives. In addition, in CCWD's 1993 BO from the USFWS, as subsequently modified by letter agreements between CCWD, Reclamation and USFWS, the X2 restrictions imposed on filling Los Vaqueros Reservoir are more stringent than the D1641 X2 restrictions. These limitations were applied in the model simulations used for the analysis of all project alternatives in both the Draft EIS/EIR and Final EIS/EIR. Additionally, the direct delivery of water for Delta Supply Restoration in Alternative 1 and Environmental Water Supply in Alternative 2 was not allowed if X2 requirements were not met. The X2 restrictions on filling Los Vaqueros Reservoir were applied in the analysis of all alternatives under all circumstances.

Modeling performed for the Draft EIS/EIR did not include the precise OCAP BO terms because they were not available in the models used at that time, but the modeling in the Draft EIS/EIR did contain estimates of moderate and severe Old and Middle River (OMR) flow restrictions on exports in order to bracket the potential range of effects, as described in Appendix C3 of the Draft EIS/EIR. Several commenters on the Draft EIS/EIR have questioned the assumptions related to OMR restrictions, so these assumptions have been addressed separately in Response 3.5.2.2 below.

The physical source of water under the Existing and Future Without Project conditions or Alternatives 1, 2 and 4 would be diversions from the Delta, with the exception of the approximate 2 percent of annual deliveries that CCWD obtains as inflow to Los Vaqueros Reservoir from the

Kellogg Creek watershed; CCWD's water supply from Kellogg Creek would not change under any of the project alternatives. The remainder of water delivered to CCWD customers under the without project conditions and each of the with-project alternatives would either be surplus water in the Delta, which would not have previously been stored in any upstream reservoirs, or would otherwise be released from CVP reservoirs that are tributary to the Delta. The physical source of CVP deliveries to other project partners in Alternative 1 or Alternative 2 would either be surplus water in the Delta or releases from CVP reservoirs that are tributary to the Delta. The physical source of SWP deliveries to project partners in Alternative 1 or Alternative 2 would either be surplus water in the Delta or releases from SWP reservoirs that are tributary to the Delta.

In the Final EIS/EIR analysis, the diversions for Delta Supply Restoration in Alternative 1 and Dedicated Storage for Environmental Water in Alternative 2 are made only when surplus conditions occur in the Delta. These diversions would be either delivered directly to South Bay water agencies or refuges, or conveyed to storage in Los Vaqueros Reservoir for later delivery. The occurrence of surplus conditions in the Delta was determined by the CalSim II model, which evaluates hydrologic conditions and determines whether sufficient flow is present in the Delta to meet all flow and water quality standards required in D1641. If more flow is present than that required to meet the standards, surplus conditions are determined to exist. In the analysis performed for the Final EIS/EIR, the diversions for Delta Supply Restoration and Dedicated Storage for Environmental Water were not made when OMR flow requirements are controlling Delta export operations, as described in Response 3.5.2.2.

Assumptions on water rights for each of the alternatives are presented in the individual response to S_SWRCB-01.

Alternative 3 was found to have significant and unavoidable fisheries impacts in modeling analysis performed for the Draft EIS/EIR, as explained in Section 4.3 of that document (Vol. 1, Chapter 4). This alternative was considered as the Final EIS/EIR was prepared, but no improvement in environmental effects was expected with inclusion of the modified operations described above. Accordingly, Alternative 3 was not included in the updated modeling analysis performed for the Final EIS/EIR.

In the CalSim II modeling analysis, CCWD's water supply is met through a combination of CCWD's CVP contract supply diversions, diversions under CCWD's Los Vaqueros water right permit, and, when these supplies are insufficient to meet CCWD demand, through water transfers. This modeling analysis is consistent with CCWD's Future Water Supply Plan, which anticipates that water transfers plus demand management will be used to meet water supply shortfalls. While CCWD's Future Water Supply Plan also anticipates that demand management can be used to partially make up for a water supply shortfall, the modeling analysis for the Draft EIS/EIR and Final EIS/EIR did not assume such rationing would occur in the CCWD service area. This was done intentionally so that the environmental effects of a maximum level of potential CCWD diversions were evaluated in the model analysis.

The CCWD water transfers assumed in this analysis are not caused by the project alternatives; the modeling analysis shows that Alternatives 1, 2 and 4 each reduce the need for such transfers. In

the Draft EIS/EIR modeling, which did not include the updated analysis of the effects of the new OCAP BOs on CVP water supply, the average amount of such water transfers required by CCWD in any single year was estimated to be approximately 3 TAF under Existing Conditions, and approximately 14 TAF under Future Without Project conditions. In the Draft EIS/EIR analysis, the project alternatives reduced the need for transfer water by approximately 20 to 30 percent. In modeling performed for the Final EIS/EIR, which includes an updated analysis of operations of the CVP and SWP under the OCAP BOs, the average amount of this type of water transfer required by CCWD was estimated to be approximately 5 TAF under Existing Conditions, and approximately 18 TAF in the Future Without Project condition. In the Final EIS/EIR analysis, the project alternatives reduced the need for transfer water by approximately 10 percent to 25 percent. The reduction in CCWD water supply available under the CVP contract in the updated modeling for the Final EIS/EIR, as compared to that from the Draft EIS/EIR, reflects the updated analysis of the OCAP BOs in the Final EIS/EIR modeling, which results in decreased CVP water supply conditions for all CVP customers. Alternative 4 shows the most potential to reduce the CCWD need for transfer water, because it provides the most additional storage capacity for CCWD customers.

CCWD has a long-term transfer agreement with East Contra Costa Irrigation District (ECCID) for an annual transfer of approximately 8 to 12 TAF. Under CCWD's Future Water Supply Plan, additional water supply transfers could be obtained from other willing sellers in years when a water supply shortfall exists that is larger than the amount available from ECCID. CCWD's existing plans also call for rationing of up to 15 percent of demand, which would reduce demand by 25 TAF. While this combination of supply and demand management is sufficient to meet currently anticipated needs, regulatory approval of additional water transfers in the future is not certain. This uncertainty highlights the need to develop projects that help ensure water supply reliability for CCWD, such as the Los Vaqueros Reservoir Expansion Project.

3.5.2.2 Modeling Assumptions Related to Old and Middle River Reverse Flows

Summary of issues raised by commenters

- It is unclear why CCWD pumping is not included in the estimation of net flow in OMR in the modeling performed for the Draft EIS/EIR.
- The modeling analysis performed for the Draft EIS/EIR used methods to estimate net OMR flow developed by DWR and USGS; an improved method developed by Paul Hutton of MWD should be used instead.
- Increased diversions at CCWD's Old River and AIP intakes could impact the ability of the SWP and CVP to export water from the south Delta; these potential impacts are not properly evaluated in the Draft EIS/EIR.
- The analysis should be updated to include the USFWS OCAP BO and the NMFS OCAP BO.
- Water supply reliability benefits to South Bay water agencies may be overestimated in the Draft EIS/EIR.

Response

The modeling performed for the Draft EIS/EIR was developed and substantially completed prior to the issuance of the USFWS OCAP BO (December 2008) and the NMFS OCAP BO (June 2009), so it used a bracketing approach to estimate moderate and severe flow requirements in OMR based on interim measures that are similar to the final OCAP BO requirements. In the Draft EIS/EIR modeling, it was assumed that diversions at Los Vaqueros Reservoir intakes would not influence the restrictions on water exports at the SWP and CVP pumping plants in the south Delta. The modeling and assumptions used in the Draft EIS/EIR are described in Section 4.2.2 (pages 4.2-31 through 4.2-34) and in Appendices C2 and C3 of the Draft EIS/EIR. The application of OMR flow restrictions in the Draft EIS/EIR modeling is described in Appendix C3, pages C3-2 through C3-7.

Updated modeling has been performed for the Final EIS/EIR to incorporate updated modeling of the effects of OMR flow regulations from the USFWS OCAP BO and the NMFS OCAP BO, along with the other requirements of these BOs, as described in the updated Section 4.2, updated Section 4.3 (Vol. 4, Chapter 5, Section 5.3) and updated Appendix C (Vol. 4). The results of this updated modeling are also presented in these sections.

In comments on the Draft EIS/EIR, State Water Contractors (SWC) provided a method for calculating OMR net flow that was developed by Metropolitan Water District of Southern California (MWD). The MWD method for calculating OMR net flow explicitly accounts for CCWD's diversions at Old River. Modeling performed for the Final EIS/EIR used the method developed by MWD to estimate OMR net flow, with a modification so that it includes diversions at both the CCWD Old River and AIP intakes. Consequently, in the modeling performed for the Final EIS/EIR, all diversions from the CCWD Old River and AIP intakes were included in the calculated value of OMR flow that is used to limit CVP and SWP exports under the OCAP BOs. This update was included in the analysis of Alternatives 1, 2 and 4.

Although the MWD method was used, it should be noted that the predictive capability of the method is weak within the regulatory range of flows (OMR < 5,000 cfs) when compared to field measurements and that CCWD diversions do not have a discernable effect on the field measurements of OMR flow under nearly all conditions. Nonetheless, this method was chosen for use because it does specifically include CCWD's diversions in the estimation of OMR flow, which ensures that the effects of changes in CCWD operations will be included in the analysis of potential impacts of the project alternatives. This ensures that the potential effects on CVP and SWP water supply are completely captured, that environmental impacts are not understated and that estimated water supply benefits of Alternatives 1, 2 and 4 are not overstated.

To further avoid impacts to CVP or SWP exports in modeling performed for the Final EIS/EIR, diversions for Delta Supply Restoration or Dry Year Water Supply benefits for South Bay water agencies under Alternative 1 would not be allowed if OMR flow requirements were limiting CVP and SWP exports from the Delta. Similarly, in modeling for the Final EIS/EIR, diversions for Dedicated Storage of Environmental Water in Alternative 2 were not allowed if OMR flow requirements were controlling Delta exports.

Modifications to CCWD operations have been incorporated in the Final EIS/EIR modeling to improve coordination of water supply operations in the Delta under the regulatory environment imposed by the OCAP BOs on CVP and SWP. Even with this improved operational coordination, the updated assumptions on calculation of OMR net flow described above result in reduced water supply reliability benefits for South Bay water agencies in Alternatives 1 and 2 in the modeling analysis performed for the Final EIS/EIR, compared to the benefits of those alternatives as estimated in the Draft EIS/EIR. The modeling analysis for Alternative 4 indicates that inclusion of the improved operational coordination and the updated assumptions on calculation of OMR net flow results in a similar level of benefit for this alternative as estimated in the Draft EIS/EIR.

3.5.2.3 Modeling Assumptions Related to Cumulative Projects

Summary of issues raised by commenters

- Discuss whether ongoing/future Sacramento Regional County Sanitation District (SRCSD) effluent discharge to the Sacramento River should be included in the cumulative analysis.
- The Final EIS/EIR should include a discussion of the sensitivity of project benefits to changes in Delta conveyance, Delta habitat, and Delta operations requirements.

Response

The analysis of potential cumulative impacts related to water supply and water quality was performed quantitatively based upon modeling of the California water system, including the Delta. The intent of this analysis is to determine for each project alternative whether its addition would create or contribute to adverse environmental impacts. Other projects have been included in the computer modeling where sufficient information on those projects and their operations exists. The CalSim II model was used to simulate all project alternative conditions for the Los Vaqueros Reservoir Expansion Project.

In cases where model analysis of other proposed projects has not been developed or is not available, it is not possible to perform the quantitative computer modeling analysis of such projects at a sufficient level of accuracy to make the analysis meaningful. In such cases, qualitative analysis has been used to determine whether the impacts of the other project are likely to combine with the impacts of the Los Vaqueros Reservoir Expansion Project.

The hydrodynamic and operational effects of the SRCSD increased rate of discharge were included in the EIS/EIR modeling and analysis. Water quality impacts of potential increases in SRCSD's pollutant load to the system were not modeled, as both the ongoing litigation regarding the Sacramento Regional Wastewater Treatment Plant 2020 Master Plan EIR and SRCSD’s pending National Pollution Discharge Elimination System permit from the Regional Water Quality Control Board are expected to ensure that SRCSD’s future discharges will not have adverse impacts on Delta water quality.

The sensitivity to changes in Delta operation of benefits and potential impacts of the project alternatives is evaluated in the updated modeling performed for the Final EIS/EIR, in which Alternatives 1, 2 and 4 are analyzed with the updated modeling of the effects of the terms of the

OCAP BOs. The updated analysis shows that the benefits of Alternatives 1 and 2 are somewhat sensitive to changes in Delta operations. The benefits of Alternative 4 are less sensitive to these changes. The impact analyses for Alternatives 1, 2 and 4 indicate that no changes to the conclusions reached in the Draft EIS/EIR result from the changes in Delta operations. See the updated Section 4.2 and updated Section 4.3 (Vol. 4, Chapter 5, Section 5.3) for more information on benefits and impacts analysis in the Final EIS/EIR. For discussion of the BDCP and DHCCP, and the Delta Wetlands Project, see Master Response 2, Section 3.2.2.

3.5.3 Assurances

Comment Summary

This section of this master response responds to all or part of the following comments:

F_EPA-01 S_SWRCB-02 O_PCL-02

Summary of Issues Raised by Commenters

Some commenters express the concern that assurances are needed so that the benefits identified for the project alternatives would in fact be realized upon implementation. This master response discusses the assurance mechanisms proposed as part of the project. Specific issues raised by the commenters are as follows:

- There are no safeguards described in the Draft EIS/EIR to prevent both the expanded Los Vaqueros system and the CVP/SWP systems from operating at full capacity; the Final EIS/EIR should include an analysis of the impacts of both systems operating at full capacity.
- The project should include assurance mechanisms to guarantee that environmental and fishery benefits result from implementation of the project in a timely manner.
- Increased diversions would occur and are not analyzed.

Response

The analysis of the Los Vaqueros Reservoir Expansion Project performed for both the Draft and Final EIS/EIR provides that in Alternatives 1 and 2, water supply deliveries wheeled through the Los Vaqueros Reservoir facilities would be accompanied by a reduction in exports at the CVP and/or SWP facilities. This is a project feature for these two alternatives. If one of the project alternatives that includes Environmental Water Management, including this type of wheeling operation, is selected for construction, agreements between all parties involved in the operation will be executed to ensure this project feature is implemented. In Alternative 4, in which CCWD diversion capacity is not increased over the Existing Conditions, the CCWD, CVP and SWP systems are assumed to operate concurrently at full capacity, subject to all applicable regulatory constraints. All impacts associated with this assumption are analyzed and disclosed Sections 4.2 and 4.3 of the Draft EIS/EIR and in the updated Sections 4.2 and 4.3 of the Final EIS/EIR (Vol. 4, Chapter 5, Section 5.3).

3.5.4 Impacts on Delta Hydrology and CVP/SWP Operations

Comment Summary

This section of this master response responds to all or part of the following comments:

L_ACWD-02	L_ACWD-03	L_EBRPD2-17	L_RD800-02
L_RD800-05	L_SCVWD-02	L_SCVWD-04	L_SCVWD-05
L_SWC-01			

Summary of Issues Raised by Commenters

A number of commenters request clarification of the Delta hydrology analysis, or additional analysis of potential impacts of the Los Vaqueros Reservoir Expansion Project on operations of the SWP and CVP, including specific impacts on South Bay Aqueduct operations and Del Valle Reservoir operations. Other comments request more specific information on the operations of the proposed project to aid in understanding the analysis of potential impacts on other Delta diverters, including impacts on water levels in the Delta. Specific issues raised by the commenters are as follows:

- The EIS/EIR should evaluate the potential impacts to SWP and CVP operations including daily, monthly and annual delivery capacities for project and non-project (i.e., transfer) supplies for SBA agencies.
- The potential for impacts to CVP and SWP deliveries while OMR flow regulations are controlling Delta exports is not fully captured in the analysis of annual averages of delivered water.
- The EIS/EIR should address effects of the Los Vaqueros Reservoir Expansion Project on operation of Del Valle Reservoir.
- The EIS/EIR analysis of impacts on other water users appears to be limited to CVP and SWP exports and does not include in-Delta users; additional information should be provided including total annual diversions from Old River and AIP pump stations, timing of diversions at these pump stations throughout the year, and maximum flow rates at these pump stations under current and future conditions.
- The water level decrease associated with Alternative 3 could lead to devastating results for a farmer if the decrease occurred in the middle of a watering cycle and disrupted the operability of the siphon.

Response

Analysis of Delta hydrology was performed using the CalSim II and DSM2 models, as described in Section 4.2 and Appendix C of the Draft EIS/EIR. Model accuracy and limitations, including model time step issues, are also discussed in Section 4.2 of the Draft EIS/EIR. The alternatives considered for the Los Vaqueros Reservoir Expansion Project were designed to be compatible with existing operation of the CVP and SWP. Updated assumptions used in modeling for the Final EIS/EIR are described in Chapter 5 and above in Section 3.5.2, including updated assumptions related to OMR flow requirements. Alternative 1 would provide a similar or enhanced level of CVP and SWP water supply to participating South Bay water agencies, relative to the level of delivery in the Existing and

Future Without Project conditions. Alternatives 2 and 4 would not affect the total level of CVP and SWP delivery to South Bay water agencies. The delivery of water from other sources, including transfers and exchanges to receive banked groundwater, would not be affected by these alternatives.

Comments received on the Draft EIS/EIR questioned the comparison of annual averages of water deliveries in the analysis of potential impacts on other Delta water users under the OMR requirements. Monthly averages of export pumping are presented in updated Appendix C4 (Vol. 4) for all alternatives. In addition, the operational coordination that is included in the Final EIS/EIR analysis is designed to avoid potential conflicts under the OMR restrictions. The operational coordination is described in Response 3.5.2.2 above, and in the updated Section 4.2, set forth in Section 5.3 herein.

Another comment received on the Draft EIS/EIR inquired about changes in the reported level of deliveries to CVP and SWP customers for the alternatives analyzed, specifically about the values reported in Tables 4.2-9 through 4.2-14. As may be seen in these tables, the model results for annual exports by CVP and SWP vary between alternatives, and between different hydrologic year types. The variation can be positive or negative, and is generally within 0.5% of the without project condition. These small variations are considered to be within the level of accuracy of the CalSim II model, which is discussed in the updated Section 4.2, set forth in Section 5.3 herein, and in updated Appendix C2 (Vol. 4).

No changes would be required for the operation of Lake Del Valle under any of the project alternatives. Lake Del Valle is a reservoir that is connected to the South Bay Aqueduct (SBA) water supply system. It is used by the SWP to store water temporarily prior to delivery to the SWP customers on the SBA, which improves the ability of the SWP to coordinate the timing of diversions from the Delta with the timing of deliveries to SBA agencies. In addition, Lake Del Valle is used to capture local precipitation in its watershed for water supply. Lake Del Valle is also operated and managed for recreational purposes. Changes in the operation of Lake Del Valle that would cause changes in the volume of water stored in the reservoir could affect some or all of these existing operations.

Alternatives 1 and 2 provide a method of delivering SWP water to the SBA system, and additional storage in Los Vaqueros Reservoir from which to make those deliveries, but would not rely on use of Lake Del Valle. These alternatives would add the benefits of additional storage to the SBA system, but would not cause changes to the current use of Lake Del Valle. Alternative 4 does not have any potential to affect Lake Del Valle operation because it would not rely on the SBA system. See Master Response 11, Recreation, for additional discussion of recreation at Lake Del Valle.

Average annual diversions at CCWD intakes are presented in Table 4.2-3 of the Final EIS/EIR (Vol. 4, Chapter 5, Section 5.3). These diversions include pumping at Rock Slough, Old River and AIP intakes. Tables C4-6 and C4-12 were added to the updated Appendix C4 to show month by month pumping at all CCWD intakes. The maximum capacity of each intake is shown in Table 3-3 of the Draft EIS/EIR (Vol. 1, Chapter 3, pg. 3-21).

The effects of the project alternatives on Delta water levels were evaluated to assess possible effects on Delta agricultural, residential or recreational interests. The results of these analyses were presented in Section 4.2 and Appendix C of the Draft EIS/EIR. This analysis was performed again for the updated Final EIS/EIR modeling, the results are presented in the updated Section 4.2 (Vol. 4, Chapter 5, Section 5.3), and in the updated Appendix C (Vol. 4). The water level effects of the project alternatives that were estimated at the CCWD Old River Intake are representative of the effects that would be expected at RD800 agricultural siphons. Based on this analysis and on field investigations for the current diversions, adverse effects to water levels are not expected under Alternatives 1, 2 or 4.

One comment (L_RD800-05) asked about operational impacts of Alternative 3 on Delta water levels. Alternative 3 was found to have significant and unavoidable fisheries impacts in the analysis performed for the Draft EIS/EIR, as explained in Section 4.3 of that document (Vol. 1). This alternative was not included in the updated modeling analysis performed for this Final EIS/EIR (see Section 2.2 herein).

3.5.5 Water Quality Impacts

Comment Summary

This section of this master response responds to all or part of the following comments:

L_ACWD-04 L_RD800-03 L_RD800-04 L_SRCSD-03
I_Graham-09

Summary of Issues Raised by Commenters

- The EIS/EIR should include analysis of impacts to water quality in the SBA under varying hydrological conditions and should assess whether any such water quality impacts would affect the treatability of the water.
- Clarify the water quality analysis represented by Table 4.2-16 in the Draft EIS/EIR which does not appear to support the conclusion in the text.
- The EIS/EIR should address impacts to water quality at the tidal bays and interior lake circulation waters in Discovery Bay that are extremely sensitive to water quality degradation.
- The Draft EIS/EIR does not discuss potential source water quality impacts due to the proximity of the Old River and proposed new Delta intakes to the Discovery Bay wastewater outfall.
- The Draft EIS/EIR does not examine the potential impacts of the project alternatives on dissolved oxygen (DO) concentrations, water temperature or other important Delta water quality parameters.

Response

Significant changes to Delta water quality would not result from any of the project alternatives, as described in the updated Section 4.2 of the Final EIS/EIR (Vol. 4, Chapter 5, Section 5.3). The

model analysis of Delta water quality for these project alternatives is described in the updated Section 4.2 (Vol. 4, Chapter 5) and in Appendix C6 (Vol. 4). The methodology used for analysis of effects on water quality, presented in Appendix C6 of both the Draft and Final EIS/EIR, takes the issues of model limitations into account. Table 4.2-16 of the Final EIS/EIR (Vol.4, Chapter 5, Section 5.3) presents the total number of potential standards violations in the 16 year period modeled for Delta water quality analysis, for the Existing and Future Without Project conditions and for Alternatives 1, 2 and 4. A statistical analysis is performed to compare the results, as explained in the updated Section 4.2 (Vol. 4, Chapter 5, Section 5.3).

Potential standards violations were found in all model runs, including the Existing Condition and Future Without Project runs, as shown in Table 4.2-16. The apparent violations in the model results are referred to as "potential violations" because they occur in the model but would not occur in actual operations. The Delta is operated to meet water quality standards and would continue being operated to meet standards if the Los Vaqueros Reservoir Expansion Project is built.

The apparent standards violations under the Existing and Future Without Project conditions are caused solely by modeling inadequacies which are discussed in updated Section 4.2 (Vol. 4, Chapter 5, Section 5.3) and in the updated Appendix C6 (Vol. 4) of the Final EIS/EIR. Apparent violations in the project alternatives modeling could also be caused by model inadequacies, as in the Existing and Future Without Project conditions, or could reflect the impacts of proposed project operations. A statistical analysis (chi-squared test) was performed to compare the occurrence of potential violations in the Existing and Future Without Project conditions and in each of the project alternatives. This analysis shows that the potential violations do not occur more often in Alternatives 1, 2 or 4 than they do in the Existing and Future Without Project conditions.

Based on the analysis of potential water quality impacts, and on field experience with existing diversions, impacts to Delta water quality are not anticipated under Alternatives 1, 2 or 4. Impacts to water levels are not anticipated under any of these alternatives as described above in Response 3.5.4. Tidal bays and interior lakes within Discovery Bay are influenced by the tidal fluctuation of water levels in the Delta, and rely on tidally driven circulation to maintain water quality within the ponds and bays. Based on the finding that water levels in Delta channels would not be impacted by the project alternatives, adverse impacts on water quality or circulation in tidal bays or ponds at Discovery Bay are not expected to result from Alternatives 1, 2 or 4.

The influence of the Discovery Bay wastewater outfall on water quality at the CCWD Old River Intake is not expected to change under any of the alternatives. The outfall is a regulated discharge to surface water, and Delta water users including CCWD maintain levels of treatment for drinking water deliveries that are adequate to ensure protection of public health. Further, this outfall was improved to ensure protection of drinking water quality for Delta water users by adding an extension and diffuser in a project completed in 2006. Consequently, it no longer affects local diversions because the discharge is diluted and now located farther away from the diversion point.

In Alternatives 1 and 2, significant changes to the water quality delivered to South Bay water agency treatment plants are not expected, since the same characteristics of Delta water will be present in water delivered from the Los Vaqueros Reservoir as would be found in water pumped at CVP or SWP facilities. Minor improvements in delivered salinity levels to South Bay water agencies may be possible at times of year when Delta salinity is highest. Alternative 4 will not influence the quality of water delivered to South Bay water agencies.

No changes to dissolved oxygen (DO) concentrations or water temperature are expected in the Delta resulting from implementing Alternatives 1, 2 or 4 because the changes to flows and water quality caused by these alternatives do not have the potential to affect DO concentration or temperature in any significant way. The DO and temperature of surface waters can be influenced by discharges of waters with significant biochemical oxygen demand, or waters of different temperature than the surface water, respectively. Changes in circulation of surface water that would result in significant stagnation of water without mixing or contact with the atmosphere could also influence changes in DO concentrations. However, diversions from surface waters such as those considered in the project alternatives are unlikely to affect the DO concentration of the surface water; the project alternatives do not include discharges to the Delta, and the project alternatives would not cause stagnation in Delta channels. Other than possible local effects caused by discharges, Delta water temperatures are governed by regional weather, and are not influenced by water diversions considered under any of the project alternatives. Circulation of Delta water would not be changed such that changes in DO concentrations in the area of the project would be expected.

3.5.6 Impacts to Aquatic Species

Comment Summary

This section of this master response responds to all or part of the following comments:

S_DFG-08	S_SWRCB-03	L_ACWD-05	L_SWC-01
L_SWC-02	O_PCL-06	I_Graham-08	L_SCVWD-01

Summary of Issues Raised by Commenters

- Evaluate potential impacts to the Alameda Creek watershed through introducing a new source of supply to the SBA, which may introduce invasive and/or predatory species in the watershed.
- Increased diversions (i.e. - diversions above 1994 MOU between CDFG and CCWD baseline) to fill the proposed expanded reservoir and/or increase the number of uses must be quantified as part of water availability analysis for California Endangered Species Act (CESA) and would cause significant impacts to listed fish species that should be analyzed and mitigated.
- The Draft EIS/EIR indicates direct and cumulative impacts to fisheries due to increased water diversion from the Delta for Alternative 3. It is unclear why Alternative 2 would not have the same effect.

- Evaluate flow regimes (quantity, direction, temperature, turbidity and other water quality parameters) needed at different locations and times of year to restore native aquatic species that spend all or part of their lives in Bay Delta Estuary.
- The fish screens at Old River and AIP are not benign and may not result in protecting fish and reducing fish losses.
- The fishery benefits are likely over-stated; the analysis for the expansion project should be revised to include the effect of CCWD diversions on fish movement (CCWD contribution to OMR), and should utilize screen efficiencies in the particle tracking modeling so particles are not removed from the system once screened at CCWD diversions.
- Given the level of protection in the OCAP BOs, it appears that the additional fishery benefits from the Los Vaqueros Expansion Project would be minimal.

Response

The modeling performed for the EIS/EIR considers the effects of CCWD's diversions on flows and fisheries. Hydrodynamic modeling includes the effects of CCWD's diversions on river flows, including OMR flows. Modeling for the Final EIS/EIR also includes CCWD effects on OMR flows in the CalSim II modeling. Several analyses were performed using the results of this modeling analysis to estimate the potential effects of the project analysis on Delta fisheries, as described in the updated Section 4.3 (Vol. 4, Chapter 5, Section 5.3).

The analyses for potential fishery effects include use of a particle tracking model (PTM), which incorporates the effects of flow in the Delta into an analysis of fishery effects. One limitation of PTM is that it does not allow for consideration of fish screens. The presence of positive barrier fish screens at CCWD intakes was accounted for during post-processing. To improve the analysis, and in response to comments received on the Draft EIS/EIR, the fate of particles that avoid entrainment due to the positive barrier fish screens was estimated in an additional post-processing step. The estimated fate of particles not entrained at CCWD intakes is included in the PTM results presented in the Final EIS/EIR in the updated Section 4.3. The methodology for these post-process steps is presented in the updated Appendix C7 (Vol. 4).

The model used for the Final EIS/EIR includes updated modeling of CVP and SWP operations under the OCAP BOs, as described in the updated Section 4.2 (Vol. 4, Chapter 5) and in the updated Appendix C (Vol. 4). These updates allowed model analysis of Los Vaqueros Reservoir Expansion Project alternatives to include the best available estimates of the effects of the CVP and SWP operations required under the OCAP BOs. As described in Sub-section 3.5.2.2, these updates include the OMR net flow requirements.

Alternative 3 was found to have significant and unavoidable fisheries impacts in modeling analysis performed for the Draft EIS/EIR, as explained in Section 4.3 of that document. This alternative was not included in the updated modeling analysis performed for the Final EIS/EIR (see Section 2.2 herein).

Alternatives 1, 2 and 4 were not found to have similar impacts to Alternative 3, because the operations of Alternatives 1, 2 and 4 are substantially different from Alternative 3. While Alternative 3, as evaluated in the Draft EIS/EIR, resulted in more net pumping in the Delta during

sensitive fishery periods, Alternatives 1 and 2 include fishery benefits associated with shifting the existing level of pumping to intakes with improved fish screens, and changing the timing of Delta pumping to avoid the most sensitive fish periods. Alternative 4 includes fishery benefits associated with shifting CCWD diversions out of dryer years, and providing storage for implementation of the no diversion period more reliably in extended droughts. The efficiency of the fish screens employed at CCWD intakes is accounted for in this analysis, as described in updated Appendix C (Vol. 4).

The effects of filling and operating Alternatives 1, 2 and 4 on Delta fisheries and aquatic resources are presented in the updated Section 4.3 (Vol. 4, Chapter 5). The effects of initial post-construction filling of the expanded reservoir are covered in the model analysis performed because the long-term hydrology includes several drought periods in which the reservoir is drained through water quality and water supply operations, followed by wetter years in which the reservoir is refilled. The effects of initial filling after construction would not be substantially different from these events, in which the reservoir is filled over several years based on water quality and water supply limitations.

Upon selection of a project alternative, CCWD and any project partners will proceed to obtain necessary permits for construction and authorization. This will include updates to federal biological opinions and authorization under state CESA requirements, as needed.

None of the alternatives would introduce a new physical source of supply to the SBA. Los Vaqueros Reservoir is filled with Delta water and with a small amount of water from Kellogg Creek, which is tributary to the Delta near the town of Discovery Bay. CCWD controls introduction of aquatic organisms into Los Vaqueros Reservoir by limiting the types of bait that can be used for fishing within the reservoir, and by not allowing private boats to be used on the reservoir. Thus the aquatic species present in Los Vaqueros Reservoir are the same as those present in Old River. Water users that receive Delta water, including the potential project partners on the SBA system, would not experience a change in the biological constituents of their Delta water supply if they were to receive deliveries from Los Vaqueros Reservoir instead of, or in addition to, their existing sources of Delta water supply. Any purposes for which Delta water is appropriate, including storage in Del Valle Reservoir or releases to Alameda Creek, would be appropriate uses for water delivered from Los Vaqueros Reservoir. In addition, the facilities proposed in Alternatives 1 and 2 to deliver water from the Los Vaqueros Reservoir to the SBA could be isolated from the SBA while control measures were implemented if invasive aquatic species were detected. Alternative 4 does not include deliveries to the SBA and so has no potential to introduce species into the SBA supply.

The proposed project alternatives are not intended to address Delta-wide flow regimes and water quality parameters, nor were they intended to effect full restoration of the Delta fisheries. The BDCP and DHCCP are attempting to develop a comprehensive plan for Delta operation that will be protective of fish in the Delta. This process includes evaluation of Delta flow regimes and water quality parameters that will best support the Delta fishery. CCWD is participating as a stakeholder in those efforts.

The operations that produce fishery benefits in Alternatives 1 and 2 of the Los Vaqueros Reservoir Expansion Project employ similar types of Delta fishery protection mechanisms as are required by the OCAP BOs. Specifically, both the alternatives for reservoir expansion and the OCAP BOs target reduced water supply exports at the most sensitive periods for the Delta fishery as a means of protecting fish species. Alternatives 1 and 2 were designed to benefit the Delta fishery while also maintaining water supply reliability, through improved screening of intakes and use of storage to modify timing of diversions. The OCAP BOs are intended solely to improve protection of Delta fisheries, and do not provide a mechanism to maintain water supply at former levels of export. Alternatives 1 and 2 were not designed as a complete solution to the Delta fishery decline, but were intended to provide regional water supply reliability for participating South Bay water agencies by making their Delta water exports safer for fish in the Delta, and therefore less susceptible to regulatory shutdown. Alternative 4 provides water supply reliability for CCWD and contributes to better overall fishery protection. In response to a comment received on the Draft EIS/EIR, and to avoid potentially overstating the benefits for the Delta fisheries, the entrainment indices based on salvage data were calculated for the Final EIS/EIR using total loss estimates for Chinook salmon at the CVP and SWP salvage facilities, rather than only using the proportion of loss due to exports for South Bay water agencies. The methodology for the entrainment indices based on salvage data is presented in updated Appendix C7 (Vol. 4).

The Water Supply Reliability and Dry Year Water Supply benefits for project partners in Alternative 1, and the Dedicated Storage for Environmental Water benefit in Alternative 2, and the Water Supply Reliability benefit in Alternative 4 were all designed prior to the completion of the OCAP BO requirements. The updated modeling performed for the Final EIS/EIR includes the terms of the OCAP BOs, and specifically limits the diversion of water for these purposes when OMR flow requirements are limiting exports at the CVP and SWP facilities, as described above in Response 3.5.2.2. The result of this update is that some of the water supply reliability and fishery benefits from the Los Vaqueros Reservoir Expansion Project in Alternatives 1 and 2 are reduced, while the benefits in Alternative 4 are not substantially changed. The updated model estimates of these benefits are presented in the updated Section 4.2 and 4.3 (Vol. 4, Chapter 5, Section 5.3).

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3.6 Master Response 6: Local Hydrology and Drainage

3.6.1 Introduction

Overview

This section responds to comments suggesting potential impacts of the proposed project on hydrology, water quality, and drainage/flooding, predominantly associated with Kellogg Creek. Master Response 5, Delta Hydrology and Water Quality, addresses comments concerning hydrology, water quality, and water supply associated with the Delta, as well as SWP and CVP facilities.

This master response is organized by the following subtopics:

- 3.6.2 Stormflow and Flood Risk Along Kellogg Creek
- 3.6.3 Flood Management Procedures, Dam Safety Maps and Plans
- 3.6.4 Flow Regime Changes on Kellogg Creek
- 3.6.5 Mitigation Along Kellogg Creek for Impacts of Increased Reservoir Inundation

Commenters

Commenters that addressed this topic include:

Federal Agencies

- None

State Agencies

- None

Local and Regional Agencies

- Contra Costa County, Flood Control and Water Conservation District – L_CCCFC
- Contra Costa County, Public Works Department – L_CCCPW
- Reclamation District 800 – L_RD800

Organizations

- None

Individuals

- Steven Navarro – I_Navarro

Draft EIS/EIR Section Reference

The Draft EIS/EIR addresses this topic area in the following locations: Vol. 1, Executive Summary, pp. ES-42 through ES-45; Vol. 1, Section 3.0, Project Description; Vol. 1, Section 4.5, Local Hydrology, Drainage, and Groundwater.

3.6.2 Stormflow and Flood Risk along Kellogg Creek

Comment Summary

This section of this master response responds to all or part of the following comments:

L_CCCFC-01	L_CCCFC-02	L_CCCFC-07	L_CCCFC-08
L_CCCFC-09	L_CCCPW-01	L_CCCPW-03	L_CCCPW-07
L_CCCPW-08	L_CCCPW-09	L_CCCPW-11	L_CCCPW-12
L_CCCPW-13			

Summary of Issues Raised by Commenters

- Discuss flow capacity of Kellogg Creek.
- Quantify flood control effects or benefits of the existing Los Vaqueros Reservoir and of the project alternatives on Kellogg Creek and the communities of Byron and Discovery Bay.
- Discuss management of storm flows on Kellogg Creek and potential for downstream flooding below the reservoir during project construction. Provide flood protection during the multi-year construction period.
- Address long-term flood impacts and mitigate to a 200-year level of flood protection, potentially including improvements to Kellogg Creek. Quantify volume of storage needed to contain 200-year flood flows along Kellogg Creek.

Response

Several comments ask about the flow capacity of Kellogg Creek. The flow capacity of Kellogg Creek and the flood control benefits of the existing reservoir are discussed in Section 4.5, Local Hydrology, Drainage, and Groundwater, of the Draft EIS/EIR (Vol. 1, Section 4.5, pp. 4.5-29 through 4.5-30).

The existing Los Vaqueros Reservoir is built on Kellogg Creek. As discussed on page 4.5-8 of the Draft EIS/EIR (Vol. 1, Section 4.5), Kellogg Creek drains an area of approximately 18,220 acres, of which about 10,528 acres are located upstream of the existing Los Vaqueros dam. Downstream of the reservoir, Kellogg Creek parallels Walnut Boulevard; east of Vasco Road the creek becomes channelized and eventually enters Discovery Bay and Indian Slough in the vicinity of the communities of Byron and Discovery Bay. The Draft EIS/EIR describes the streams that are tributary to the creek upstream and downstream of the dam. All streams in the watershed are intermittent. As stated in the Draft EIS/EIR, between the mouth of Kellogg Creek and the State Route 4 bridge, below the Los Vaqueros watershed, the channel capacity ranges from 200 to 1,100 cubic feet per second (cfs).

Other comments ask about flooding along Kellogg Creek under existing and with-project conditions. The 100-year and 500-year flood potentials for lower Kellogg Creek are shown on Figure 4.5-2 (Draft EIS/EIR, Section 4.5, pg. 4.5-10), which shows the portion of the floodplain located in the Kellogg Creek watershed downstream of the existing reservoir, as revised to reflect the flood protection offered by the existing reservoir. As discussed in Impact 4.5.5 on page 4.5-29

(Draft EIS/EIR, Vol. 1, Section 4.5), the existing reservoir acts to decrease the magnitude of the 100-year peak flow event in Kellogg Creek below the dam by having the capacity to contain flood flows and by controlling the release of water downstream. Even at full operating capacity, the reservoir has been designed to have sufficient freeboard to attenuate flood flows to approximately 150 cfs in lower Kellogg Creek, which has reduced flood potential downstream of the dam compared to conditions that existed before the reservoir was constructed.

During a 100-year peak flow flood event, releases from the existing reservoir may reach up to 150 cfs. Below the existing reservoir, other tributaries contribute additional flood flows, such that total 100-year flood flows at the mouth of Kellogg Creek would be approximately 1,650 cfs. Most of the below-reservoir flood flow contributions occur along the reach of Kellogg Creek located downstream of the existing reservoir and upstream of Camino Diablo Road. At Camino Diablo Road (which crosses the creek just upstream of the flat areas between Byron and Brentwood), the existing 100-year peak flood event would produce approximately 1,560 cfs of flow along Kellogg Creek, including 150 cfs contributed from the reservoir outfall, and an additional 1,410 cfs contributed by other tributaries. An additional 90 cfs would be contributed by tributaries downstream of Camino Diablo Road, resulting in the total discharge of 1,650 cfs at the mouth of Kellogg Creek. Under the existing conditions, during the 100-year peak flow event, localized flooding can occur below Camino Diablo Road, along a five-mile stretch of Kellogg Creek between State Route 4 and the mouth of the creek, since the channel capacity in this reach ranges from 200 to 1,100 cfs (CCWD and Reclamation, 1993).

Under the project, with implementation of any of the alternatives, these peak flow conditions and downstream flooding potential during 100-year and 500-year storms (as well as 10-year and 50-year storms) would remain unchanged. As discussed on page 4.5-29 under Alternative 1 (Draft EIS/EIR, Vol. 1, Section 4.5), by design the proposed expanded reservoir would carry forward the same level of flood control benefits afforded by the existing reservoir, in order to handle the maximum flood without overtopping. DSOD sets the design criteria for dam facilities that include conservative measures to insure that the facility is prepared to handle peak storm flows at times when the reservoir is full. DSOD will review the specific design for the expanded Los Vaqueros Reservoir. CCWD can meet with County staff during the dam design review process to brief them on the DSOD requirements and design compliance. Reservoir expansion under any of the four expansion alternatives would not result in additional downstream flooding and would not increase flood risks to people or structures within the 100-year flood hazard area (as mapped by the Federal Emergency Management Agency [FEMA]) under normal or flood conditions. In addition, construction of proposed facilities as well as reservoir expansion under any of the proposed alternatives would not significantly impede or redirect flood flows, in comparison to existing conditions. Reservoir expansion would not require submission of a Letter of Map Revision to FEMA since it would not alter the floodplain downstream of the reservoir. Comments on the potential for flooding in the highly unlikely event of an emergency reservoir drawdown or outright dam failure are addressed in Response 3.6.3 below.

Two comments suggest that the Draft EIS/EIR should evaluate flood impacts and mitigate to a 200-year level of flood protection, based on recent changes to state requirements for flood

protection. Several pieces of legislation were recently passed in California that require counties, cities, and flood control agencies to implement 200-year flood protection for urban and urbanizing areas within the Central Valley and the Delta. However, as discussed above, none of the proposed alternatives would result in increased flood releases into Kellogg Creek during operation and none of the proposed alternatives would result in a significant change in flooding along lower Kellogg Creek. By design, the expanded reservoir would continue to provide flood control benefits equivalent to existing conditions. Therefore, additional analysis is not warranted and mitigation for a 200-year flood level is not required.

One comment (L_CCCFC-01) requests that a discussion regarding the flood capacity of Kellogg Creek be added to the list of Issues of Known Controversy and Issues to be Resolved in the Draft EIS/EIR (Vol. 1, Executive Summary, pg. ES-31). However, since the expanded reservoir would continue to provide flood control benefits equivalent to existing conditions as discussed above, this is not an outstanding issue to be resolved.

Kellogg Creek Peak Flow Management During Project Construction

Two commenters request additional discussion of flood flow management during reservoir construction, and request additional mitigation during that period.

As discussed on page 4.5-14 of the Draft EIS/EIR (Vol. 1, Section 4.5), under Alternatives 1, 2 and 3 (275-TAF reservoir expansion), the existing reservoir would be completely drained to allow for dam modification. Under Alternative 4 (160-TAF reservoir expansion), the reservoir water level would be reduced by approximately 60 TAF, retaining up to 40 TAF of water in storage. Drawdown of the reservoir to facilitate construction would not result in the release of additional flows to Kellogg Creek; the stored water would be drawn down over a period of six months to a year for use by CCWD and discharged through the existing CCWD water system facilities. (Draft EIS/EIR, Vol. 1, Chapter 3, pg. 3-53.) Therefore, drawdown of the reservoir under any of the project alternatives would not increase peak flow conditions in Kellogg Creek.

For construction of the necessary dam modifications required for reservoir expansion under Alternatives 1, 2 and 3, a cofferdam would be installed upstream of the dam, around the dam construction work area, to retain storm flows entering the reservoir basin from Kellogg Creek and its tributaries upstream of the dam and thereby keep the dam construction work area dry (Draft EIS/EIR, Vol. 1, Chapter 3, pg. 3-53.) This coffer dam would be designed to retain anticipated creek runoff in the reservoir basin during the construction period. Average annual inflow to the existing reservoir from Kellogg Creek is estimated to be 1.3 TAF per year, while the maximum anticipated inflow would be 8.5 TAF (Draft EIS/EIR, Vol. 1, Section 4.5, pg. 4.5-8). During the construction period, storm flows would collect within the reservoir basin behind the coffer dam and be released incrementally through a bypass around the dam area and discharged downstream into Kellogg Creek. Storm flows would be managed during construction so as not to increase the downstream flood potential. Under Alternative 4, which does not require installation of a coffer dam, some water would remain in the reservoir during the construction period. Water levels will be drawn down within the reservoir to allow for construction of the modified dam and DSOD will set interim water level requirements within the reservoir such that adequate capacity

is maintained within the reservoir to capture and store storm flows without releases downstream. Reservoir construction will not increase flood potential downstream of the reservoir.

3.6.3 Flood Management Procedures, Dam Safety Maps and Plans

Comment Summary

This section of this master response responds to all or part of the following comments:

L_CCCFC-03	L_CCCFC-10	L_CCCFC-11	L_CCCPW-09
L_CCCPW-14	L_CCCPW-15	L_RD800-06	I_Navarro-03

Summary of Issues Raised by Commenters

- Discuss potential flooding hazards during an emergency reservoir water release.
- Prepare and submit revised inundation map and revised emergency evacuation plan prior to circulation of the Final EIS/EIR.
- Revise the emergency evacuation plan in consultation with the Contra Costa County Office of Emergency Services.
- Letter of Map Revision should be submitted to FEMA and FEMA flood insurance rate maps should be updated.

Response

Two commenters ask about the inundation area during emergency dam releases and associated flooding along Kellogg Creek that could occur. As discussed on page 4.5-11 of the Draft EIS/EIR (Vol. 1, Section 4.5), a portion of the area located downstream of the existing Los Vaqueros Dam is currently subject to inundation in the event that emergency releases are required to reduce water levels in the reservoir because of unsafe conditions at the dam. For the existing reservoir, emergency releases could reach up to 1,140 cfs. For Alternatives 1, 2, and 3, emergency releases could reach up to 2,430 cfs, with up to 1,500 cfs being released to Kellogg Creek, and the remainder through installed facilities via the proposed Transfer Station, to the Delta, or to Bethany Reservoir (Draft EIS/EIR, Vol. 1, Section 3.0, pg. 3-49). Floodwaters would be anticipated to spread outward to a depth of about 6 inches until an obstruction was reached, along a zone that could extend about 2,000 feet laterally from the creek channel. Under Alternative 4, which would involve expansion of the existing reservoir to 160 TAF, maximum emergency releases to Kellogg Creek would be greater than existing conditions, but at 1,430 cfs, would be less than the maximum emergency releases associated with Alternatives 1, 2, and 3. See Draft EIS/EIR, Vol. 1, sections 4.5, page 4.5-36. As discussed on page 4.5-33 of the Draft EIS/EIR (Vol. 1, Section 4.5), because the risk of occurrence for an event requiring an emergency release would remain extremely remote, the expanded reservoir would not result in a substantially greater impact due to flooding from emergency releases, as compared to the existing reservoir.

Regarding dam failure, the proposed dam under any alternative would be conservatively designed, would meet earthquake and flooding standards as adopted by the Department of Water Resources, Division of Safety of Dams, and would be subject to continuous monitoring and inspections, as explained in the Draft EIS/EIR (Vol. 1, Section 4.5, pp. 4.5-32 through 4.5-33). The existing dam has caused no failure concerns in its ten years of existence. Though the potential extent of the inundation area resulting from the failure of a larger dam would be greater than under existing conditions, because the risk of failure would remain extremely remote, this impact is Less-than-Significant.

Several comments request that a revised inundation map be submitted and that emergency evacuation procedures be updated. As discussed in the Draft EIS/EIR, California Government Code Section 8589.5 requires that an inundation map be prepared and submitted to the California Emergency Management Agency (Cal EMA), and requires development of a downstream evacuation plan for areas within the potential inundation area of a reservoir. For an expanded Los Vaqueros Reservoir, the required inundation map and evacuation plan would be completed in compliance with relevant state and federal regulations. CCWD would submit a copy of the map to Cal EMA during the project design process (Vol. 1, Section 4.5, pg. 4.5-33). The evacuation plan would be prepared in coordination with the Contra Costa County Office of Emergency Services.

Several comments request further information regarding the potential for the inundation of downstream communities in the event of emergency release or reservoir breach, potential mitigation for such releases, and concerns regarding dam failure. In the event of an unsafe condition at the dam requiring or resulting in the emergency release of water from the proposed expanded reservoir, the emergency procedures contained in the evacuation plan would be implemented. As discussed in the Draft EIS/EIR (Vol. 1, Section 4.5, pg. 4.5-33), although the potential inundation area would increase, the potential risk of dam failure and inundation along downstream areas, including Byron, Discovery Bay, and areas surrounding Brentwood, would not increase as a result of implementing the proposed reservoir expansion project. The risk of potential dam failure for both the existing reservoir and the proposed project alternatives is very remote.

As noted in Response 3.6.2 above, reservoir expansion would not require submission of a Letter of Map Revision to FEMA since it would not alter the floodplain downstream of the reservoir.

3.6.4 Flow Regime Changes on Kellogg Creek

Comment Summary

This section of this master response responds to all or part of the following comments:

L_CCCFC-13 L_CCCPW-02

Summary of Issues Raised by Commenters

- Chronic hydromorphological effects of changed flow regimes, including sedimentation in Kellogg Creek, associated with the proposed project must be addressed.

Response

Two comments suggest potential hydromorphologic changes along Kellogg Creek should be analyzed. As discussed on page 4.5-8 of the Draft EIS/EIR (Vol. 1, Section 4.5), flow downstream of the existing reservoir is currently managed so as to release up to 5 cfs of water on a daily basis to meet downstream water rights. The existing reservoir is also managed in a manner that provides flood control benefits along Kellogg Creek downstream of the existing reservoir, as discussed above. These operations would not change as a result of implementing Alternatives 1, 2, 3, or 4. As a result, no change in hydrologic or hydromorphologic conditions would occur under the proposed project in comparison to existing conditions.

3.6.5 Mitigation Along Kellogg Creek for Impacts of Increased Reservoir Inundation

This section of this master response responds to all or part of the following comments:

L_CCCFC-12 L_CCCPW-16

Summary of Issues Raised by Commenters

- Raising the reservoir water surface will impact wetland, floodplain and riparian habitat; these impacts should be mitigated along Kellogg Creek.

Response

Installation of the enlarged reservoir, under each project alternative, would result in the loss of existing floodplain areas around the reservoir that would be permanently inundated with reservoir expansion. However, as discussed above, the design of the expanded reservoir under each alternative would include sufficient freeboard to maintain existing levels of storm flow retention and peak flood flow reduction along Kellogg Creek, downstream of the dam. Therefore, no additional flood control mitigation to offset loss of floodplains is warranted.

With regard to habitat in the reservoir inundation area, the EIS/EIR's study area includes the maximum inundation area plus an approximate 1,000-foot buffer around the expanded reservoir (Draft EIS/EIR, Vol. 2, Section 4.6, pg. 4.6-1). Biological surveys show that 5.76 acres of wetland habitats, including riparian habitat, would be within the footprint of the reservoir inundation and dam under Alternatives 1, 2 and 3, and that 3.48 acres of wetland habitats (but no riparian habitat acreage) would be within that footprint under Alternative 4 (Draft EIS/EIR, Vol. 2, Section 4.6, pp. 4.6-93 through 4.6-94, Table 4.6-10). The Draft EIS/EIR accounts for acreages of both habitat previously created or restored as mitigation for the original reservoir and habitat that existed or developed naturally within the inundation areas. "Floodplain" is not a habitat distinct from the wetland and riparian habitats described above. Mitigation Measures 4.6.2a and 4.6.2b would reduce these wetland/riparian impacts to a less than significant level, in part by restoring and creating wetland habitats (Draft EIS/EIR, Vol. 2, Section 4.6, pp. 4.6-102 through 4.6-103). Whether some of this mitigation would occur along Kellogg Creek would be determined by CCWD following identification of sites by a qualified biologist in coordination with California Department of Fish

and Game, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and/or the Regional Water Quality Control Board under Mitigation Measure 4.6.2b. For existing mitigation lands, Mitigation Measures 4.6.4a and 4.6.4b would reduce impacts to a less than significant level. (Draft EIS/EIR, Vol. 2, Section 4.6, pp. 4.6-112 through 4.6-115). The Draft EIS/EIR also includes a discussion of impacts to wetlands and stockponds previously created as mitigation (see Fig. 4.6-15, Vol. 2, Section 4.6, pp. 4.6-67 through 4.6-68, 4.6-107 through 4.6-112).

3.7 Master Response 7: Agriculture

3.7.1 Introduction

Overview

This master response addresses issues raised by two commenters regarding setting information, analysis of impacts to agricultural operations and lands, and additional mitigation measures, including siting alternatives.

This master response is organized by the following subtopics:

- 3.7.2 Setting Information
- 3.7.3 Impact Analysis
- 3.7.4 Mitigation of Agricultural Land Impacts

Commenters

Commenters that addressed this topic include:

Federal Agencies

- None

State Agencies

- California Department of Conservation – S_DOC

Local and Regional Agencies

- East Bay Regional Park District – L_EBRPD

Organizations

- None

Individuals

- None

Draft EIS/EIR Section Reference

The Draft EIS/EIR addresses this topic area in the following locations: Vol. 1, Executive Summary, ES-73 to ES-75; Vol. 2, Section 4.8, Agriculture; Vol. 2, Section 4.17, Socioeconomics; Vol. 2, Section 4.20, Growth-Inducing Effects; and Vol. 3, Appendices E-1 and E-2, Alameda County and Contra Costa County Policies Relevant to Project Analysis, respectively.

3.7.2 Setting Information

Comment Summary

This section of this master response responds to all or part of the following comments:

S_DOC-01 S_DOC-02

Summary of Issues Raised by Commenters

- Provide additional information on the agricultural setting of the project including information about the extent and location of farmlands as well as data about current and past agricultural use in the project area.

Response

The California Department of Conservation's (DOC) comments suggest that "any subsequent" CEQA document for the project include certain information. The EIS/EIR for the Los Vaqueros Reservoir Expansion Project is, however, a project-level environmental analysis, and it is unknown whether any subsequent CEQA document would be prepared. Therefore, all of DOC's comments will be addressed in the context of the Final EIS/EIR.

The Draft EIS/EIR uses the agricultural land categories recommended by the DOC's Important Farmland Inventory System and Farmland Mapping and Monitoring Program (FMMP) to evaluate impacts to Important Farmland. Important Farmland, defined as prime Farmland, Farmland of Statewide Importance, and Unique Farmland is identified in Section 4.8 (Vol. 2). As the Draft EIS/EIR states, most of the designated agricultural land in and near the project area is used for grazing rather than crops. Livestock grazing activities occur on upland areas where the topography is relatively steep and local surface or groundwater supplies are limited. Irrigated farming, used for orchards and field crops, occurs on properties to the north and east of Los Vaqueros Reservoir, and on low-lying properties in southeast Contra Costa County. The locations and extents of various types of farmland in and adjacent to the project area are provided in the Draft EIS/EIR in Figure 4.8-1 (Vol. 2, Section 4.8, pg. 4.8-6) and pages 4.8-5 and 4.8-8 (Vol. 2, Section 4.8). The approximate 22 acres of agricultural land that would be converted from agricultural to project-related land use under Alternatives 1 and 2 have recently been and are currently used for farming of various field crops as shown by the aerial photograph used for Draft EIS/EIR in Figure 3-19 Intake Facilities (Vol. 2, Chapter 3, pg. 3-56). Field crops that may be affected include alfalfa, wheat and oat hay, and orchard grasses that are typically used for horse and cattle feed (Mangini, 2009). Crop yields and gross revenue per acre for field crops in 2008 ranged from $422.28/acre for wheat/oat hay (based upon $153.00 gross revenue per ton with 2.76 tons yield per acre) to $1,061.54/acre for alfalfa (based upon $184.00 gross revenue per ton with 5.71 tons yield per acre) (Contra Costa County, 2008).

Section 4.17, Socioeconomic Effects, in the Draft EIS/EIR (Vol. 2) provides information concerning crop yields, farm revenues and agricultural jobs. Temporary or long-term reduction in agricultural resources has the potential to affect Contra Costa County's economy. As indicated in

Table 4.17-1 (Draft EIS/EIR, Vol. 2, Section 4.17, pg. 4.17-2), the County has an estimated 2,796 agricultural jobs and $1.34 billion in agricultural output, measured in 2008 dollars. The Contra Costa County Department of Agriculture 2007 Crop Report indicates that of the County's 482,000 total acres, the Land in Farms is 126,228 acres and Harvested Cropland is 26,018 Acres (Contra Costa County, 2008). As analyzed in Section 4.8 in the Draft EIS/EIR and shown in Table 4.8-5 (Vol. 2, Section 4.8, pg. 4.8-13), temporary construction activities associated with Alternatives 1 and 2 (under Power Option 1, and including the 22 acres that would also be permanently converted) could affect up to 171 acres of Important Farmland; Alternative 3 would temporarily affect up to 149 acres; and Alternative 4 would have no effect on Important Farmland. Project construction, including pipeline and transmission line construction under Alternatives 1 through 3, would occur over a period of up to 3 years, so only a portion of the acreage that would be temporarily affected would be out of agricultural production in any one year. Permanent impacts would total up to approximately 22 acres of Important Farmland (for Alternatives 1 and 2 and none for Alternatives 3 and 4 listed by project component in Table 4.8-6 in the Draft EIS/EIR (Vol. 2, Section 4.8, pg. 4.8-19). The maximum affected acreage represents less than 0.01 percent of the existing total 262,000 acres of farmland in Contra Costa County in 2006 and approximately 0.05 percent of the 41,619 acres of Important Farmland in the County (Draft EIS/EIR, Vol.2, Section 4.8, pg. 4.8-8). At $1,062 per acre, the permanent loss of 22 acres of field crops would represent $23,364 in lost agricultural output per year, or 0.00174 percent of the County's $1.34 billion in agricultural output, all measured in 2008 dollars. There would be no impact to Important Farmland under Alternative 4 as project components would not include power facilities and major pipelines occurring outside the watershed.

3.7.3 Impact Analysis

Comment Summary

This section of this master response responds to all or part of the following comments:

S_DOC-03 S_DOC-05 L_EBRPD2-39

Summary of Issues Raised by Commenters

- Provide information about project impacts on agricultural land, including the type, amount and location of farmland conversion resulting from project implementation and growth-inducing impacts; impacts on current and future agricultural operations from land-use conflicts, increases in land values and taxes, and vandalism; and cumulative impacts.
- Provide information and discussion about Williamson Act Lands, including a map detailing the location of agricultural preserves, contracts that may be terminated in order to implement the project, and proposed uses of portions of the planning area that would continue to be under contract.
- The Draft EIS/EIR does not acknowledge a conflict between implementing the project and existing Williamson Act contracts.

Response

The Draft EIS/EIR quantifies and evaluates project impacts related to construction and operation (temporary, permanent and cumulative effects) upon Important Farmland, lands under Williamson Act contract, and nearby agricultural activities.

Type, amount and location of farmland conversion (direct and indirect). The discussion under Impact 4.8.2 in the Draft EIS/EIR (Vol. 2, Section 4.8, pp. 4.8-17 through 4.8-22) addresses the potential conversion of Important Farmland associated with the project alternatives. Table 4.8-6 (Draft EIS/EIR, Vol. 2, Section 4.8, pg. 4.8-18) presents the acres of Important Farmland that would be permanently affected by each project component, which provides an indication of the location of this farmland, under each alternative. Permanent impacts from the proposed project are shown by alternative in Table 4.8-7 (Draft EIS/EIR, Vol. 2, Section 4.8, pg. 4.8-19). Impacts related to the permanent conversion under Alternatives 3 and 4 are Less-than-Significant because these alternatives would cause no loss of Important Farmland.

DOC also refers to farmland conversion resulting indirectly from a project's inducement of growth. Section 4.20, Growth-Inducing Effects, in the Draft EIS/EIR analyzes the potential for the four project alternatives to remove water supply reliability as an obstacle to growth and, therefore, to indirectly induce growth (Draft EIS/EIR, Vol. 2, Section 4.20, pp. 4.20-2 through 4.20-12). As the Draft EIS/EIR explains, CCWD and each of the other water agencies that might benefit from the project have prepared long-term water supply plans. These plans have been designed to provide adequate water supply to meet the needs of both existing customers and the growth that has been planned in each water agency service area by the respective city and county land use agencies (Draft EIS/EIR, Vol. 2, pg. 4.20-12). It is not known whether or to what extent these agencies would in fact use the improved water supply reliability afforded by the project (particularly Alternative 1) to support future growth. It is also unknown, if improved water supply reliability did encourage a land use agency to allow future growth, whether or to what extent such growth would occur on Important Farmland. As noted in the Draft EIS/EIR's analysis of cumulative impacts (discussed below), the expectation is that Contra Costa and Alameda Counties will continue to lose agricultural land to urban and other non-agricultural uses. Given the recent fallowing of farmland throughout the state as a result of water shortages, however, it is also possible that land use agencies would decide to use increased water supply reliability to avoid fallowing more Important Farmland.

Temporary impacts on current and future agricultural operations from land-use conflicts, etc. DOC's reference to impacts on current and future agricultural operations from "land-use conflicts, increases in land values and taxes, vandalism, etc." appears to refer to off-site agricultural impacts. None of the project alternatives would cause conflicts with nearby agricultural uses, increase property values or property taxes, or increase public access to agricultural lands so as to encourage vandalism. As stated in the Draft EIS/EIR, the proposed project "would not result in further urbanization of the area, make agricultural land vulnerable to the pressures of urbanization, or lead to the additional loss of farmland to nonagricultural uses," (Draft EIS/EIR, Vol. 2, pp. 4.8-24 through 4.8-25). Rather, continued protection of the

Los Vaqueros Watershed would be compatible with nearby farming operations and would prevent encroachment of urban uses along Vasco Road.

During construction, however, Alternatives 1, 2 and 3 would temporarily affect agricultural uses within the project footprint. Temporary construction impacts to agricultural operations (Draft EIS/EIR, Vol. 2, Section 4.8, Impact 4.8.1, pp. 4.8-10 through 4.8-16) would occur on approximately 171 acres of Important Farmland for Alternatives 1 and 2, and 149 acres for Alternative 3. There would be no impact to Important Farmland under Alternative 4. Table 4.8-4 in the Draft EIS/EIR (Vol. 2, Section 4.8, pg. 4.8-11) presents the acreages of Important Farmland temporarily affected by each project component under Alternatives 1, 2, and 3, including approximately 22 acres for the new Delta Intake and Pump Station; 109 acres for the Delta-Transfer Pipeline; and 39 acres for Power Supply Option 1: Western Only. Project construction activities would cause short-term disturbance of agricultural lands during all or part of the approximate 3-year construction period. Construction activities could cause direct disturbance to agricultural lands or indirectly disrupt agricultural lands and activities – disruption of irrigation systems, soil compaction affecting drainage, dewatering, and dust generation. Measures to minimize temporary impacts are provided in Section 4.8, page 4.8-21 (Draft EIS/EIR, Vol. 2).

Cumulative Impacts. Impact 4.8.4 (Draft EIS/EIR, Vol. 2, Section 4.8, pp. 4.8-24 through 4.8-26) addresses cumulative impacts related to conversion of Important Farmland. The analysis provides an assessment of each of the alternatives in conjunction with other project area development. The Draft EIS/EIR describes Impact 4.8.4 as Significant and Unavoidable with respect to cumulative agricultural effects for Alternatives 1 and 2, and Less-than-Significant for Alternatives 3 and 4. However, with the proposed revisions to Mitigation Measure 4.8.2b (presented in the following subsection), which provides for acquisition of agricultural conservation easements, along with implementation of Mitigation Measures 4.8.1 and 4.8.2a, the cumulative farmland impacts associated with Alternatives 1 and 2 would be reduced to Less-than-Significant.

Similarly, related to the project's effect on farmland, Socioeconomic Impact 4.17.5 evaluates cumulative effects on Contra Costa County's economy as a result of conversion of agricultural land uses (Vol. 2, Section 4.17, Impact 4.17.5, pg. 4.17-20). The Draft EIS/EIR describes this impact as being Significant and Unavoidable for Alternatives 1 or 2, and Less-than-Significant for Alternatives 3 or 4 (Vol. 2, Section 4.17, Impact 4.17.5, pg. 4.17-20). However, with implementation of revised Mitigation Measure 4.8.2b along with Mitigation Measures 4.8.1 and 4.8.2a, this impact would be reduced to Less-than-Significant with Mitigation for Alternatives 1 and 2.

See Section 3.7.4, Mitigation of Agricultural Land Impact, below, for further discussion of mitigation measures and proposed revisions to Mitigation Measure 4.8.2b to address cumulative farmland and socioeconomic impacts.

Williamson Act Lands. Impacts related to Williamson Act lands are quantified by alternative and by project component under Impact 4.8.3 (Draft EIS/EIR, Vol. 2, Section 4.8, pp. 4.8-22 through 4.8-24). Figure 4.8-2 (Draft EIS/EIR, Vol. 2, Section 4.8, pg. 4.8-7) shows a map

detailing the location of Williamson Act contract lands in the project area. After construction of project facilities is complete, there would be no change from existing land uses on affected properties that are under Williamson Act contract. The majority of the land under contract that would be affected is grazing land that would be returned to grazing land. One Williamson Act property, currently used to grow crops (located along Vasco Road within the footprint of the Transfer-Bethany Pipeline alignment), would be returned to cropland. No orchards would be affected.

The discussion of impacts to Williamson Act land (Draft EIS/EIR, Vol. 2, Section 4.8, Impact 4.8.3, pp. 4.8-22 through 4.8-24) indicates that under Alternatives 1 and 2, project components and pipeline alignments would be located on or next to nine properties under Williamson Act contracts. Under Alternative 3, up to four Williamson Act properties would be affected. No Williamson Act lands would be affected by Alternative 4 Impacts to Williamson Act contract lands would be temporary impacts related to construction. The temporarily impacted lands would be restored upon completion of the project.

The Delta-Transfer Pipeline would be installed within the existing utility corridor used for CCWD's existing Old River Pipeline; therefore, although the pipeline would pass through two Williamson Act properties, no new utility corridor would be needed.

A temporary construction easement on an adjacent parcel currently under Williamson Act contract would be required. The expanded Transfer Facility would be located near one property currently under Williamson Act contract, but would not require a construction easement on that property because transfer facility construction would not extend beyond existing CCWD property lines.

The Transfer-LV Pipeline would pass by two parcels currently under Williamson Act contract and a temporary construction easement would be required.

Although the route of the Transfer-Bethany Pipeline has been planned to minimize contact with Williamson Act parcels, construction of the Transfer-Bethany Pipeline would require temporary construction easements (up to 300 feet wide) and permanent right-of-way (up to 85 feet wide) through acquisition of fee title or easement interests in active or fallowed agricultural lands that are currently under Williamson Act contract. It is possible that fee title purchase of land would be required. Whether through acquisition of fee title or permanent easement, the land would remain as grazing land. As discussed in the Draft EIS/EIR, the Williamson Act anticipates such acquisitions. As noted in the Draft EIS/EIR, proposed water facility uses on Williamson Act contracted lands are considered compatible under Section 51238.1 of the Government Code, which governs compatibility of Williamson Act preserves with nonagricultural uses (Vol. 2, Section 4.8, pp. 4.8-23 through 4.8-24).

Construction of electrical facilities under Power Option 1 (Western Only) would pass near one property under Williamson Act contract within existing utility easements. Under Power Option 2, the upgrade of an existing Pacific Gas and Electric (PG&E) transmission line would pass south of one property under Williamson Act contract, also within an existing utility easement. Therefore,

there would be no Williamson Act impacts resulting from either power option. Both PG&E and Western confirmed that they routinely allow agricultural activities like grazing and farming practices including row crops, rice fields and also orchards within their power transmission rights-of-way (Fisi, 2009; Young, 2009).

The proposed project components (pipelines) to be constructed on Williamson Act contracted lands would not change the overall agricultural character or use of the proposed project site and would not promote the future conversion of agricultural lands to urban or other uses or hinder the overall preservation of agricultural uses on lands in the surrounding area. Therefore, the project would not conflict with Contra Costa County policies regarding the commitment to preserve agricultural uses in the project area, and would not involve other changes in the existing environment that could result in the conversion of farmland to non-agricultural use.

As noted above, construction of project pipelines would require acquisition of temporary construction easements, and operation of the Transfer-Bethany Pipeline would require acquisition of permanent easement interests in grazing land or fallowed agricultural lands that are under Williamson Act contract and along the pipeline and power line alignments. Because construction and operation of underground water pipelines and overhead power lines is considered compatible with Williamson Act contracts (Oborne, 2009), and because the acquisition of easements for maintenance of such pipelines and overhead power lines would not interfere with the current agricultural uses of the overlying or underlying land, the impacts of Alternatives 1, 2 and 3 on Williamson Act lands would be Less-than-Significant. Alternative 4 would cause no impact.

3.7.4 Mitigation of Agricultural Land Impacts

Comment Summary

This section of this master response responds to all or part of the following comments:

S_DOC-04 L_EBRPD2-38

Summary of Issues Raised by Commenters

- The Draft EIS/EIR does not consider siting alternatives that could reduce or eliminate the Project's permanent impacts to farmland.
- Mitigation measures for the loss of agricultural land do not help reduce the severity of the project's impact upon agricultural land, and omit discussion of other feasible measures (in addition to conservation easements) such as siting alternatives.
- Provide additional information on mitigation for the project including information about conservation easements, mitigation fees and other conservation tools.

Response

One comment (L_EBRPD2-38) asks whether the need to convert agricultural land for the new Delta intake under Alternatives 1 and 2 could be avoided through project modifications such as consideration and selection of a non-agricultural site for the new Delta Intake and Pump Station.

Alternative sites for the new Delta intake were evaluated as part of the project development process, which is discussed in Chapter 3, Project Description: Description of Project Alternatives, in the Draft EIS/EIR (Vol. 1). Section 3.2.4, Facilities Siting, discusses the alternatives screening process related to the evaluation of nine potential intake locations on Old and Middle Rivers in the vicinity of Victoria Island, evaluated in 2001-2002. Because the intake facility must be located on the shoreline along the river, there are no sites available to avoid farmland. Important Farmland occurs adjacent to Old River and Victoria Canal throughout the study area.

EBRPD and DOC both identify additional options for mitigation for the permanent loss of approximately 22 acres of agricultural land under Alternatives 1 and 2. In its comment letter, DOC recommends the use of permanent conservation easements to mitigate for the direct loss of agricultural land: "…the Department recommends the use of permanent agricultural conservation easements on land of at least equal quality and size as partial compensation for the direct loss of agricultural land" (L_DOC-04, pg. 2 of 4, paragraph 4). DOC also recommends, however, that where "growth inducing or cumulative agricultural impacts are involved, … this ratio of conservation easements to lost agricultural land be increased." EBRDP also notes that a higher compensation ratio might better reduce the project impact.

Acquisition of agricultural conservation easements is a useful tool for regional conservation of important farmland that reduces the total amount of farmland that is available for conversion to future urban use or other non-agricultural uses. In response to these comments, the mitigation ratio for acquisition of agricultural conservation easements relative to acres of important farmland permanently impacted by the project is increased from 1:1 to 1.5:1. As revised, this measure would result in conservation of 50 percent more farmland than would be affected by Alternative 1 or 2. While this revised measure would provide a greater level of mitigation for direct project effects on important farmland, the project would still result in permanent loss of such farmland. Although Alternatives 1 and 2 affect a relatively small area of farmland (up to 22 acres), this permanent loss of farmland remains a significant and unavoidable impact. However, this revised mitigation measure does reduce the project's contribution to cumulative effects on farmland, by limiting future farmland conversion, to a less than significant level. Correspondingly, this revised measure also reduces the associated cumulative socioeconomic effects to a less than significant level as well.

Measure 4.8.2b and the corresponding impact conclusion for Impact 4.8.2 (Draft EIS/EIR, Vol. 2, Section 4.8, pp. 4.8-21 through 4.8-22) has been revised as shown below. These text changes are included in Chapter 5, Revisions to the Draft EIS/EIR, in this document (Vol. 4).

> **Measure 4.8.2b:** CCWD will provide the following mitigation for the permanent conversion of Important Farmland:
>
> For each acre of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance that is permanently converted to nonagricultural use, 1.5 acres of agricultural conservation easement will be obtained. An agricultural conservation easement is a voluntary, recorded agreement between a landowner and a holder of the easement that preserves the land for agriculture. The easement places legally enforceable restrictions on the land. The exact terms of the easement are to be negotiated in coordination with a local agriculture land

trust, but restricted activities will include subdivision of the property, non-farm development, and other uses that are inconsistent with agricultural production. The mitigation lands must be of equal or better quality (according to the latest available FMMP data) and have an adequate water supply. In addition, the mitigation lands must be within the same county. Information presented in Table 4.8-6 indicates that this compensatory mitigation would require acquisition of easements on about ~~22~~33 acres (22 acres of impact x 1.5 acres mitigation) of Farmland of Statewide Importance or better quality farmland, preferably within Contra Costa County.

Impact Significance after Mitigation: Significant and unavoidable. These mitigation measures would reduce the impact of the proposed conversion of Farmland of Statewide Importance to nonagricultural uses, but not to a less than significant level.

As revised, this measure would result in conservation of 50 percent more farmland than would be affected by the project. Therefore, implementation of this revised mitigation measure would reduce the cumulative effects associated with Alternatives 1 and 2 on both farmland and the socioeconomic activity related to farmland activity from the previous designation of Significant and Unavoidable to Less-than-Significant with Mitigation.

Impact 4.8.4 regarding the project's contribution to cumulative impacts from conversion of Important Farmland to Nonagricultural uses (Draft EIS/EIR, Vol. 2, Section 4.8, pp. 4.8-24 through 4.8-26) has been revised as follows:

Impact 4.8.4: The project would involve changes in the environment that, due to their location or nature, could contribute to cumulative impacts from conversion of Important Farmland to nonagricultural uses. (Less-than-Significant for Alternative 4; Less-than-Significant with Mitigation for Alternatives 1, 2, and 3~~; Significant and Unavoidable for Alternatives 1 or 2~~)

Alternative 1

Text on Draft EIS/EIR page 4.8-25, final paragraph under the Alternative 1 discussion is revised as follows:

The incremental contribution of farmland conversion associated with the proposed project would be a cumulatively considerable contribution to a significant cumulative impact. This impact would be significant but would be mitigated to Less-than-Significant with implementation of Mitigation Measures 4.8.2a and 4.8.2b, which provide for minimizing construction effects on farmland during and following project construction activities as well as compensation through acquisition of agricultural conservation easements at a ratio of 1.5 to 1.

Alternative 2

Text on Draft EIS/EIR, pp 4.8-25 and 4.8-26, under the Alternative 2 discussion is revised as follows:

Under Alternative 2, which would construct the same facilities as Alternative 1, the proposed project would contribute to a significant cumulative impact with respect to the cumulative conversion of Farmland of Statewide Importance to nonagricultural use~~, even with implementation of Mitigation Measure 4.8.2a and 4.8.2b~~. The incremental

contribution of farmland conversion associated with the proposed project would be a cumulatively considerable contribution to a significant cumulative impact. Under Alternative 2, this impact would ~~therefore~~ be significant, but would be mitigated to a less than significant level with implementation of Mitigation Measures 4.8.2a and 4.8.2b, which provide for minimizing construction effects on farmland during and following project construction activities as well as compensation through acquisition of agricultural conservation easements at a ratio of 1.5 to 1.

Mitigation Measure

Implementation of Agricultural Resources Mitigation Measures 4.8.1 and 4.8.2 (a and b) would ~~minimize potential impacts under Alternatives 1 and 2; however, those measures would not~~ reduce cumulative impacts to less than significant levels for Alternatives 1 and 2. ~~The level of significance after mitigation would be a significant and unavoidable cumulative impact for Alternatives 1 and 2.~~ With Mitigation Measure 4.8.2a, Alternative 3 would not result in a cumulatively considerable contribution to a significant impact on agriculture.

Impact Significance after Mitigation: ~~Significant and Unavoidable for Alternatives 1 or 2;~~ Less-than-Significant ~~for Alternatives 3 and 4~~.

Chapter 4.17 Socioeconomic Effects, Impact 4.17.5 in the Draft EIS/EIR, Vol. 2, Section 4.17, pp. 4.17-20 through 4.17-21) is revised as follows:

Impact 4.17.5: Construction of the project alternatives, when combined with construction of other future projects, could have a potential cumulative effect on Contra Costa County's economy as a result of ~~temporary~~ permanent loss of agricultural land uses. (Less-than-Significant for Alternatives 1 – 4. ~~3 or 4; Significant and Unavoidable Less Than Significant for Alternatives 1 or and 2~~)

Alternative 1

Impact 4.17.2 indicates that the socioeconomic impacts associated with temporary loss of agricultural land use resulting from construction activities would be Less-than-Significant. Due to the small area affected by these impacts and the temporary nature of the construction activities, these impacts were determined to be negligible in relation to the overall regional economy. However, in Section 4.8, the agricultural analysis determined that the project would have significant cumulative impact on the region's agricultural resources because the project would result in the permanent reduction of Important Farmland (Impact 4.8.4).

With or without the project, the trend of land conversion from agricultural uses to urban and other non-agricultural uses (e.g., wildlife habitat enhancement) in the Central Valley would continue. It is likely that other future projects, ~~such as expansion of Discovery Bay into the Cecchini Ranch property~~ particularly large development projects that would require large tracts of land, would convert agricultural lands to non-agricultural uses; these lands may or may not be designated Prime Farmland, Unique Farmland, and Farmland of Statewide Importance and may or may not be under Williamson Act contracts.

As a number of the proposed projects listed in Appendix I, "Local Development Projects Considered in Cumulative Impact Analyses," are not yet in the environmental planning

stage, the acreage of Prime Farmland, Unique Farmland, and Farmland of Statewide Importance that could be converted by these projects is not known. However, in general, the acreage of Prime Farmland, Unique Farmland, and Farmland of Statewide Importance in Contra Costa County and, to a lesser degree, in Alameda County, is expected to decline. The proposed project would contribute incrementally to this decline. However, with implementation of Mitigation measure 4.8.2b, which provides for acquisition of agricultural conservation easements at a ratio of 1.5:1 to protect farmland from future development, the incremental contribution of farmland conversion associated with the proposed project would not be a cumulatively considerable contribution to an existing significant cumulative impact. This impact would therefore be Less-than-Significant ~~and unavoidable~~ with Mitigation.

Alternative 2

Under Alternative 2, which would construct the same facilities as Alternative 1, the project would result in a Less-than-Significant ~~and unavoidable~~ cumulative impact with respect to the cumulative conversion of Farmland of Statewide Importance to non-agricultural use.~~,~~ ~~even~~ with implementation of mitigation Measure 4.8.2a and 4.8.2b. The incremental contribution of farmland conversion associated with the proposed project would not be a cumulatively considerable contribution to an existing significant cumulative impact. Under Alternative 2, this impact would ~~therefore~~ be Less-than-Significant ~~and unavoidable~~ with Mitigation.

Mitigation Measure

Implementation of Agricultural Resources Mitigation Measures 4.8.1 and 4.8.2 (a and b) would minimize potential impacts under Alternatives 1 and 2~~; however, those measures~~ and would ~~not~~ reduce cumulative impacts to less than significant levels. The level of significance after mitigation would be Less-than-Significant with Mitigation ~~a significant and avoidable cumulative impact~~.

Impact Significance after Mitigation: Less-than-Significant~~ and Unavoidable for Alternatives 1 or 2; Less than Significant for Alternatives 3 and 4~~.

DOC's comment letter also mentions that information about other feasible measures such as mitigation fees, mitigation banks and approximately 30 conservation tools is available from DOC upon request. A request by CCWD for information on the approximately 30 conservation tools resulted in receipt of a 1997 Discussion Paper titled Agricultural Land Use Conservation Tools (DOC, 1997). Review of the paper indicates that purchase of Agricultural Conservation Easements is the first tool listed. Other tools such as a transfer of development rights, greenbelts, buffers and lease agreements for protecting agricultural land use show that DOC considers many different valuable mechanisms. However, it should be noted that few of these methods provide any assurance of providing in-kind farmland with provisions for "in perpetuity" mitigation compared to the purchase of a permanent agricultural conservation easement. Therefore, the provision of a permanent agricultural conservation easement as project mitigation would serve as the most effective way to mitigate project impacts and protect regional agriculture when compared with the other conservation tools listed in DOC's discussion paper.

EBRPD suggests that "remaining farmland, or an equal or greater amount of farmland, be placed under Williamson Act contract." Mitigation Measure 4.8-2b calls, however, for an agricultural conservation easement, which is more protective of mitigation lands than is a Williamson Act contract. EBRDP suggests two additional measures, which EBRPD identifies as being included in a 1990 publication by American Farmland Trust (AFT) (AFT, 1990). The first of these is "[r]equiring conversion of urban uses on former farmland back to agricultural use." However, CCWD and Reclamation lack jurisdiction over lands in urban uses, so could not require their conversion to farmland. EBRPD also suggests "[r]equiring that existing agricultural land be newly brought into production". Again, CCWD and Reclamation lack jurisdiction over any existing agricultural lands that could be newly brought into production. As a result, these types of measures are not feasible for implementation. A review of the relevant discussion in the AFT publication indicates that these mitigation measures are discussed as options for local governments to implement when considering mitigation options for a development projects in their jurisdiction (AFT, 1990, pg. 5-4). Neither CCWD nor Reclamation has the authority to require that any landowners place their land under Williamson Act contract nor can land held by a public agency be placed under Williamson Act contract. Neither CCWD nor Reclamation has the authority to require that any landowners commence agricultural activities on land that is not currently being grazed or farmed or that they discontinue existing urban uses and replace those uses with agricultural activities. For Alternatives 1 and 2, acquisition of agricultural conservation easements is the most feasible and effective mitigation measure.

3.8 Master Response 8: Biological Resources

3.8.1 Introduction

Overview

This master response addresses the issues raised by commenters about the terrestrial biological resources impact analysis and implementation of mitigation measures related to the Los Vaqueros Reservoir Expansion Project. This master response is organized by the following subtopics:

- 3.8.2 Overall Mitigation Strategy
- 3.8.3 Habitat Impacts and Mitigation
- 3.8.4 Wildlife Impacts and Mitigation
- 3.8.5 Special-Status Plant Impact Analysis and Mitigation
- 3.8.6 Wetlands and Vernal Pools
- 3.8.7 Conservation Easements
- 3.8.8 East Contra Costa Habitat Conservation Plan (HCP)/Natural Communities Conservation Plan (NCCP)
- 3.8.9 Cumulative Effects

Commenters

Commenters that address the topic of terrestrial Biological Resources include:

Federal Agencies

- Environmental Protection Agency – F_EPA

State Agencies

- California Department of Fish and Game – S_DFG

Local and Regional Agencies

- Contra Costa County, Public Works Department – L_CCCPW
- East Bay Regional Park District – L_EBRPD
- East Contra Costa Habitat Conservancy – L_ECCCHC

Organizations

- East Bay California Native Plant Society – O_EBCNPS
- Native Alliance of the Sierra Nevada Foothills – O_NASNF
- Save Mount Diablo – O_SMD

Individuals

- Betty Lu Graham – I_Graham
- Dave Fontaine – I_Fontaine
- Ralph Osterling – I_Osterling

Draft EIS/EIR Section Reference

The Draft EIS/EIR addresses this topic area in the following locations: Vol. 1, Executive Summary, pp. ES-45 through ES-72; Vol. 2, Section 4.6 Biological Resources, pages 4.6-1 through 4.6-188, and Vol. 3, Appendix D.

3.8.2 Overall Mitigation Strategy

Comment Summary

This section of this master response responds to all or part of the following comments:

S_DFG-06	S_DFG-09	S_DFG-12	S_DFG-13
S_DFG-14	S_DFG-15	O_SMD-01	O_SMD-02
O_SMD-03	O_SMD-04	O_SMD-05	O_SMD-06
O_SMD-08			

Summary of Issues Raised by Commenters

- Proposed mitigation for terrestrial biological resources relies on the CALFED MultiSpecies Conservation Strategy (MSCS), which does not adequately address the issues of existing encumbrances, cumulative impacts, and changed circumstances on previously conserved lands.
- The only mitigation areas considered should be able to meet success criteria approved by the California Department of Fish and Game (CDFG), and be transferred in fee title or preserved through conservation easement or other mechanism approved by CDFG.
- Mitigation and monitoring plans should be included in the Draft EIS/EIR and should be approved by regulatory agencies before the EIS/EIR is certified. Delaying this plan until after the EIS/EIR is certified is inadequate.
- Impacts should be mitigated at the highest temporary and permanent compensation ratios based on consultation with regulatory agencies; where existing mitigation land is impacted, the mitigation ratio should be up to 20:1.

Response

Mitigation Ratios

Several comments question the adequacy of the mitigation acreage ratios identified in the Draft EIS/EIR, stating that some of these ratios are too vague or are insufficient to mitigate the impacts of project alternatives to less than significant levels. The mitigation ratios identified in the Draft EIS/EIR range from 1:1 to 5:1. They are based on extensive investigations of the habitat qualities of both the areas that would be affected by the project alternatives and the replacement habitat areas that are potentially available for acquisition; the detailed CALFED MSCS for conservation of plants, fish and wildlife that may be affected by elements of the Bay-Delta Program, issued in 2000; input from state and federal resource agencies with which Reclamation and CCWD have met over the past five years; information, policies and conservation strategies presented in the East Contra Costa County Habitat Conservation Plan/Natural Community

Conservation Plan (ECCC HCP/NCCP) (ECCCHCPA, 2006) and the professional judgment of the biologists who prepared the Draft EIS/EIR analysis (Vol. 2, Section 4.6, pp. 4.6-72 through 4.6-188).

The CALFED MSCS identifies where CALFED actions are likely to have an adverse effect on special status species are not likely to provide discernable benefit to those species. For those species, such as the San Joaquin kit fox, which are likely to be adversely affected by, and not to receive discernable benefit from the CALFED actions, the MSCS assigns a conservation goal to maintain the species and identifies conservation measures to mitigate adverse impacts and achieve the conservation goal. The MSCS identifies a range of recommended mitigation ratios, and the Draft EIS/EIR uses the MSCS as guidance to develop compensatory mitigation ratios and reflect a range of possible land acquisition requirements to compensate for project effects upon terrestrial habitats and species. Where appropriate, mitigation for the Los Vaqueros Reservoir Expansion Project incorporates the high end of the recommended compensation ratio range, as in the case of the San Joaquin kit fox. The compensation ratios identified in the mitigation measures for the project, coupled with the conservation principles identified to guide a comprehensive biological resource mitigation program for this project, reflect and reinforce the resource conservation goals and objectives identified in the MSCS, and the ECCC HCP/NCCP. The habitat compensation component of the project's overall mitigation program will preserve large areas of habitat and preserve or establish habitat linkages in the region.

CDFG states (S_DFG-06) that deficiencies in the discussion and analysis of impacts to existing encumbrances, cumulative impacts, and changed circumstances on previously conserved lands make it difficult to determine if implementation of the avoidance strategies and mitigation measures proposed in the Draft EIS/EIR will reduce impacts to a less than significant level. The analysis of the project effects identified in Comment S_DFG-06 and associated mitigation is discussed in the Draft EIS/EIR with further discussion of habitat and species-specific effects provided below in Section 3.8.4 (Wildlife Impacts and Mitigation) and Section 3.8.9 (Cumulative Effects).

Reclamation and CCWD understand that the resource agencies concerned with terrestrial biological resources may, as part of regulatory permitting processes, impose additional requirements beyond those that the lead agencies have concluded are adequate to mitigate significant impacts. These regulatory permitting processes are not required to be completed before the EIS/EIR is finalized.

One commenter (O_SMD-01 and O_SMD-08) asserts that mitigation ratios for previously conserved acreage that would be inundated due to an expanded reservoir should be up to 20:1. There is no basis in CEQA or NEPA, however, for applying a mitigation ratio of this magnitude. For the purposes of the EIS/EIR, the impacts to existing conserved lands are analyzed according to the same criteria as impacts to other habitat lands, based on the lands' habitat quality, functions and values.

CDFG Review and Approval of Mitigation Lands

CDFG's comments on specific impacts (Comments S_DFG-09, S_DFG-12, S_DFG-13, S_DFG-14 and S_DFG-15) also state generally that CDFG must approve mitigation lands for their biological suitability and that these lands must be transferred in fee title or preserved through conservation easements approved by CDFG. The Draft EIS/EIR acknowledges that both CDFG and USFWS will have key roles in helping to select mitigation lands, and selected lands would be subject to agency review and approval to ensure that they comply with relevant permit conditions. Reclamation and CCWD will continue to work with CDFG to comply with applicable environmental regulatory procedures and requirements.

Mitigation and Monitoring Plans

One comment (L_SMD-05) quotes one phrase from a fairy shrimp mitigation measure in the Draft EIS/EIR, beginning "develop and implement a mitigation, monitoring, and management plan…." The comment states that this language shows the Draft EIS/EIR postpones the full study of project impacts and that mitigation and monitoring plans for the project should be prepared prior to Draft EIS/EIR approval. The Draft EIS/EIR, however, already rigorously characterizes project impacts to sensitive resources, including wetlands, sensitive plant communities and other sensitive biological resources in the project area, and identifies extensive mitigation measures to address these impacts where appropriate. This is particularly the case with respect to fairy shrimp; the language quoted in the comment appears on the third page of detailed mitigation measures for the two fairy shrimp species that could be affected by project alternatives (Draft EIS/EIR, Vol. 2, Section 4.6, pp. 4.6-125 through 4.6-128).

Several of the detailed individual mitigation measures for biological resource impacts also call for development and implementation of site-specific and/or resource-specific implementation plans and corresponding monitoring and reporting efforts. As described in several of the mitigation measures, the plans required in some cases shall include specific provisions for the restoration, enhancement, and/or preservation of impacted resources; thresholds of success; monitoring and reporting requirements; site-specific designs for site restoration and enhancement activities; and long-term maintenance activities. The Draft EIS/EIR identifies the required performance objectives and components of the resource mitigation and monitoring plans [e.g., see Draft EIS/EIR, Section 4.6, pg. 4.6-91 (oak woodlands), pg. 4.6-103 (wetlands), pg. 4.6-106 (rare plants), pg. 4.6-113 (California red-legged frog), etc.]. Individual mitigation plans will provide specific details such as the location of off-site mitigation areas, size and functional requirements for compensatory wetlands, and requirements for oak mitigation sites and planting.

To the extent that the comment seeks completion of a CEQA mitigation monitoring and reporting program to be included in the Draft or Final EIS/EIR, this is not required. In accordance with CEQA requirements, a CEQA mitigation monitoring and reporting program (MMRP) will be prepared and submitted to the CCWD Board for adoption at the time that a project alternative is presented to the Board for adoption. An MMRP addresses how compliance with adopted mitigation measures will be monitored and confirmed during implementation of an approved project; the MMRP is part of the project approval process, not part of the EIR preparation or public review process.

3.8.3 Habitat Impacts and Mitigation

Comment Summary

This section of this master response responds to all or part of the following comments:

S_DFG-02	L_CCCPW-04	L_EBRPD2-05	L_EBRPD2-15
L_EBRPD2_19	L_EBRPD2-20	L_EBRPD2-23	L_EBRPD2-28
L_EBRPD2-30	L_EBRPD2-32	L_EBRPD2-35	L_EBRPD2-36
L_ECCCHC-02	L_ECCCHC-03	O_EBCNPS-04	O_SMD-13
I_Graham-02	I_Graham-03	I_Osterling-01	

Summary of Issues Raised by Commenters

- The interface between new trails on the east side of the reservoir, in areas formerly designated as no public access, with adjacent undeveloped areas needs to be fully analyzed.
- The Byron Vernal Pools Preserve is not identified in Draft EIS/EIR, and it would be adversely affected by construction of the Transfer-Bethany Pipeline. The project would interfere with EBRPD planned restoration of wetlands at that location.
- The mitigation opportunities discussion does not demonstrate that it will be feasible to both replace trails within the watershed and replace habitat and associated mitigation restrictions on land that will be inundated.
- The project should prioritize local mitigation in close proximity to affected habitat.
- The Draft EIS/EIR does not fully consider the biological resource impacts of draining or refilling Los Vaqueros Reservoir.
- The Draft EIS/EIR does not consider impacts to common wildlife species and large mammals that live in the Los Vaqueros Watershed.
- The habitat categories identified in the impact and mitigation analyses are too broad and a detailed assessment of subcategories should be performed.

Indirect Effects on Wildlife Habitat of the proposed Eastside Trail

One comment (S_DFG-02) states that the Draft EIS/EIR does not adequately identify and discuss indirect adverse effects associated with the interface of the proposed developed and undeveloped areas, specifically the potential impacts to undeveloped areas located east of Los Vaqueros Reservoir resulting from development of a public hiking trail on the east side of the reservoir.

Recreation facilities can indirectly affect wildlife when recreational users alter the soil and vegetation of a particular area. For example, an assessment of high use pedestrian traffic areas near campgrounds found that these areas may experience reduced soil porosity with altered soil chemistry, reduced plant cover and density, with altered vegetation composition and spatial distribution of plants (Knight, 1995). However, within the Los Vaqueros watershed camping is not allowed and the trails do not receive the level of use that would typically be associated with a campground area. In addition, for the proposed Eastside Trail, the created facilities would use an existing maintained gravel road that is currently used by livestock managers, wind farm employees, and CCWD staff, within an area that is grazed by livestock. As identified in

Draft EIS/EIR Figure 3-28 (Vol. 1, Chapter 3, pg. 3-82), several connector roads would also be created to join the existing roads. The final trail would route recreational users away from sensitive resources such as vernal pools and seasonal ponds. Based on CCWD's experience with public use of other trails within the watershed, only limited use of the Eastside Trail would be expected. Access would be restricted to within the managed roadway, much like the Westside Trail. Finally, the Eastside Trail is proposed as a hiking only trail with no bicycle or horse use permitted. As a result, no habitat modifying effects would be anticipated, and plant and wildlife use are not expected to change in these areas following project implementation. For these reasons, as discussed in the Draft EIS/EIR, the Eastside Trail is not expected to result in significant indirect impacts to habitat or sensitive resources.

While the Draft EIS/EIR indicates that with proper siting and management the proposed Eastside Trail would be developed and used without significant impact to biological or cultural resources on the east side of the reservoir, in response to comments expressing concern about this project element, CCWD has reduced the proposed trail, eliminating all but the first short segment extending from the southern Marina area a short distance to the east. This substantially reduced trail addition would lie entirely within the Low Intensity Recreation area (shown on Draft EIS/EIR Figure 4.6-16, pg. 4.6-69), consistent with the requirements of the 1995 Biological Opinion (USFWS, 1995). Shortening of the Eastside Trail is described and evaluated in Chapter 2, and the impact assessment tables in Appendix A, of this Final EIS/EIR.

Impacts to the Future "Byron Vernal Pools Regional Preserve"

Several comments indicate that the future EBRPD "Byron Vernal Pools Regional Preserve" was not specifically identified or discussed in the Draft EIS/EIR (L_EBRPD2-14, L_EBRPD2-20, L_EBRPD2-28, L_ECCCHC-02, L_ECCCHC-03, O_EBCNPS-04). The only project component that would be constructed near the EBRPD future Byron Vernal Pools Regional Preserve is the Transfer-Bethany Pipeline in Alternatives 1 and 2. No component of Alternative 4 would be located near the preserve. In EBRPD's 2007 Master Plan Map this "future preserve area" is shown to the west of Vasco Road on the other side of the road from and approximately 1,000 feet away from the alignment for the proposed Transfer-Bethany pipeline, which is a component of Alternatives 1 and 2. (The pipeline would not be constructed under Alternatives 3 or 4). Initially, it appeared that the Byron Vernal Pools Regional Preserve would not yet be created by the time construction of the Transfer-Bethany pipeline occurred. Inquiries to the Park District during the Draft EIS/EIR preparation did not uncover the fact that the Park District was moving ahead with private property acquisition in this area or refinement/modification of its proposed preserve location until shortly before publication of the Draft EIS/EIR document. However, the lands purchased by EBRPD for this preserve had been fully surveyed and evaluated during preparation of the Draft EIS/EIR. Upon learning the preserve may be in place by the time of project implementation, CCWD moved the proposed pipeline alignment from its originally proposed location to avoid the preserve property. The biological resources on these lands are accurately shown on Figure 4.6-23 (Draft EIS/EIR, Vol. 2, Section 4.6, pg. 4.6-98) and other figures on which the alignment is depicted.

Although the preserve is not mentioned by name, potential impacts on the Byron Vernal Pools Regional Preserve parcel were analyzed in the Draft EIS/EIR Biological Resources Environmental Consequences evaluation (Vol. 2, Section 4.6.2, pp. 4.6-72 through 4.6-128), which evaluated impacts to the area's northern clay pan vernal pool habitat (Impact 4.6.1); jurisdictional wetlands (Impact 4.6.2); and listed vernal pool fairy shrimp and their habitat (Impact 4.6.6). In regard to Comment L_EBRPD2-28, in part, the Draft EIS/EIR concluded that the installation of the Transfer-Bethany Pipeline within Armstrong Road "is not expected to indirectly affect local vernal pool hydrology in pools outside the alignment by altering surface flows, groundwater flow, or infiltration rates, or substantially reducing the quality or extent of the overall vernal pool complex outside the project alignment" (Section 4.6, pg. 4.6-124). As of February 2010, wetland creation and enhancement activities are underway at the preserve. Thus, this site is recognized as an existing feature in the Draft EIS/EIR with the addition of the following text to the Biological Resources Project Setting (Section 4.6, pg. 4.6-17, first paragraph, last sentence):

> Vernal pool conditions occur in a portion of the Transfer-Bethany Pipeline alignment on Armstrong Road near Byron Airport, and in areas farther south along this alignment, and are being created though are not yet functional at the adjacent Byron Vernal Pools Regional Preserve.

This text change is included in Chapter 5, Revisions to the Draft EIS/EIR, in this document (Vol. 4).

Once CCWD became aware of plans for protecting and restoring the Byron Vernal Pools Regional Preserve, it continued its efforts to avoid and minimize impacts by further limiting the width of the proposed Transfer-Bethany pipeline construction zone in the Armstrong Road area of the proposed preserve while also protecting other vernal pools on the Byron Airport property to the east. To the extent possible, construction activities and pipeline placement will be limited to the Armstrong Road right-of-way to avoid, minimize and mitigate impacts to the area's northern clay pan vernal pool habitat (Mitigation Measures 4.6.1a and 4.6.1b); jurisdictional wetlands (Mitigation Measures 4.6.2a and 4.6.2b); and listed vernal pool fairy shrimp and their habitat (Mitigation Measures 4.6.6a and 4.6.6b). To respond to Comment L_EBRPD2-28, in part, placing the pipeline within the road easement would minimize encroachment into the adjacent preserve's sensitive habitats. Also, the typical 85 foot wide construction right-of-way would be reduced in width such that the work area would not encroach on the preserve property or impact sensitive habitat elements on this site.

In summary, the Transfer-Bethany pipeline alignment does not cross the future preserve property. Measures to avoid, minimize and, as necessary, mitigate identified Transfer-Bethany Pipeline construction impacts along the east edge of the preserve adjacent to Armstrong Road have been identified. To further clarify the location of the Transfer-Bethany pipeline in the vicinity of the Byron Vernal Pools Regional Preserve, the text in Chapter 3 in the Draft EIS/EIR (Vol. 1, pg. 3-66) is to be corrected as shown below.

> As shown on Figure 3-21, the Transfer-Bethany Pipeline would start on the eastern side of Vasco Road near the Expanded Transfer Facility with a connection to the Delta-Transfer Pipeline and extend approximately 8.5 to 8.9 miles southeast to Bethany Reservoir. The alignment would extend southeast generally parallel to Vasco Road for about ~~3.8~~ 3.0 miles, then move away from Vasco Road to the southeast and then south for approximately 1.0 mile to connect with Armstrong Road ~~to the corner of~~ where Armstrong Road turns south. The pipeline would continue south along Armstrong Road for about 1.3 miles and then traverse southeast overland approximately 1.5 miles to a point close to the California Aqueduct. At this point, there are two options for the final southern segment of the pipeline to the Bethany Reservoir Tie-in: a Westside Option and an Eastside Option. As described below, both of these options include tunnel segments (see Figure 3-23).

This text change is included in Chapter 5, Revisions to the Draft EIS/EIR, in this document (Vol. 4).

Other mitigation measures identified in the Draft EIS/EIR that address potential impacts to biological resources from construction dust, other construction pollutants, construction noise and construction lighting will be equally applied to protect resources at the Byron Vernal Pools Regional Preserve. The potential indirect effects of the Transfer-Bethany Pipeline construction, which do not directly impact the Preserve, would be short-lived and fully mitigated through the implementation of protective measures.

Mitigation Opportunities Discussion

EBRPD (L_EBRPD2-32) expresses the opinion that the Draft EIS/EIR's discussion of mitigation opportunities for natural communities is too broad and does not represent the variety of habitat types that would be impacted by the project. As an example, the comment notes that the grassland habitat type includes such habitat as non-native annual grassland, native perennial grassland, alkali grassland and grasslands with special features like vernal pools. One comment (L_EBRPD2-15) questions whether it will be feasible to both replace trails within the watershed and replace habitat and associated mitigation restrictions on land that will be inundated.

The mitigation opportunities analysis screens land throughout the eastern Contra Costa County project region to demonstrate the existence of large areas of various habitat types in the regional project area that could be considered for acquisition and management as mitigation. To inform the Draft EIS/EIR analysis, focused habitat mapping surveys were conducted for all portions of the project within and outside the Los Vaqueros Watershed. These surveys documented that non-native annual grasslands and oak woodlands comprised the overwhelming majority of lands that would be impacted by the project, followed by riparian habitat, oak woodlands, and scrub habitat. As a result, the discussion of mitigation opportunities focused on those habitat types that could reasonably be limiting factors in the selection of mitigation lands. Impacts to other sensitive habitat types were documented in the Draft EIS/EIR (see Table 4.6-9, Section 4.6, pg. 4.6-85); however, with the relatively small magnitude of project effects to these habitat types (e.g., 1.56 acres of saltgrass; 0.93 acre of vernal pool; 0.66 acre of purple needlegrass) it was evident from the field surveys completed that adequate suitable mitigation areas for these specific habitat types

could be identified. Selected mitigation habitat types will closely match the impacted habitat, including each of the varieties of habitat subsumed in larger categories such as "grassland."

Within the Los Vaqueros watershed it is feasible to replace both trails and, to some extent, habitat impacted by the project. The existing watershed is a good example of how recreation trails and habitat mitigation can be executed and managed together successfully. As needed, CCWD will manage future recreation activities to support habitat and sensitive species management goals. An example of this is CCWD's current practice of closing trails to public use when Golden Eagle nesting occurs. As indicated above, CCWD has reduced the length of the proposed Eastside Trail which will keep public access restrictions on habitat areas east of the reservoir. While much of the habitat mitigation for the project will occur outside the reservoir, it will be feasible to replace trails and mitigate for some habitat impacts within the watershed.

Two comments (Comment I_Graham-02 and I_Graham-03, in part) state that the restoration of oak woodlands, wetlands, and riparian habitat in the Kellogg Creek Watershed is likely not feasible or achievable. While there are instances where mitigation for habitat impacts can and should occur within the watershed property, the Draft EIS/EIR also acknowledges that mitigation for project impacts will require substantial land acquisition to provide compensatory mitigation outside of the watershed property. The Draft EIS/EIR indicates that compensation for losses to wetlands and sensitive plant communities shall be provided through habitat creation, enhancement, and preservation, both within and outside the watershed (e.g., Draft EIS/EIS, Vol. 2, Section 4.6, pg. 4.6-91 and pg. 4.6-115).

Prioritization of Mitigation Sites in Close Proximity to Affected Habitat

EBRPD (L_EBRPD2-35) and CCCPW (L_CCCPW-04) comment that the Draft EIS/EIR should prioritize mitigation habitat in close proximity to affected habitat and not through a mitigation bank outside Contra Costa County. As a commenter states, the Draft EIS/EIR provides that one of the selection criteria for highest priority mitigation sites includes "lands next to or near the Los Vaqueros Watershed or other existing land reserves" (see Draft EIS/EIR, Vol. 2, pg. 4.6-187). EBRPD states that this selection criterion fails to recognize the importance of identifying suitable habitat sites near the affected habitat. The comment appears to reflect the view that the inclusion of "or other existing land reserves" in this selection criterion is unacceptable and that proximity to affected habitat should prevail over all other considerations. As the Draft EIS/EIR states, and as EBRPD notes in other comments, however, proximity to affected habitat cannot be the only criterion for identifying suitable mitigation acreage; the size and particular qualities of potential mitigation sites are also important. In consultation with the resource agencies, CCWD will evaluate suitable mitigation lands in Contra Costa, San Joaquin, and Alameda Counties, where appropriate, for inclusion in the mitigation program.

EBRPD comments (L_EBRPD2-26 and L_EBRPD2-35) emphasize the importance of maintaining regional habitat connectivity for San Joaquin kit fox between protected lands. The Draft EIS/EIR discussion acknowledges and incorporates habitat connectivity as a key kit fox conservation principle that will guide the selection and acquisition of mitigation lands for this species (see Draft EIS/EIR, Vol. 2, Section 4.6, pg. 4.6-183). The need to encourage kit fox

movement opportunities has also been carried through the Action Specific Implementation Plan that is currently being developed with Reclamation, CDFG and USFWS.

With regard to mitigation for burrowing owl, the requirement that mitigation areas "support burrowing owl populations in similar or greater densities to those on impacted burrowing owl habitat" (Draft EIS/EIR, Vol. 2, Section 4.6, pg. 4.6-146), could necessitate the consideration of mitigation lands located away from the Los Vaqueros Watershed. Thus, while mitigation in the near vicinity of project impacts is preferred, the requirement that burrowing owl mitigation sites support breeding (and are available to CCWD) may enlarge the mitigation study area for this species. Based on numerous years of biological studies in the Los Vaqueros Watershed, no burrowing owl pairs would be isolated by the project.

Habitat Impacts of Reservoir Draining and Refilling

Two commenters address the potential impacts of reservoir draining and refilling before and after dam modification construction. Regarding draining alone, Comment L_EBRPD2-36 raises the concern that the Draft EIS/EIR does not adequately analyze and mitigate the biological resource impacts to birds from draining the reservoir during construction. As the Draft EIS/EIR notes, this impact does not apply to Alternative 4. Because the reservoir would only be partially drained to allow the dam modification needed for the 160-TAF reservoir expansion, some water would remain at all times in the reservoir, maintaining the reservoir water habitat for birds.

The impact of temporary draining of the reservoir on migratory birds for Alternatives 1 through 3 is discussed in detail in the Draft EIS/EIR (Vol. 2, Section 4.6, pp. 4.6-172 through 4.6-173, Impact 4.6.16). The comment's statement that 165 different species of birds are dependent on the reservoir is mistaken; instead, the Draft EIS/EIR states that 53 species of birds are at least partly dependent on the habitat provided by the reservoir (Vol. 2, Section 4.6, pg. 4.6-172). These bird species discovered the reservoir after it was created in 1998. As identified in the Draft EIS/EIR, the principal effect of reservoir draining under Alternatives 1 through 3 would be the temporary elimination of foraging and stopover opportunities that would foreseeably force the birds to use other nearby aquatic sites, which are plentiful in the region. Under these alternatives, when the expanded reservoir is refilled, these bird species would be expected to rediscover it. The Draft EIS/EIR accurately describes the scope and magnitude of the impact, which is considered Less-than-Significant.

Comment L_EBRPD2-36 also states that the Draft EIS/EIR does not properly mitigate temporary impacts to California tiger salamanders and red-legged frog habitat resulting from the draining of Los Vaqueros Reservoir. The Draft EIS/EIR provides mitigation for temporary impacts to California red-legged frog and California tiger salamander mitigation sites. The commenter is referred to Mitigation Measure 4.6.4a (Draft EIS/EIR, Vol. 2, Section 4.6, pg. 4.6-113), which reads, "(w)here needed to maintain California red-legged frog and/or California tiger salamander breeding in existing mitigation wetlands that are presently supplemented with water, but are not directly disrupted by construction, CCWD shall continue to provide supplemental water to these ponds during and after construction according to the existing terms and conditions for these mitigation sites."

With respect to the combination of reservoir draining and refilling, Comment O_SMD-13 suggests that the Draft EIS/EIR should consider impacts to wildlife species that may move into the existing reservoir footprint when it is drawn down and could be affected once the reservoir is refilled. For the 160-TAF alternative (Alternative 4), the reservoir drawdown and refilling would represent no change from the reservoir's existing operating conditions. The existing reservoir currently undergoes substantial water level fluctuations, and in drought years, those fluctuations are very similar to the levels that would be required for Alternative 4. Under these existing conditions, wildlife has not been observed to move onto the soils exposed by reservoir drawdown. Possible reasons for this include the steep slopes and panoche soils that characterize the reservoir's shoreline; these conditions cause exposed soils to erode into the reservoir, making the exposed areas inhospitable to colonization by animals and plants.

For the 275-TAF alternatives (Alternatives 1-3), which would require full drawdown of the reservoir, wildlife would be discouraged from occupying the upper reaches by the soil conditions described above. At the lower levels of the drained reservoir, active construction work, including removing borrow materials with heavy equipment and cofferdam and dam construction, would further discourage wildlife occupation. Finally, the very slow rate at which the reservoir would refill following partial (Alternative 4) or complete (Alternatives 1-3) drawdown would allow any wildlife that had strayed into the site time to relocate. For these reasons, the process of reservoir drawdown and refill would not cause significant impacts to wildlife under any of the four project alternatives.

Impacts to Common Wildlife Species

Comment L_EPRPD2-30 states that the Draft EIS/EIR neglects impacts of the project alternatives on native species that are not special status species. The Draft EIS/EIR appropriately focuses greater attention on special status species than on common wildlife species because special status species have, by definition, been identified as suffering from difficulties that common species have not. As the comment notes, one of the questions CEQA asks is whether a project "has the potential to ... substantially reduce the habitat of a fish or wildlife species." For a special-status species whose remaining habitat is small, a small project-related habitat loss may represent a substantial reduction of habitat, whereas a larger habitat loss for a common species may not be as significant because the species' range is much larger.

As the comment also notes, one of the Draft EIS/EIR's significance criteria is not limited to special-status species; it asks whether the project alternatives would "interfere substantially with the movement of any native resident or migratory wildlife species or with established native resident or migratory native wildlife corridors, or impede the use of wildlife nursery sites." This significance criterion is consistent with CEQA and with NEPA, which emphasizes ecosystem effects. The comment states that the Draft EIS/EIR fails to analyze the project alternatives' effects on large mammals that live in and migrate through the watershed, migratory birds that use the watershed seasonally, and small mammals that live along the edge of the water.

The Draft EIS/EIR includes an analysis of impacts to migratory birds using the watershed seasonally; none of the project alternatives would substantially interfere with movement or

migration of these species (Vol. 2, Section 4.6, pp. 4.6-172 through 4.6-173). Common large and small mammals in the watershed area are identified in the Draft EIS/EIR; these species can use a wide range of habitat types for movement, migration and nursery sites. Existing large mammal movement corridors through grassland, oak woodland and upland scrub habitat would remain intact following reservoir expansion. Accordingly, impacts to the movement, migration and nursery sites of common wildlife species would be Less-than-Significant.

Potential Conflicts Between Relocated Mitigation Areas and Recreational Trails

Comment L_EBRPD2-15 states that the Draft EIS/EIR fails to describe how mitigation areas that are created for sensitive amphibians can be created and managed without conflicting with recreational uses. As presently is the case in the watershed, many mitigation ponds that were created for California red-legged frog are located in low-lying areas that have an adjacent or nearby service road that also doubles for limited recreational use. The Resource Management Plan (RMP) that CCWD actively uses to manage the Los Vaqueros Watershed heads off potential conflicts between restored habitat and recreational users. The RMP requires that many ponds be fenced to manage livestock access. Public use of off-road, off-trail areas is prohibited with violators subject to punishment by fine. The continued application of the RMP, which separates recreational users from restoration sites, will continue to address potential conflicts between these uses.

3.8.4 Wildlife Impacts and Mitigation

Comment Summary

This section of this master response responds to all or part of the following comments:

S_DFG-01	S_DFG-10	S_DFG-11	S_DFG-12
S_DFG-13	S_DFG-14	S_DFG-15	S_DFG-16
L_EBRPD2-15	L_EBRPD2-20	L_EBRPD2-24	L_EBRPD2-26
L_EBRPD2-27	L_EBRPD2-29	L_EBRPD2-33	L_EBRPD2-34
L_EBRPD2-36	O_EBCNPS-02	O_NASNF-01	O_SMD-04
O_SMD-07	O_SMD-09	O_SMD-10	O_SMD-11
I_Fontaine-01			

Summary of Issues Raised by Commenters

- Draft EIS/EIR maps of biological resources should identify important project components that are needed to determine wildlife impacts.
- The project does not provide adequate mitigation for loss of habitat for non-listed special-status reptile species.
- The EIS/EIR should include additional mitigation measures to address construction impacts on the San Joaquin kit fox.
- Mitigation for California tiger salamander and California red-legged frog were not adequately addressed in the Draft EIS/EIR to support a Less-than-Significant impact finding.

- Mitigation for temporary effects on California red-legged frog and California tiger salamander from reservoir draw down is insufficient.
- The project does not provide adequate mitigation for impacts to western pond turtle.
- The Draft EIS/EIR does not adequately characterize impacts to San Joaquin kit fox, their movement corridors and the continued viability of remaining grassland habitat linkages for San Joaquin kit fox.
- The burrowing owl mitigation strategy is inadequate.
- Mitigation should be provided for impacts to non-scrub Alameda whipsnake habitat
- The proposed mitigation ratio for Alameda whipsnake impacts are not high enough and improperly defers selection of a mitigation ratio.
- Proposed mitigation through habitat protection only is inadequate.
- The project does not adequately consider impacts to actively nesting birds.
- The habitat and wildlife movement corridor effects of the project could undermine EBRPD's efforts to provide habitat for such species, by eliminating movement corridors that these species use to travel to EBRPD properties near the watershed.
- The Draft EIS/EIR delegates to other agencies the authority to determine the actual mitigation ratio within an identified range to compensate for impacts to San Joaquin kit fox habitat.
- Mitigation ratios for loss of kit fox habitat are too low, in light of cumulative effects.
- Mitigation for effects on kit fox movement should include improvements to wildlife undercrossings, to be implemented in a manner consistent with scientific literature.

Maps of Impacts to Species

One comment states that three maps provided in the biological resources section of the Draft EIS/EIR are insufficient to determine project impacts. The commenter notes that Figure 4.6-11 (Vol. 2, Section 4.6, pg. 4.6-53) illustrates the regional distribution of San Joaquin kit fox, but does not include the location of any project components. The identified figure was intended to illustrate the project setting, whereby the entire Los Vaqueros Reservoir Expansion Project is within the range of the San Joaquin kit fox. Figures 4.6-15 and 4.6-16 (Vol. 2, Section 4.6, pp. 4.6-68 through 4.6-69) were intended to provide context for the impact discussed but not to provide the full extent of the detailed information used in the analysis. Detailed GIS database maps along with a series of field visits and detailed resource surveys have been used during the impact analysis process. Most of the figures included in Draft EIS/EIR Section 4.6 present information from the detailed GIS database. Figure 4.6-15 names those created wetlands and stock ponds that occur in the 275-TAF inundation zone and the 160-TAF inundation zone. Aquatic features that would be impacted by the project alternatives are identified in Table 4.6-11 (Draft EIS/EIR, Vol. 2, Section 4.6, pg. 4.6-108).

To further address this comment, **Figures 4.6-11, 4.6-15** and **4.6-16** in the Draft EIS/EIR have been updated to provide the requested information. These updated figures are included in Chapter 5, Revisions to the Draft EIS/EIR, in this document (Vol. 4).

Impacts on Non-listed Reptile Species

EBRPD (L_EBRPD2-33) and SMD (O_SMD-07) comment that the mitigation provided for special status reptile species, coast horned lizard and San Joaquin coachwhip, is insufficient because it does not address potential loss of habitat or explain the proposed avoidance (instead of compensatory) mitigation.

The Draft EIS/EIR states that high quality habitat for coast horned lizard occurs in association with alkali areas with sandy loam soils and alkali flats, which have limited distribution in the project area (Vol. 2, Section 4.6, pg. 4.6-43). High quality alkali flat habitat was identified in the Power Option 2 Western powerline alignment, just north of the Skinner Delta Fish Protective Facility, and would be spanned by powerlines. Thus, the minimal habitat disturbance in high quality habitat is avoided by project design and does not require the implementation of additional protective measures. This approach is consistent with the statement in Measure 4.6.14 that habitat disturbances are minimized in areas that are known or suspected to support coast horned lizard (Vol. 2, Section 4.6, pg. 4.6-168).

The San Joaquin coachwhip is known to occupy grassland and scrub areas with little tree cover. Such habitat is available throughout the regional project area, thus this species is expected to occur sporadically in low densities in annual grasslands throughout the project area as identified in Table 4.6-7 (Vol. 2, Section 4.6, pg. 4.6-75). Annual grasslands in the project area are considered to provide uniformly low to moderate quality habitat for this species. Thus, the general statement in Measure 4.6.14 (Vol. 2, Section 4.6, pg. 4.6-168) that, "CCWD shall ensure that habitat disturbances are minimized in areas that are known or suspected to support San Joaquin coachwhip…" would apply to all grasslands in the project area. This broad statement is necessary for San Joaquin coachwhip because this species could literally be encountered in any open grassland or alkali scrub habitat in the project area.

Potential habitat losses for coast horned lizard and San Joaquin coachwhip on the proposed pipeline alignments would be temporary; following construction and site restoration the habitat would approximate pre-project conditions within several years. The permanent loss of habitat would mostly occur in the Los Vaqueros Watershed in association with the expanded reservoir footprint. There is an abundance of annual grassland habitat in the local and regional project area that can support San Joaquin coachwhip with few other development pressures in the Altamont Hills. Reservoir expansion is not expected to significantly contribute to the decline of local or regional coast horned lizard populations, for which high quality habitat is largely avoided, or San Joaquin coachwhip, which occurs in grasslands throughout the undeveloped Altamont Hills. Thus, compensatory mitigation for habitat losses is not required for these species to reduce impacts to less than significant levels. However, the habitat conservation measures that will be implemented for the San Joaquin kit fox (see Measures 4.6.7b and 4.6.7c in Vol. 2, Section 4.6, pp. 4.6-139 through 4.6-140) would provide between 1,506 acres and 3,939 acres of compensatory habitat, for Alternatives 1 and 2, between 1,355 and 3,773 acres for Alternative 3, and between 819 and 2,421 acres for Alternative 4 would also be suitable for San Joaquin coachwhip and possibly coast horned lizard (see Tables 4.6-17, 4.6-18, and 4.6-19 in Vol. 2, Section 4.6, pp. 4.6-180 through 4.6-182). Mitigation that is provided to identify and relocate

coast horned lizard and San Joaquin coachwhip prior to construction is sufficient to reduce impacts to these species to less than significant levels.

Impacts to California Red-legged Frog and California Tiger Salamander

The distribution of California red-legged frog and California tiger salamander in the Los Vaqueros Watershed has been studied since the mid-1990s and is well described (see Vol. 2, Section 4.6, pp. 4.6-107 through 4.6-112). One comment from CDFG (Comment S_DFG-10) states that additional mitigation requirements should be imposed before a Less-than-Significant impact finding can be made for these species. The specific concerns raised by CDFG include the requirement to provide temporary and permanent mitigation for impacts to upland and aquatic habitat at a 3:1 mitigation ratio.

As stated in the Draft EIS/EIR, the habitat mitigation and compensation ratios presented in this Draft EIS/EIR are based on guidance provided in the MSCS with some modifications based on preliminary input provided by CDFG and USFWS staff during project meetings held at several points from 2004 to the present. The final identification of specific compensation ratios will be determined during ongoing consultation with resource agencies, as discussed in Section 3.8.2, Mitigation Strategy, above. The Draft EIS/EIR states that temporary and permanent impacts to California red-legged frog and California tiger salamander aquatic breeding sites shall be mitigated at a 3:1 ratio (Vol. 2, Section 4.6, Measure 4.6.2b, pg. 4.6-103; and Measure 4.6.4b, pg. 4.6-114), which is consistent with Comment S_DFG-10. Thus, the aquatic mitigation commitments in the Draft EIS/EIR are consistent with those identified by the commenter.

The MSCS guidelines do not specify compensation for the loss of California red-legged frog and California tiger salamander aestivation habitat, thus, direct mitigation was not presented in the Draft EIS/EIR for impacts to upland habitat. However, the Draft EIS/EIR mitigation and compensation summary (Vol. 2, Section 4.6, pg. 4.6-180) provides an allowance to compensate for upland habitat losses to California red-legged frog and California tiger salamander concurrently with mitigation that would be provided for impacts to San Joaquin kit fox grassland habitat. Thus, the majority of upland mitigation lands required for kit fox mitigation will jointly function as compensation for impacted sensitive amphibian habitat, for which permanent losses will be mitigated at a 3:1 ratio.

As the Draft EIS/EIR states, CCWD will continue to provide supplemental water to existing mitigation ponds during and following construction according to the existing terms and conditions for these mitigation sites (Vol. 2, Section 4.6, pg. 4.6-113). CDFG has requested that future mitigation for impacts to aquatic pond habitat for these amphibians provide compensatory new pond habitat that can be “hydrologically self-sustaining” without the need for a supplement water supply. CCWD will endeavor to incorporate this criterion into mitigation pond design. However, because few natural drainages in the Los Vaqueros Watershed could maintain hydrologically self-sustaining ponds, this may not be feasible; if “hydrologically self-sustaining” is deemed a more important mitigation criterion than proximity, some of the mitigation ponds may need to be located outside of the watershed (Draft EIS/EIR, Vol. 2, Section 4.6, pg. 4.6-115).

In its comment letter, CDFG identifies numerous mitigation requirements that it may impose on the California red-legged frog and California tiger salamander mitigation strategy. These include varying requirements for both species in terms of ponding duration, presence of vegetation, and the requirement for successful reproduction and metamorphosis during multiple years. The mitigation measures identified in the Draft EIS/EIR are not inconsistent with any of these suggestions and CCWD understands that specific mitigation design criteria will be subject to CDFG approval.

Impacts to Western Pond Turtle

CDFG and SMD (O_SMD-07) comment that habitat for western pond turtle should be conserved when possible and that a habitat management plan should include provisions to provide pond turtle habitat elements in created aquatic habitat. As discussed in Impact 4.6.5, some aquatic habitat for the western pond turtle would be lost as a result of reservoir expansion (inundation and dam modification) or temporarily degraded due to dewatering during construction. For the 160-TAF expansion (Alternative 4), the project could affect approximately seven ponds along with segments of drainages. Impacts to ponds due to expanded reservoir inundation are unavoidable. This impact to aquatic habitat for the western pond turtle is similar to that described in Draft EIS/EIR Impact 4.6.4 for the California red legged frog and the California tiger salamander. Mitigation Measure 4.6.4b requiring provisional compensatory aquatic habitat would also address impacts to the western pond turtle. However, to clarify the application of this measure to the pond turtle and incorporate CDFG recommendations for pond turtle mitigation the new mitigation measure below is added.

Comment S_DFG-11 states that a habitat management plan should include provisions that benefit western pond turtle such as basking sites and woody debris in ponds. The Draft EIS/EIR presently only provides for the identification and relocation of pond turtles prior to and during construction to minimize impacts to individual turtles. The Draft EIS/EIR inadvertently failed to include western pond turtle habitat provisions in the creation of aquatic habitat. Thus, impacted aquatic sites that presently support California red-legged frog breeding will be mitigated with sites that also provide habitat elements for western pond turtles. Mitigation Measure 4.6.5 is revised as shown below-to, further mitigate and reduce aquatic habitat impacts to western pond turtle to a less than significant level.

The Draft EIS/EIR text (Vol. 2, Section 4.6, pg. 4.6-119) is revised as shown below. These text changes and all other document revisions are included in Final EIS/EIR, Chapter 5, Section 5.1, Revisions to the Draft EIS/EIR.

> **Measure 4.6.5:** Before construction activities begin, a qualified biologist[1] shall conduct western pond turtle surveys within creeks and in other ponded areas affected by the project. Upland areas shall also be examined for evidence of nests as well as individual turtles. The

[1] The term "qualified biologist" refers to an individual who has at least a minimum education and qualifications that may include a 4-year degree in a biological sciences or other specific field and training and/or experience surveying, identifying, and handling the subject species. This individual differs from a "Service-approved biologist" in that the qualified biologist may only handle species that are not listed as threatened or endangered by the USFWS. The Service-approved biologist is authorized to relocate such species.

project biologist shall be responsible for the survey and for the relocation of turtles. Construction shall not proceed until a reasonable effort has been made to capture and relocate as many western pond turtles as possible to minimize take. However, some individuals may be undetected or enter sites after surveys, and would be subject to mortality. If a nest is observed, a biologist with the appropriate permits and prior approval from CDFG shall move eggs to a suitable location or facility for incubation, and release hatchlings into the creek system the following autumn.

In addition, concurrent with mitigation commitments to create and enhance aquatic sites for California red-legged frog (Measure 4.6.4b), CCWD shall include habitat elements in the aquatic habitat and tiger salamander plan that benefit western pond turtle. Such elements may include logs or rafts for emergent basking sites where needed and the maintenance of upland areas adjacent to ponds in a relatively open condition.

~~w~~Western pond turtles shall be included in the fish rescue operation described in Mitigation Measure 4.3.3 (Alternatives 1 and 2 only).

Impacts to San Joaquin Kit Fox

Several comments (S_DFG-12, L_EBRPD2-20, and EBRPD2-26) state the Draft EIS/EIR analysis is deficient with regard to project impacts and mitigation for San Joaquin kit fox. Comment S_DFG-12 states that impacts to grasslands located west of the Los Vaqueros Reservoir and the associated isolation and reduced accessibility to Round Valley Regional Preserve are not acknowledged in the Draft EIS/EIR. The Draft EIS/EIR recognizes, however, that the project alternatives would reduce potential regional movement opportunities for San Joaquin kit fox (Impact 4.6.7, Section 4.6, pp. 4.6-128 through 4.6-138) including a significant potential movement corridor west of Los Vaqueros Reservoir. As Impact 4.6.7 discloses, the project alternatives would permanently reduce potential regional movement opportunities for San Joaquin kit fox, which is considered a significant and unavoidable project impact despite the mitigation identified in the Draft EIS/EIR. As described in the text and presented in Figure 4.6-24 (Vol. 2, Section 4.6, pg. 4.6-130) the northeastern overland kit fox movement corridor would be mostly unchanged by the project alternatives. Accordingly, one movement corridor through the watershed lands would remain.

Mitigation for annual grassland impacts would include a combination of acquiring suitable annual grassland habitat with a particular emphasis on optimizing kit fox movement opportunities, and the improvement of such lands through adaptive management. Upon acquisition, a management plan would be implemented such that preserved grasslands would be enhanced to the benefit of target species and in particular, San Joaquin kit fox. This strategy was implemented within the Los Vaqueros Watershed upon the completion of the existing reservoir with the result being a 25 percent improvement in the suitability of annual grassland habitat for native species including kit fox (based on a 1993 USFWS Habitat Evaluation Procedure suitability index score of 0.80, versus 1.0 in 2006). Thus, the long-term enhancement of protected lands is an essential part of their management following acquisition.

A detailed GIS-based slope analysis of in-watershed lands was performed to identify the suitability of the western movement corridor and northeastern movement corridor for kit fox and

evaluate whether the latter area would continue to provide habitat continuity between Los Vaqueros Watershed lands and the Round Valley Regional Preserve following project implementation. The slope analysis showed that the western corridor was moderately sloped, but has several steeper areas that would inhibit kit fox movement, especially just north of the existing marina facility. The analysis also showed that a contiguous strand of moderately sloped terrain connects the Los Vaqueros Watershed to Round Valley Regional Preserve in the northeastern area and would continue to link these areas following project implementation. Based on this analysis, it is expected that San Joaquin kit fox would be able to use the northeastern corridor following reservoir expansion. The results of this analysis are incorporated into Figure 4.6-24 (Vol. 2, Section 4.6, pg. 4.6-130) of the Draft EIS/EIR. One comment (O_SMD-02) states that because of the loss of the western movement corridor, project mitigation should include the preservation of an entire corridor in Eastern Contra Costa County. While reservoir expansion would affect the potential movement corridor on the west side of the reservoir, it would not affect the existing movement corridor area northeast of the reservoir. After reservoir expansion, the area northeast of the reservoir will continue to provide movement opportunities for the kit fox to and from the Round Valley area. In addition, the mitigation program for the reservoir expansion project includes as an objective, protecting and enhancing other existing movemement corridors in the region, outside the watershed. In consultation with the resource agencies, CCWD will identify mitigation lands for acquisition and enhancement activities that address this objective.

As stated in comment S_DFG-12 and acknowledged by the Draft EIS/EIR (Vol. 2, Section 4.6, pg. 4.6-133), kit fox movement opportunities would be diminished in the area below (northeast from) the dam during construction of the Inlet/Outlet Pipelines, which would occur over a 2-year period for Alternatives 1, 2, and 3 and a one year period for Alternative 4. At a minimum, the potential western kit fox movement corridor, identified in Figure 4.6-25 (Vol. 2, Section 4.6, pg. 4.6-131), would continue to serve as a potential movement corridor for kit fox during construction and would be widened substantially as a result of reservoir drawdown. Thus, the area that the commenter identifies as the “highest quality north to south connection through the reservoir area,” would be retained intact during construction and for a period of approximately 1 to 2 years thereafter during the period when the reservoir is being filled to capacity. During that time, lands that are affected below the dam would be restored to emulate pre-project conditions.

Commenters also state that San Joaquin kit fox mitigation lands should ideally promote movement corridors and connectivity to kit fox conservation lands, including Round Valley Regional Preserve. This principle has been incorporated into the mitigation conservation strategy for the project. CCWD will work with resource regulatory agencies throughout the permitting and mitigation implementation process to identify suitable lands for acquisition and assess their value in terms of meeting the mitigation performance objectives.

Comment L_EBRPD2-26 (in part) states that the Draft EIS/EIR defers the actual selection of mitigation ratios to the resource agencies and that the stated mitigation ratios are too low. The Draft EIS/EIR does not defer mitigation. It identifies the compensatory ratios to be used in the mitigation of impacts to terrestrial biological resources, based on the CALFED MSCS guidance as well as the results of the impact analysis for this specific project. The final determination of the

mitigation acreage required will be based on a combination of factors including the quality of affected habitat, which has been identified, and the quality of mitigation lands to be acquired which will be evaluated in detail as part of the mitigation land acquisition program. Table 4.6-17 (Vol. 2, Section 4.6, pg. 4.6-179) in the Draft EIS/EIR identifies impacts to potential San Joaquin kit fox habitat under the proposed project and identifies the range of mitigation acreages that is anticipated by the project. Identifying a range of mitigation acreages is appropriate for developing the project mitigation strategy; final acreages will be based on the location and habitat suitability of mitigation lands.

One comment states that the identified mitigation ratios are inadequate to compensate for losses to existing mitigation lands, which mitigated for the impacts of the original reservoir project. As required in Draft EIS/EIR Mitigation Measure 4.7.6c (Vol. 2, Section 4.6, pg. 4.6-140), CCWD will both replace the affected conservation easements and compensate for impacts to habitat within these easements. To mitigate for impacts to the existing conservation easements, these easements would be relocated and re-established within the watershed on a 1:1 basis to preserve the total acreage required under conservation easement in accordance with the mitigation commitment for the original reservoir. In addition, to mitigate for the loss of habitat acres within the conservation easements due to expanded reservoir inundation, CCWD will acquire, enhance as appropriate and dedicate into conservation compensatory acreage or purchase mitigation credits at the additional compensation ratios identified in Mitigation Measure 4.7.6c. This measure ensures that the original easements are replaced and, in addition, new mitigation is implemented for the loss of habitat from the expansion project.

Comment L_EBRPD2-24 indicates that Project Alternatives would interfere with HCP/NCCP biological goals, a topic that is indirectly discussed in this section. For a more complete response to this and similar comments about consistency of the Draft EIS/EIR mitigation strategy with the ECCC HCP/NCCP, see Section 3.8.8, below.

Two comments state that the project should mitigate for kit fox movement barriers at Los Vaqueros Reservoir by making improvements to wildlife undercrossings at Vasco Road. The commenter notes that substantial wildlife mortality can be attributed to Vasco Road vehicle traffic and suggests that removal of the kit fox movement corridor west of Los Vaqueros Reservoir will influence kit foxes to cross Vasco Road. As stated previously, the conservation of mitigation lands that promote regional connectivity for kit fox populations will be a priority of the project mitigation strategy for this species. Based on the analysis presented in the Draft EIS/EIR, and the slope evaluation described above, following project construction, the existing kit fox movement corridor north of the reservoir will continue to provide connectivity between the Herdlyn Watershed, Los Vaqueros Watershed, and Round Valley through lands that are located northeast of the reservoir. Vasco Road is located about two miles south and east of the reservoir. Kit fox traveling on the northeast corridor would not cross Vasco Road. Given the distance between the northeast corridor and Vasco Road, the project is not expected to change the frequency or types of interactions between kit foxes and Vasco Road. Nonetheless, the suggestion that improvements be made to the existing wildlife undercrossings of Vasco Road will be considered, in consultation with the resource agencies, as one way to protect and enhance regional movement opportunities for the kit fox and other wildlife as part of the project mitigation program.

One comment suggests that construction impacts to kit foxes are not adequately mitigated and that the project should include construction-period provisions to ban pets and firearms, cover open pipes, and restrict the use of pesticides in areas where kit foxes are known to occur. These are common recommendations that USFWS requires for projects, as identified in their *Standardized Recommendations for Protection of the San Joaquin Kit Fox* (USFWS, 1999), and these measures will be included in the more detailed plans developed to implement the project mitigation measures.

One commenter (O_EBCNPS-02) states that the description of the western movement corridor in the Draft EIS/EIR as a potential *undocumented* (emphasis added) movement corridor for San Joaquin kit fox is inconsistent with other CCWD references such as annual kit fox reports, the website and outreach publications. The distribution of kit foxes and their habitat use in the local and regional project vicinity is first presented in the Affected Environment section of Section 4.6 in the Draft EIS/EIR (Vol. 2, pp. 4.6-52 through 4.6-55), which states in regard to the potential western movement corridor:

> *The corridor is interrupted in two locations by oak woodlands that measure roughly 80 feet and 300 feet in width with gentle to moderate topography. Although a potential movement corridor, kit fox use has not been documented in this area* (Vol. 2, Section 4.6, pg. 4.6-54).

This statement is also repeated in the cumulative impact discussion (Vol. 2, Section 4.6, pg. 4.6-176). Both statements are fully consistent with CCWD kit fox surveys that have been performed annually in the watershed since 1998, and published biological studies describing the watershed. The Draft EIS/EIR recognizes that the western corridor is valuable habitat, even though kit fox have not been documented in that location.

Impacts to Burrowing Owl

Impacts to the burrowing owl are described in the Draft EIS/EIR (Vol. 2, Section 4.6, pp 4.6-140 through 4.6-145). Comment S_DFG-13 suggests burrowing owl mitigation measures for the project. The suggested compensation ratio (a minimum 2:1 ratio) is presently provided in the Draft EIS/EIR (Measure 4.6.8b, Vol. 2, Section 4.6, pg. 4.6-146) with an allowance for the purchase and enhancement of a permanent conservation easement on burrowing owl mitigation lands. As suggested by the commenter, mitigation lands would be conveyed to a managing agency or institution in perpetuity (Measure 4.6.8b, Vol. 2, Section 4.6, pg. 4.6-146).

The burrowing owl mitigation strategy presented in Measure 4.6.8a (Vol. 2, Section 4.6, pg. 4.6-145) uses the most recent Burrowing Owl Consortium multi-phase approach, which was specifically recommended for use by CDFG. Consistent with Comment S_DFG-10 and the Burrowing Owl Consortium recommendations, the Draft EIS/EIR states that “artificial nesting burrows would only be provided as a temporary measure when natural burrows are lacking” (Measure 4.6.8a, Vol. 2, Section 4.6, pg. 4.6-146).

Comment S_DFG-13 indicates that the “presence and abundance of host burrowers will be measured as part of the site's success criteria.” The majority of temporary grassland impacts would occur on private lands in association with pipeline construction for Alternatives 1 and 2.

While the Draft EIS/EIR provides for vegetative restoration of temporarily impacted lands with an appropriate assemblage of native vegetation suitable to the area (Measure 4.6.4a, Vol. 2, Section 4.6, pg. 4.6-112), no commitments were provided for the enhancement of private, non-CCWD owned lands to monitor the status of California ground squirrel or other burrowing owl host burrowers. This is appropriate as CCWD does not have control of the long-term management or monitoring of lands that are privately owned. The burrowing owl mitigation strategy, as described in the Draft EIS/EIR (Measure 4.6.8b, Vol. 2, Section 4.6, pg. 4.6-146), relies on habitat acquisition to compensate for burrowing owl habitat losses (based on the above specified ratios). Burrowing owl mitigation lands will be subject to CDFG review and approval. Thus, during the site selection and CDFG approval process, CCWD anticipates that mitigation lands will be subject to minimum requirements regarding the presence and abundance of host burrowers such as California ground squirrel. With regard to facility siting, none of the known burrowing owl locations in the Los Vaqueros Watershed occur near proposed facilities, including the Eastside Trail and Westside Trail alignments.

Impacts to Non-scrub Alameda Whipsnake Habitat

CDFG states (Comments S_DFG-01 and S_DFG-14) that the proposed mitigation measures do not adequately reduce impacts to Alameda whipsnake to a less than significant level. This statement is based on recent findings that show that Alameda whipsnake use substantially more non-scrub (i.e., "non-core") upland habitat than was known when the 2000 CALFED Guidelines were finalized. The Draft EIS/EIR adequately characterizes the extent of non-scrub habitat impacts within 1,000 feet and 2,500 feet of high quality scrub habitat, which may support Alameda whipsnake. As the Draft EIS/EIR states, Project Alternatives 1, 2, and 3 would impact about 457 acres of non-scrub upland habitat and Alternative 4 would impact about 159 acres of non-scrub habitat within 2,500 feet of upland scrub habitat (see Table 4.6-16, Vol. 2, Section 4.6, pg. 4.6-154). However, consistent with CALFED Guidelines, the Draft EIS/EIR did not propose compensatory mitigation.

In addition, the present standard for Alameda whipsnake mitigation, as embraced by the ECCC HCP/NCCP, does not directly provide compensation for upland habitat losses near upland scrub habitat that supports Alameda whipsnake. Instead, mitigation strategies emphasize the acquisition and preservation of core and movement habitat to preserve primary habitat and create important linkages. For example, the ECCC HCP/NCCP seeks to generally expand public lands north of Morgan Territory Regional Preserve to include patches of chaparral/scrub habitat as well as grasslands and oak woodlands (ECCCHCPA, 2006). Thus, the ECCC HCP/NCCP generally acknowledges and emphasizes the conservation of Alameda whipsnake movement habitat without being tied to a specific habitat compensation ratio.

The specific circumstances within the Los Vaqueros Watershed that support the mitigation ratio and compensation package proposed in the Draft EIS/EIR for Alameda whipsnake include:

1. Project location relative to designated critical habitat. The Los Vaqueros Project is not located within and does not affect designated critical habitat for Alameda whipsnake.

2. Previous USFWS and CDFG Alameda whipsnake mitigation. The USFWS and CDFG have consistently used 500 feet as a standard distance for determining impacts to non-scrub Alameda whipsnake movement habitat. Using the 2006 ECCC HCP/NCCP as a basis for comparison, this analysis modeled impacts to Alameda whipsnake "perimeter" or "movement" habitat using a distance of 500 feet (ECCCHCPA, 2006). Using this approach, non-scrub Alameda whipsnake impacts in the entire inventory areas were estimated to be only 341 acres.

3. Project effects to scrub habitat. The Los Vaqueros Project's impacts to high quality upland scrub habitat are small (less than 1.0 acre) and are adequately mitigated by Measure 4.6.10b following CALFED guidelines. Also, the expanded reservoir would not separate or isolate any upland scrub areas from one another.

4. Use of the correct metric as a basis for mitigation. The 1,000-foot and 2,500-foot study buffers used in the Draft EIS/EIR analysis were identified "for informational purposes that are not intended to inform project mitigation requirements." (Section 4.6, pg. 4.6-154). These buffer distances were selected because they acknowledge the recent understanding that whipsnakes may utilize areas greater than 500 feet from core habitat. The importance of these areas to the long-term conservation of Alameda whipsnakes, however, is still being assessed.

CDFG's suggested mitigation ratio of 3:1 for non-scrub habitat impacts is high in light of the project-specific information summarized above. The CALFED MSCS process does not address potential impacts to non-scrub Alameda whipsnake habitat. The concept of including impacts to non-scrub Alameda whipsnake habitat was developed during consultation with CDFG and USFWS from 2007 to 2009. Given the above considerations and the fact that Alameda whipsnake habitat is under minimal development threat in the Los Vaqueros Watershed region, the 2,500 foot study buffer area was coupled with a 1.1:1 mitigation ratio to develop the non-scrub Alameda whipsnake mitigation commitment. Consistent with the ECCC HCP/NCCP approach and based on the recent and developing scientific understanding of Alameda whipsnake habitat use, Mitigation Measure 4.6.10b is revised as follows to reduce impacts for potential losses to Alameda whipsnake movement habitat to a less than significant level. The following text change is included in Chapter 5, Revisions to the Draft EIS/EIR, in this document (Vol. 4).

> **Measure 4.6.10b:** Consistent with MSCS guidelines, CCWD shall provide compensation for permanent and temporary loss of upland scrub habitat that may support Alameda whipsnakes by either (1) compensating for permanent habitat losses by acquiring, protecting, and managing 2 to 5 acres of existing occupied habitat for every acre within the same area of occupied habitat that would be affected, and/or (2) enhancing or restoring 2 to 5 acres of suitable habitat near the affected areas for every acre of occupied habitat affected (CALFED, 2000).
>
> Concurrent with other project requirements to mitigate for impacts to grasslands and oak woodland habitat, as summarized in Table 4.6-17, a portion of the total grassland and oak woodland mitigation requirement shall be chosen and preserved in perpetuity to provide linkages between other chaparral and scrub habitat, or to serve as foraging and movement habitat for Alameda whipsnake near existing scrub habitat patches. Mitigation shall be provided at a 1.1:1 mitigation ratio for all areas within 2,500 feet of core scrub habitat. Therefore, under Alternatives 1, 2 and 3, about 503.1 acres of the total grassland and oak

woodland mitigation commitment would be located within 2,500 feet of areas that are considered to provide core Alameda whipsnake habitat. Under Alternative 4, about 173.8 acres of grassland mitigation lands would be provided for this purpose.

Mitigation for Alameda Whipsnake

One commenter (L_EBRPD2-29) suggests that the proposed mitigation ratios for Alameda whipsnake impacts are unsupported and the mitigation for impacts to the whipsnake improperly defer selection of a final ratio. The mitigation ratios and selection criteria identified in the Draft EIS/EIR are based on CALFED MSCS guidelines.

In compliance with CEQA Guidelines and consistent with CALFED recommendations, the Draft EIS/EIR provides specific habitat-based compensation to provide for the replacement of impacted scrub habitat. As noted above, the Draft EIS/EIR commits to the replacement of impacted scrub habitat "by either (1) compensating for permanent habitat losses by acquiring, protecting, and managing 2 to 5 acres of existing occupied habitat for every acre within the same area of occupied habitat that would be affected and/or (2) enhancing or restoring 2 to 5 acres of suitable habitat near the affected areas for every acre of occupied habitat affected." (Measure 4.6.10b, Vol. 2, Section 4.6, pg. 4.6-158). The anticipated impacts to scrub habitat are clearly presented in the Draft EIS/EIR, consisting of 0.5 acres of temporary impact and 6.9 acres of permanent impact to scrub habitat under Alternatives 1, 2, and 3 and 0.3 acres temporary and 6.4 acres permanent impact under Alternative 4 (Section 4.6, Vol. 2, pg. 4.6-153 through 4.6-156). The mitigation requirements identified in the document include the range of possible mitigation requirements based on CALFED MSCS scrub replacement guidance (2:1 to 5:1), which total 14.0 to 34.8 acres of replacement scrub habitat under Alternatives 1 through 3 and 13.1 to 33.5 acres for Alternative 4 (see Tables 4.6-17, 4.6-18, and 4.6-19, Section 4.6, Vol. 2, pg. 4.6-180).

The majority of scrub habitat that would be impacted by the project (5.8 of 7.0 acres) is relatively low quality habitat that became established on the borrow site for the existing dam. This habitat is about 2 miles distant from other scrub habitat in the watershed. This area would likely be compensated at the lower presented mitigation ratio (i.e., 2:1), thus creating a need for 11.6 acres of compensation habitat. The remaining areas (1.2 of 7.0 acres) are native scrub on the west side of the reservoir that would likely be mitigated at the highest ratio (5:1), with a requirement for 6.0 acres of upland scrub habitat. Thus, anticipated area of upland scrub replacement lands would be 11.6 + 6.0 acres, or 17.6 acres. As with habitat on the existing borrow site, it is anticipated that the expanded borrow site will also support scrub habitat.

Comment L_EBRPD2-29 states that "even the high end of the range, a 5:1 ratio, is not high enough to account for the unique characteristics of scrub and chaparral habitat that make it difficult to replicate successfully." Given the recent and spontaneous origin of the upland scrub habitat, which established on its own on the former borrow site, the suggested mitigation ratios (5:1 to 10:1) would not apply to this site. The comment further notes that "the Draft EIS/EIR does not provide any examples of successful creation of scrub and chaparral habitat to support the feasibility of the proposed mitigation." The current presence of scrub habitat on the existing borrow site demonstrates the feasibility and suitability of lands within the Los Vaqueros

Watershed for the creation of scrub habitat. With the implementation of site enhancement, it is anticipated that the expanded borrow site will support similar scrub and chaparral to the existing borrow site within ten years following project implementation.

Proposed Mitigation through Habitat Protection

One commenter (L_EBRPD2-26 and 27) states that the proposed mitigation for California tiger salamander, California red-legged frog, Alameda whipsnake, Swainson's hawk, and San Joaquin kit fox through the acquisition and preservation of mitigation lands does not adequately mitigate the loss of habitat. The regional recovery objectives for special status plant and wildlife species presented in the Draft EIS/EIR are guided by the habitat compensation requirements and recommendations specified by CDFG and USFWS. For California tiger salamander and California red-legged frog the USFWS has concluded that the 3:1 replacement of impacted aquatic habitat with a suitable upland buffer is, in most cases, sufficient to mitigate for project impacts to aquatic habitat and is consistent with the recovery of these species. The created ponds will be subject to long-term management and monitoring, as identified in the Draft EIS/EIR (see Draft EIS/EIR Measures 4.6.4a and 4.6.4b, Vol. 2, Section 4.6, pp. 4.6-112 through 4.6-115.

For Alameda whipsnake, a portion of the applicable CALFED MSCS protection measure for the species states that acquiring, protecting and managing upland scrub habitat is sufficient to mitigate habitat losses. The measure further states that enhancing or restoring habitat may also be performed to mitigate habitat losses (Draft EIS/EIR, Vol. 2, Section 4.6, pg. 4.6-158).

The Draft EIS/EIR mitigation strategy for Swainson's hawk came from the most recent (1994) CDFG mitigation guidelines for this species and is consistent with CDFG mitigation requirements. As stated in the Draft EIS/EIR, a specific allowance is provided for the acquisition and restoration of lands according to CDFG requirements: "CCWD shall acquire and/or restore foraging habitat for Swainson's hawks and golden eagles in accordance with CALFED and CDFG guidelines" (DEIS/DEIR, Section 4.6, pg. 4.6-153). The specific CDFG requirement is, "(t)o mitigate for the loss of (Swainson's hawk) foraging habitat…, the Management Authorization holder/project sponsor shall provide Habitat Management (HM) lands to the Department…" and provide a nominal management endowment fee per acre (CDFG, 1994). The loss of Swainson's hawk foraging habitat would only occur under Alternatives 1, 2 and 3 and would be limited to less than 0.1 acre of agricultural land due to the footprint of numerous small (less than 0.002 acre) vaults on the Delta-Transfer Pipeline. CCWD would comply with CDFG guidance to ensure that the needed mitigation lands (up to approximately 0.15 acre of agricultural land) meet State acquisition and management requirements.

For the San Joaquin kit fox, the resource agencies have concluded that a 3:1 mitigation ratio, which would ultimately preserve 75 percent of remaining kit fox habitat (3 units preserved for each 1 unit developed), is generally sufficient and consistent with the recovery of this species.

EBRPD (L_EBRPD2-27) and CDFG (S_DFG-16) comment that the Draft EIS/EIR provides for the protection of existing habitat for California tiger salamander, California red-legged frog, Alameda whipsnake and Swainson's hawk without providing for the creation of new habitat or

improvement of existing habitat. However, habitat creation, enhancement and compensation is identified for each of these species in Vol. 2, Section 4.6 in the Draft EIS/EIR as follows: Measure 4.6.4b (pg. 4.6-114) specifies that aquatic breeding habitat for California red-legged frog and California tiger salamanders be created at a 3:1 replacement ratio; Measure 4.6.10b (Vol. 2, Section 4.6, pg. 4.6-158, as amended above) specifies the replacement and/or enhancement or restoration of scrub habitat at a 2:1 to 5:1 ratio based on the quality of impacted habitat, and the conservation of upland non-scrub habitat within 2,500 feet of core scrub areas; and Measure 4.6.9b (Vol. 2, Section 4.6, pg. 4.6-153) requires acquisition and/or restoration of foraging habitat at a ratio of 1:1 for permanent impacts to Swainson's hawk foraging habitat.

SMD (O_SMD-07) asserts that mitigation for certain species (i.e., the western pond turtle, the San Joaquin coachwhip, the coast horned lizard, the American badger, the San Joaquin pocket mouse, and special status bat species) did not include compensation (the Draft EIS/EIR considered avoidance to be sufficient), which is not considered supportable by the commenter. Several species (the western pond turtle, the San Joaquin coachwhip, the coast horned lizard) have been specifically addressed in Section 3.8.4 above. For the others (the American badger, the San Joaquin pocket mouse, and special status bat species) the avoidance and minimization of impacts to the species and their habitat are a recognized form of mitigation for biological impacts. Existing habitat, potential impacts (Impact 4.6.15) and mitigation of these species is discussed in the Draft EIS/EIR (Vol. 2, Section 4.6, Table 4.6.6, pg. 4.6-28 and pp. 4.6-56 through 4.6-58, and pp. 4.6.169 through 4.6-172). The Draft EIS/EIR indicates that prior to mitigation, project effects to American badgers, special status bats, and San Joaquin pocket mice would be potentially significant, and that the implementation of Mitigation Measures 4.6.15a and 4.6.15b would reduce this impact to Less-than-Significant.

Mitigation Measure 4.6.15a includes Measure 4.6.7b which would provide habitat conservation for temporary and permanent impacts on annual grasslands that may support San Joaquin kit fox; this compensatory mitigation would also benefit American badgers and San Joaquin pocket mouse.

The Draft EIS/EIR states that the loss of maternal roosting sites for special status bat species could be a potentially significant impact (Vol. 2, Section 4.6, pg. 4.6-169). While Mitigation Measure 4.5.15b would protect any active roosting sites during the roosting period, no measures were identified to mitigate for this habitat that could be lost as a result of the proposed project. However, Mitigation Measure 4.6.1b requires the preservation and/or restoration of valley oak, blue oak woodlands, and Fremont cottonwood series. These habitat types could also be used by special status bats as maternal roosting sites. The following text has been added to Mitigation Measure 4.6.15b after the second bullet:

> Implementation of Mitigation Measure 4.6.1b requires the creation, enhancement and preservation of a variety of habitat types, including valley oak, blue oak woodlands and Fremont cottonwood series. These habitats and this mitigation would additionally benefit special status bats and provide potential roosting habitat.

This text change is included in Chapter 5, Revisions to the Draft EIS/EIR, in this document (Vol. 4).

Impacts to Actively Nesting Birds

CDFG comments (Comment S_DFG-15) that the project does not adequately mitigate for lost nests of birds that have high nest site fidelity, such as burrowing owl, red-shouldered hawk, Swainson's hawk, and others. This comment states that mitigation for such impacts should include the protection and enhancement of known nesting sites on mitigation lands that would be protected in perpetuity. This requirement has been stipulated in the Draft EIS/EIR for burrowing owl (Measure 4.6.8b, Vol. 2, Section 4.6, pg. 4.6-146), though no active burrowing owl nests sites have been identified that would be directly impacted by the project. No Swainson's hawk nests have been identified that would be directly impacted by the project. A single Swainson's hawk nest is known within a cottonwood tree located 300 feet from the Delta-Transfer Pipeline alignment, as identified in the Draft EIS/EIR; however, project activities for Alternatives 1, 2 and 3 would not directly impact this nest and Alternative 4 would not include this pipeline. Golden eagle nests are surveyed for annually and monitored by CCWD staff to inform the closure of trails to public access. Based on data provided by CCWD staff in support of the Draft EIS/EIR, no golden eagle nests would be directly impacted by the project under any alternative. In addition, there are no documented red-shouldered hawk, red-tailed hawk, ferruginous hawk or barn owl nests in the project area. Based on surveys and data provided by CCWD staff in support of the Draft EIS/EIR, no nests for these species would be directly impacted by the project under any alternative.

With respect to new nests that may appear, comment S_DFG-15 recommends performing preconstruction raptor surveys within 15 days prior to ground-disturbing or construction activities. The Draft EIS/EIR (Vol. 2, Section 4.6, pg. 4.6-163) provides for a qualified wildlife biologist to conduct preconstruction surveys of all potential nesting habitat within 30 days of ground-disturbing or construction activities. The 30-day period presented in the Draft EIS/EIR is consistent with CDFG preconstruction breeding bird survey guidance. Additionally, construction activities will employ a qualified on-site biological monitor to allow clearance for burrowing owls (Measure 4.6.8a, Vol. 2, Section 4.6, pg. 4.6-145), Alameda whipsnake (Measure 4.6-10a, Vol. 2, Section 4.6, pg. 4.6-158), San Joaquin kit fox (Measure 4.6.7a, Vol. 2, Section 4.6, pg. 4.6-139) and other protected species. These additional required preconstruction surveys also provide survey coverage for nesting birds that may occur in the project area.

Save Mount Diablo comments (Comment O_SMD-10) that an avian mortality monitoring plan should be reviewed and adopted with the Draft EIS/EIR. Sufficient mitigation protection has been provided in the Draft EIS/EIR (e.g., Measure 4.6.12a – 4.6.12c, Vol. 2, Section 4.6, pg. 4.6-162) that impacts to nesting birds would be avoided and minimized by the project. Existing measures that are proposed in the Draft EIS/EIR are sufficient to protect nesting birds.

Comment O_SMD-11 requests that the analysis include a study of the ways in which birds may use surrounding bodies of water during project construction. The Draft EIS/EIR provides an adequate analysis of anticipated project impacts on waterfowl and shorebirds. As stated in the Draft EIS/EIR, during dam construction for Alternatives 1, 2, and 3, water dependent migratory birds are expected to use other nearby reservoirs and water bodies as foraging and stopover locations (Impact 4.6.16, Vol. 2, Section 4.6, pg. 4.6-173). These include large aquatic features

such as the Delta and Clifton Court Forebay, but also local reservoirs such as Lake Del Valle, the Livermore Chain of Lakes, San Antonio Reservoir, San Leandro Reservoir, Suisun Bay, and San Francisco Bay. This analysis does not include the California Aqueduct or the hundreds of livestock ponds that occur throughout the Altamont Hills, which provide additional habitat. As explained in the Draft EIS/EIR, surrounding water bodies are considered to have ample capacity to support birds that may be displaced during project construction under Alternatives 1, 2, and 3. Under Alternative 4 the reservoir water level would be drawn down but not completely drained. The lowered water level in the reservoir during the construction period would be similar to levels reached at times during drought period operations. Water remaining in the reservoir during construction of the 160-TAF reservoir under Alternative 4 would continue to provide habitat for waterfowl and shorebirds.

Comment L_EBRPD2-20 generally states that there will be significant destruction of habitat and wildlife movement corridors that wildlife species use to travel to EBRPD lands located near the Los Vaqueros Reservoir Expansion Project impact areas. The commenter does not specifically identify EBRPD lands by name, but is presumably referring to the potential loss of the west side movement corridor that is discussed in the Draft EIS/EIR and potential effects on wildlife movement into the EBRPD Round Valley Regional Preserve. Potential project effects to this and other wildlife movement corridors and the continued viability of movement corridors into Round Valley Regional Preserve, are discussed in the Draft EIS/EIR (Vol. 2, Section 4.6, pp. 4.6-129 through 4.6-132) and are further analyzed in Final EIS/EIR Sections 3.8.3 Habitat Impacts and Mitigation, Response 3.8.4 Wildlife Impacts and Mitigation; and Response 3.8.9 Cumulative Effects. These analyses indicate that remaining movement corridors will continue to provide access to the Round Valley Regional Preserve. Other EBRPD properties in the Los Vaqueros region are the Morgan Territory Regional Preserve, Brushy Peak Regional Preserve and Vasco Caves Regional Preserve. The Los Vaqueros Reservoir Expansion Project would not eliminate or substantially modify wildlife movement corridors that are used to access these EBRPD lands.

Comment L_EBRPD2-20 goes on to discuss potential impacts to the Byron Vernal Pools Regional Preserve, however does not provide any further information about where habitat and wildlife movement corridors could be affected as a result of the project. As discussed above in Section 3.8.3 (Habitat Impacts and Mitigation), the pipeline alignment was relocated to Armstrong Road to avoid the preserve property. Under Alternatives 1 and 2, the proposed Transfer-Bethany pipeline construction zone would remain within Armstrong Road right of way, to the extent possible, to avoid existing and proposed wetlands in the Preserve. In this manner, pipeline construction impacts to the proposed EBRPD Byron Vernal Pools Regional Preserve would be avoided or minimized and, if necessary, mitigated. Wildlife movement would be temporarily affected in the vicinity of active construction; however, the project would not contribute to a significant destruction of habitat and wildlife movement corridors in or near the proposed preserve under either Alternative 1 or 2, as the commenter identifies. Alternatives 3 and 4 do not include the Transfer-Bethany Pipeline and so no impact to the Byron Vernal Pools Regional Reserve would occur.

3.8.5 Special-Status Plant Impact Analysis and Mitigation

Comment Summary

This section of this master response responds to all or part of the following comments:

L_EBRPD2-31 O_EBCNPS-04 L_CCCPW-04

Summary of Issues Raised by Commenters

- Special-status plant surveys on the Transfer-Bethany Pipeline, Delta-Transfer Pipeline and Power Options 1 and 2 alignments were conducted during spring months when Congdon's tarplant, big tarplant and other late season plant species would not be evident or identifiable. The EIR eliminated these species from further analysis of potential impacts.
- The Draft EIS/EIR should identify and provide mitigation for impacts to habitat that was created or restored as mitigation for the original reservoir.
- Potential surveys and reports did not take into account locally rare, unusual or significant species.

Response

Timing of Special-status Plant Surveys

EBRPD and EBCNPS question whether the special-status plant surveys were appropriately timed to characterize the presence or absence of Congdon's tarplant, big tarplant and other rare late season plant species in the project area. The commenters are correct that botanical surveys on the Transfer-Bethany Pipeline, Delta-Transfer Pipeline and Power Options 1 and 2 alignments were conducted during the month of April (2008), which was the only period that these private lands were accessible. This is because access to the majority of lands on the Transfer-Bethany Pipeline alignment was achieved through court order. As acknowledged in the Draft EIS/EIR, this survey window was not adequate for rare plants that are identifiable only during summer months, thus Mitigation Measure 4.6.3a required that additional surveys be conducted prior to construction in limited areas.

Based on the ESA's 2008 rare plant survey report, which is a component of the project record, the plant surveys were appropriately timed for the majority of special status plants that occur in the regional project vicinity (ESA, 2008). Stated differently, most species reach their peak flowering, or are otherwise identifiable in a vegetative state, within the period that botanical surveys took place. However, as explained in ESA's 2008 botanical survey report, several species including big tarplant do not become identifiable until later in the season. The 2008 botanical survey report stated that an additional survey was required to identify the distribution of big tarplant, the distribution of which in the Transfer-Bethany Pipeline, Delta-Transfer Pipeline and Power Options 1 and 2 alignments would be ascertained by a subsequent summer survey; however, this conclusion was inadvertently not carried forward into the Draft EIS/EIR.

Unlike big tarplant, Condon's tarplant was one of the species that was characterized in ESA's 2008 botanical survey report. Based on survey findings, the report stated that the botanical survey window was adequate to determine the presence/absence of Condon's tarplant, which is identifiable in late spring. The full list of plant species considered during surveys is provided in ESA's 2008 botanical survey report, which includes all California Native Plant Society List 1 through 4 species as well as locally rare, unusual, or significant species.

Measure 4.6.3a provides that, prior to final design of pipelines and power options, late season botanical surveys shall be completed on out-of-watershed alignments following CDFG and USFWS special-status plant survey guidelines. In the event that special status plants are identified during surveys, Measure 4.6.3b shall be implemented to avoid and minimize impacts to the identified population. No modifications are required to the Draft EIS/EIR to identify potential impacts to late season plant species, or to avoid and minimize protect impacts to identified plant populations.

Note the Transfer-Bethany pipeline, the Delta-Transfer pipeline, and Power Options 1 and 2 only comprise components of Alternatives 1 and 2 and that Alternative 3 does not include the Transfer-Bethany pipeline and Alternative 4 does not include any of these facilities.

Impacts to Created and Restored Habitat

Comment L_CCCPW-04 states that the EIR should identify mitigation for habitat lost due to raising the reservoir water surface elevation, as well as the loss of habitat that was created or restored to mitigate the original Los Vaqueros Reservoir project. The issue of potential impacts to habitat that was created or restored following the creation of the original Los Vaqueros Reservoir is discussed in the Draft EIS/EIR. As discussed in the Draft EIS/EIR, these habitats are limited to ponds and other aquatic features that were created to offset wetland losses (see Table 4.6.10 in Vol. 2, Section 4.6, pg. 4.6-93 through 4.6-94) and oak tree mitigation plantings (Table 4.6.9 in Vol. 2, Section 4.6, pg. 4.6-85 through 4.6-86). Impacts to mitigation ponds that were created to benefit California red-legged frog following the creation of Los Vaqueros Reservoir are discussed in Impact 4.6.4 and presented in Table 4.6-11 (Vol. 2, Section 4.6, pg. 4.6-108). Thus, the Draft EIS/EIR accounts for acreages of both habitats previously created or restored as mitigation for the original reservoir and habitat that existed or developed naturally within the inundation areas. Whether some of this mitigation would occur along Kellogg Creek would be determined by CCWD following identification of sites by a qualified biologist in coordination with CDFG, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, and/or the Regional Water Quality Control Board under Mitigation Measure 4.6.2b. For existing mitigation lands, Mitigation Measures 4.6.4a and 4.6.4b would reduce impacts to a less than significant level (Draft EIS/EIR, Vol. 2, Section 4.6, pp. 4.6-112 through 4.6-115). The Draft EIS/EIR also includes a discussion of impacts to wetlands and stockponds previously created as mitigation (see Fig. 4.6-15, Vol. 2, Section 4.6, pp. 4.6-67 through 4.6-68, 4.6-107 through 4.6-112).

3.8.6 Wetlands and Vernal Pools

Comment Summary

This section of this master response responds to all or part of the following comments:

F_EPA-02 S_DFG-07

Summary of Issues Raised by Commenters

- Impacts to vernal pools on the Transfer-Bethany Pipeline should be considered permanent.
- Wetland mitigation should be consistent with the new Clean Water Act Section 404 Final Compensatory Mitigation Rule of April 20, 2008, which seeks to ensure permanent protection of all compensatory mitigation project sites.
- Acreage estimates must include CDFG jurisdictional areas addressed in Fish and Game Code Section 1600 et. seq., not just U.S. Army Corp of Engineers (USACE) wetlands.
- Temporary impacts at the new Delta Intake and Pump Station would not be eliminated by site restoration and by removal of the cofferdam at the completion of in-channel work.
- Avoidance strategies must include siting access vaults, manholes, and blow off valves for the pipelines outside of CDFG jurisdictional areas and where they will minimize impacts to sensitive habitat for native species. Since the draft EIR does not specifically prohibit the location of these facilities in jurisdictional areas, an impact estimate should be provided in the EIR.

Response

Wetlands Impacts and Mitigation

The U.S. Environmental Protection Agency (EPA) comments that vernal pool impacts along the Transfer-Bethany Pipeline alignment should be considered permanent (F_EPA-02) and that wetland mitigation should follow the new federal Clean Water Act guidance issued on April 20, 2008. Another comment (S_DFG-07) asserts that temporary impacts are those that last less than one season and that occur in areas where in-site restoration is reasonably expected to restore the area to pre-project conditions. The Draft EIS/EIR (Vol. 2, Section 4.6, pg. 4.6-88) presently states that up to 0.86 acre of northern claypan vernal pool habitat would be impacted by the pipeline alignment and that these areas would be restored following construction. The Draft EIS/EIR inadvertently presents this impact as temporary in Table 4.6-9, Sensitive Plant Community Impacts by Project Component (Vol. 2, Section 4.6, pg. 4.6-84), but it is correctly presented as permanent in Table 4.6-10 Wetland Impacts by Project Component (Vol. 2, Section 4.6, pg. 4.6-93). The 0.86 acre of impact to vernal pools is considered permanent because the features will be affected in total, thus requiring the creation of replacement features. As stated in the Draft EIS/EIR (Vol. 2, Section 4.6, pg. 4.6-100), “Installation of the pipeline would result in an estimated temporary impact to 3.03 acres of wetland and *permanent impacts* [emphasis added] to twelve seasonal pools or topographic depressions totaling 0.86 acre that occur in or next to the Transfer-Bethany Pipeline.” The **revised Table 4.6-9**, below, has been updated to reflect that these vernal pool impacts are permanent, not temporary. (Revised Table 4.6-9 and all other document revisions are included in Final EIS/EIR, Chapter 5, Revisions to the Draft EIS/EIR.)

REVISED DRAFT EIS/EIR TABLE 4.6-9
SENSITIVE PLANT COMMUNITY IMPACTS BY PROJECT COMPONENT (ACRES)[a]

	Alternatives 1 and 2			Alternative 3			Alternative 4		
Project Component	**Temporary**	**Permanent**	**Total**	**Temporary**	**Permanent**	**Total**	**Temporary**	**Permanent**	**Total**
In-Watershed Facilities									
Reservoir Inundation Footprint and Dam									
Blue oak series	0.00	68.61	68.61	0.00	68.61	68.61	0.00	17.55	17.55
Bulrush-cattail series	0.00	2.50	2.50	0.08	2.50	2.50	0.00	1.95	1.95
Fremont cottonwood series	0.00	0.94	0.94	0.00	0.94	0.94	0.00	0.00	0.00
Purple needlegrass series	0.00	0.34	0.34	0.00	0.34	0.34	0.00	0.00	0.00
Saltgrass series	0.00	0.08	0.08	0.00	0.08	0.08	0.00	0.08	0.08
Valley oak series	0.00	29.15	29.15	0.00	29.15	29.15	0.00	16.42	16.42
Valley oak mitigation plantings	0.00	128.03	128.03	0.00	128.03	128.03	0.00	128.03	128.03
Blue oak mitigation plantings	0.00	9.02	9.02	0.00	9.02	9.02	0.00	9.02	9.02
Subtotal	**0.00**	**238.67**	**238.67**	**0.08**	**238.67**	**238.67**	**0.00**	**173.04**	**173.04**
Other In-Watershed Facilities [b]									
Bush seepweed series	0.38	0.00	0.38	0.38	0.00	0.38	0.38	0.00	0.38
Blue oak series	5.73	18.79	24.53	5.73	18.79	24.53	3.25	11.84	15.09
Bulrush-cattail series	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.09
Fremont cottonwood series	0.02	0.05	0.07	0.02	0.05	0.07	0.02	0.07	0.09
Purple needlegrass series	0.09	0.23	0.32	0.09	0.23	0.32	0.04	0.08	0.12
Valley oak series	0.31	0.64	0.95	0.31	0.64	0.95	0.43	0.94	1.37
Valley oak mitigation plantings	0.00	4.1	4.1	0.00	4.1	4.1	0.00	0.00	0.00
Subtotal	**6.53**	**19.71**	**26.25**	**6.53**	**19.71**	**26.25**	**4.12**	**13.02**	**17.14**
Delta Intake Facilities									
Bulrush-cattail series	0.08	0.22	0.30	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal	**0.08**	**0.22**	**0.30**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Delta-Transfer Pipeline									
Saltgrass series	0.30	0.00	0.30	0.30	0.00	0.30	0.00	0.00	0.00
Valley oak series	1.63	0.00	1.63	1.63	0.00	1.63	0.00	0.00	0.00
Subtotal	**1.93**	**0.00**	**1.93**	**1.93**	**0.00**	**1.93**	0.00	0.00	0.00
Transfer-LV Pipeline									
Bulrush-cattail series	0.24	0.00	0.24	0.24	0.00	0.24	0.00	0.00	0.00
Fremont cottonwood series	0.11	0.00	0.11	0.11	0.00	0.11	0.00	0.00	0.00
Saltgrass series	0.22	0.00	0.22	0.22	0.00	0.22	0.00	0.00	0.00
Valley oak series	0.10	0.00	0.10	0.10	0.00	0.10	0.00	0.00	0.00
Subtotal	**0.67**	**0.00**	**0.67**	**0.67**	**0.00**	**0.67**	**0.00**	**0.00**	**0.00**

REVISED DRAFT EIS/EIR TABLE 4.6-9
SENSITIVE PLANT COMMUNITY IMPACTS BY PROJECT COMPONENT (ACRES)[a]

	Alternatives 1 and 2			Alternative 3			Alternative 4		
Project Component	**Temporary**	**Permanent**	**Total**	**Temporary**	**Permanent**	**Total**	**Temporary**	**Permanent**	**Total**
Transfer-Bethany Pipeline									
Bulrush-cattail series	0.23	0.00	0.23	0.00	0.00	0.00	0.00	0.00	0.00
Bush seepweed	0.22	0.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00
Saltgrass series	0.95	0.00	0.95	0.00	0.00	0.00	0.00	0.00	0.00
Northern claypan vernal pool	~~0.86~~ 0.00	~~0.00~~ 0.86	0.86	0.00	0.00	0.00	0.00	0.00	0.00
Subtotal	**~~2.26~~ 1.40**	**~~0.00~~ 0.86**	**2.26**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Power Option 1[c]									
Northern claypan vernal pool	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bulrush-cattail series	<0.1	0.00	<0.1	<0.1	0.00	<0.1	0.00	0.00	0.00
Bush seepweed	0.0	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0.00
Subtotal	**<0.1**	**0.00**	**<0.1**	**<0.1**	**0.00**	**<0.1**	**0.00**	**0.00**	**0.00**
Power Option 2 [c]									
Northern claypan vernal pool	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bulrush-cattail series	<0.1	0.00	<0.1	<0.1	0.00	<0.1	0.00	0.00	0.00
Bush seepweed	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fremont cottonwood	**<0.1**	0.00	**<0.1**	**<0.1**	0.00	**<0.1**	0.00	0.00	0.00
Subtotal									
Total Impacts to Sensitive Habitats									
Bush seepweed series	6.73	1.32	8.05	6.50	1.32	7.82	0.38	0.00	0.38
Blue oak series	5.73	87.40	93.14	5.73	87.40	93.14	3.25	29.39	32.64
Bulrush-cattail series	1.40	2.72	4.11	1.40	2.72	4.11	0.00	2.03	2.03
Fremont cottonwood series	0.18	0.99	1.18	0.18	0.99	1.18	0.02	0.07	0.09
Northern claypan vernal pool	~~0.93~~ 0.07	~~0.00~~ 0.86	0.93	0.07	0.0	0.07	0.00	0.00	0.00
Purple needlegrass series	0.09	0.56	0.66	0.09	0.56	0.66	0.04	0.08	0.12
Saltgrass series	1.48	0.08	1.56	0.52	0.08	0.60	0.00	0.08	0.80
Valley oak series	2.03	29.79	31.83	2.04	29.79	31.83	0.43	17.36	17.79
Valley oak mitigation plantings	0.00	132.13	132.13	0.00	132.13	132.13	0.00	132.13	132.13
Blue oak mitigation plantings	0.00	9.02	9.02	0.00	9.02	9.02	0.00	9.02	9.02

[a] "Temporary" impacts, as used in this analysis, include habitats that would be degraded or similarly impaired, with features being restored *in situ* to emulate pre-project conditions. "Permanent" impacts are those that would permanently destroy features, with compensatory mitigation provided in alternate locations.

[b] Other in-watershed facilities under Alternatives 1, 2, and 3 include the marina, marina access road, borrow area, picnic areas, trailhead parking, westside access road, eastside trail, stockpile area, and parking areas. Facilities under Alternative 4 include the above facilities, and 160 TAF borrow area.

[c] Note that plant community impacts for Power Supply Infrastructure do not include the acreage of features that will be avoided by facilities or spanned by powerlines.

SOURCE: ESA unpublished data, 2006-2008

Two comments (F_EPA-02 and S_DFG-07) state that compensatory wetland mitigation sites must be protected in perpetuity. The mitigation strategy will comply with the new Clean Water Act rule, which provides that aquatic habitats, riparian areas, buffers, and uplands that comprise the overall compensatory mitigation project must be provided long-term protection through real estate instruments or other available mechanisms, and that any provisions necessary for long-term management, including compliance monitoring, must be addressed in the original permit or instrument.

CDFG also states (S_DFG-07) that wetland impact estimates must include CDFG jurisdictional areas, consistent with CDFG code (not just USACE wetlands). The Draft EIS/EIR states that both CDFG and the Regional Water Quality Control Board (RWQCB) regulate wetlands and waters at the state level while the Corps regulates wetlands and waters at the federal level. For purposes of preparing the EIS/EIR impact analysis, field assessment and preliminary wetland delineations were completed at all potential facility sites to allow analysis of the nature and magnitude of potential wetland impacts under both wetland regulatory schemes. Reported "wetlands" in the Draft EIS/EIR are those wetlands that are regulated by the Corps (See Draft EIS/EIR Vol. 2, Section 4.6, Table 4.6-10, pg. 4.6-93). CDFG jurisdiction will cover some additional area within its definition, "bank to bank". The streambed width and areas of riparian cover are also analyzed in the Draft EIS/EIR impact analysis and addressed as part of the assessment of impacts to riparian habitats. Because the majority of wetland features that would be affected by the project are created ponds and semi-permanent marshlands, it is expected that the additional area within CDFG's jurisdiction will be minimal and will include the banks of Adobe Creek and Kellogg Creek in the watershed, and the banks of Brushy Creek and other drainages that would be traversed by pipeline alignments. The areas affected by pipelines outside the watershed are not applicable to Alternative 4, which does not include construction of facilities outside of the CCWD watershed. During the project permitting process, detailed delineations will be prepared in accordance with each of the appropriate state and federal requirements to reflect more detailed project design information and the mitigation requirements identified in the Draft EIS/EIR will be implemented in accordance with the verified acreages of wetland impact.

This comment also states that the temporary impacts at the new Delta Intake and Pump Station (associated with Alternatives 1 and 2 only) would not be eliminated by site restoration and by removal of the cofferdam at the completion of in-channel work, as stated in the wetland impact summary (see Summary for Alternative 1, Vol. 2, Section 4.6, pg. 4.6-101). This comment does not identify specific issues or concerns at this site. Jurisdictional wetlands that would be affected at the new pump station site principally include freshwater emergent cattail vegetation and open water. The Draft EIS/EIR impact analysis utilizes a "study zone" site assessment method that characterizes the type and area of wetlands present within a broad study area much larger than the proposed facility. Thus, the impact values presented indicate the upper expected level of impact. The proposed intake facility was purposefully sited in a deepwater area that supports only a sparse and narrow fringe of wetland vegetation. The shallow water point bar that occurs between the existing and new intake facilities, on the inside bend of Old River, was avoided during siting of the new intake (Figure 4.6-18, Vol. 2, Section 4.6, pg. 4.6-83). Siting the new intake in deep water habitat, where less emergent vegetation is present, is preferred because it minimizes the

need for long-term facility maintenance such as dredging near the intakes. This also serves to reduce impacts to aquatic habitat and sensitive fish species. With the proposed mitigation, Measure 4.6.2a (Vol. 2, Section 4.6, pg. 4.6-102), which seeks to avoid and minimize effects to wetlands and other waters to the greatest extent practicable and Mitigation Measure 4.6.2b (Vol. 2, Section 4.6, pg. 4.6-103), which provides compensation for impacts through wetland restoration or creation, temporary impacts to wetlands would be reduced to a less than significant level. The comment states that temporary impacts to wetlands and waters should be mitigated at a ratio of 1.1:1. Such a ratio is consistent with the ratios identified in Mitigation Measure 4.6.2b.

One comment (S_DFG-07) states that avoidance strategies must include the siting of permanent pipeline features such as blow-off valves, vaults and manholes outside of CDFG jurisdictional areas. As a matter of refining the project description, the Draft EIS/EIR (Vol. 2, Section 4.6, pg. 4.6-99) correctly states for the Delta-Transfer Pipeline that, "no access vaults would be installed within the jurisdictional drainages that occur along the pipeline corridor. Thus, installation of the pipeline would result in … no permanent impacts to potential jurisdictional features." This statement was inadvertently omitted for the Transfer-Bethany Pipeline and Transfer-Los Vaqueros Pipeline. Thus, Mitigation Measure 4.6.2a is revised as shown below. This text change is included in Chapter 5, Revisions to the Draft EIS/EIR, in this document (Vol. 4).

> **Measure 4.6.2a:** Final project design shall avoid and minimize the fill of wetlands and other waters to the greatest practicable extent. No access vaults would be installed within the jurisdictional drainages that occur along any pipeline corridors. Areas that are avoided shall be subject to best management practices under the General National Pollutant Discharge Elimination System Permit, as described in Measure 4.5.1. The fill of wetlands at the proposed Western substation site shall be avoided by siting facilities within the study area so as to avoid impacts to such areas.

3.8.7 Conservation Easement

Comment Summary

This section of this master response responds to all or part of the following comments:

S_DFG-03	S_DFG-05	L_EBRPD2-26	L_EBRPD2-37
O_SMD-01	S_DFG-16		

Summary of Issues Raised by Commenters

- The Draft EIS/EIR does not explain how the Lead Agencies intend to extinguish the existing conservation easement for kit fox habitat.
- The Draft EIS/EIR does not discuss wind leases or wind rights on the Los Vaqueros Watershed lands that may be proposed as conservation areas.

Response

Impacts to Existing Conservation Easement

Several comments discuss the legal mechanisms that are required to modify or extinguish a conservation easement. CDFG discusses possible procedures for accomplishing the necessary revisions to the existing conservation easement. CCWD will work with CDFG as needed to implement the appropriate steps to modify the existing easement, and to mitigate the new impacts to the areas currently subject to the conservation easement. Steps to modify the existing conservation easements would include one or more of the following: CCWD and CDFG may agree to amend the boundaries of the watershed lands that are subject to the easement; CCWD and CDFG may agree to exchange easement lands; or CCWD may initiate condemnation proceedings, while also providing a replacement easement to CDFG. In all cases, CCWD would ensure the amount and quality of the land subject to the conservation easement are consistent with the easement's purpose and requirements.

One comment states that the project's inconsistency with the existing conservation easement established to protect habitat is itself a significant impact. CEQA requires that a lead agency consider and evaluate all potentially significant impacts to the physical environment. As is discussed and evaluated in the Draft EIS/EIR, the potentially significant impact associated with modification of the existing easement is the impact that could occur to San Joaquin kit fox from loss of grassland habitat. The mitigation for this impact described in the Draft EIS/EIR requires that CCWD replace any acreage subject to the conservation easement that is affected by the project with an equivalent amount of acreage suitable for use by the kit fox, thereby assuring that the amount and quality of habitat subject to the protection of the easement is maintained (Mitigation Measure 4.6.7c). Further, the Draft EIS/EIR requires that CCWD compensate for new impacts to areas protected by the conservation easement, as well as other grassland areas affected by the project, at a ratio of up to 3:1 (Mitigation Measure 4.6.7c). Given that high quality lands are available within and outside the watershed for acquisition or transfer and that the project will be required to ensure that lands are preserved and enhanced for the benefit of the species in an amount that is sufficient to ensure that the loss of potential kit fox habitat will be fully offset, this impact is considered less than significant after mitigation.

Existing Wind Farm Easements

One comment (Comment S_DFG-05) states that the Draft EIS/EIR does not discuss wind leases or wind rights on Los Vaqueros Watershed lands that may be proposed as conservation areas, and that if lands with these or other potentially incompatible encumbrances exist on lands that Reclamation and CCWD propose to use for habitat management, the encumbrances need to be disclosed and outstanding issues must be resolved with CDFG. Some lands within the watershed contain existing wind farms and others are potential sites for such farms. Such lands tend to be in the southern area of the watershed; it is likely that habitat management lands would be in the northern area. Reclamation and CCWD agree that existing and potential wind farms on lands proposed to be used for habitat management would be considerations to discuss and resolve with CDFG.

3.8.8 East Contra Costa HCP/NCCP

Comment Summary

This section of this master response responds to all or part of the following comments:

L_CCCPW-04	L_EBRPD2-21	L_EBRPD2-22	L_EBRPD2-23
L_EBRPD2-24	L_EBRPD2-25	L_ECCCHC-01	O_SMD-12

Summary of Issues Raised by Commenters

- The EIS/EIR should further address consistency of the Draft EIS/EIR mitigation strategy with the ECCC HCP/NCCP.
- By competing for mitigation land in the region, the project has the potential to affect the activity of the HCP/NCCP to achieve its recovery goals.
- CCWD should compensate the ECCC HCP/NCCP for impacts outside of the Los Vaqueros Watershed

Response

Consistency of the Mitigation Strategy with the ECCC HCP/NCCP

Several comments (L_EBRPD2-21, L_EBRPD2-24 and L_ECCCHC-01) indicate that the Draft EIS/EIR should further identify and evaluate inconsistencies between the proposed project and the ECCC HCP/NCCP. As discussed in the Draft EIS/EIR (Vol.2, Section 4.6.2, Impact 4.6.17, pg. 4.6-174), the Los Vaqueros Watershed lies within the biological inventory area of the ECCC HCP/NCCP, but outside of the action area and defined mitigation areas. The ECCC HCP/NCCP preparers were well aware of the potential expansion of Los Vaqueros Reservoir and therefore previously included the expansion project in the regional analysis of biological resources.

The HCP/NCCP does not prohibit projects that are approved outside of its coverage from causing impacts to biological resources. The HCP/NCCP was developed with the full understanding that the Los Vaqueros Reservoir Expansion Project was advancing and would occur during the permitting lifetime of the HCP/NCCP. As such, the HCP/NCCP considered potential project impacts in its analysis (ECCCHCPA, 2006). Thus, it was understood during the development of the HCP/NCCP that mitigation would occur locally for the Los Vaqueros Reservoir Expansion Project. Many of the areas that were prioritized for acquisition in the HCP/NCCP were identified because their permanent loss would have lasting effects on sensitive species, and in particular San Joaquin kit fox. Mitigation that is implemented for the Los Vaqueros Reservoir Project will further the same goals and objectives as the HCP/NCCP. However, unlike the HCP/NCCP, habitat protection for the Los Vaqueros Reservoir Expansion Project can be implemented on a fully regional scale that includes Alameda County and areas further south where appropriate.

A commenter (L_EBRPD2-22) states that the Los Vaqueros Reservoir Expansion Project will compete with the ECCC HCP/NCCP for available mitigation lands and has the potential to affect the ability of the HCP/NCCP to meet its recovery goals. However, the Mitigation Lands

Opportunities analysis performed to determine the availability of regional mitigation lands (see Draft EIS/EIR, Vol. 2, Section 4.6, pg. 4.6-185 through 4.6-187) demonstrates that there is ample habitat in Contra Costa County to satisfy mitigation requirements under any of the project alternatives, while being consistent with the HCP/NCCP goals and land acquisition program. The HCP/NCCP identifies considerably more mitigation lands in Contra Costa County than would be needed to meet its land acquisition and preservation goals. In addition, the Los Vaqueros Reservoir Expansion project may also conserve suitable mitigation lands in nearby northeastern Alameda County and San Joaquin County, thus providing additional locations to support the conservation goals of the ECCC HCP/NCCP, which is limited to available lands in eastern Contra Costa County.

Comment (L_EBRPD2-25) requests that the lead agencies for the reservoir expansion project further explain how they will coordinate with the East Contra Costa Habitat Conservancy as the ECCC HCP/NCCP and Los Vaqueros Reservoir Expansion Project are implemented. The lead agencies (for the Los Vaqueros Project) and ECCC HCP/NCCP participants have coordinated on land issues for many years, and will continue to do so throughout implementation of the reservoir expansion project. The CCWD Watershed and Lands Department is responsible for securing land and property rights for CCWD projects. The Department Manger maintains routine contact and coordination with land managers at the East Contra Costa County Habitat Conservancy and East Bay Regional Park District.

One comment (Comment SMD-12) states that CCWD should pay ECCC HCP/NCCP fees to mitigate for impacts outside the watershed (approximately 267 acres). The Los Vaqueros Reservoir Expansion project was not included as a covered activity in the ECCC HCP/NCCP. While it may be possible for projects not included in the HCP/NCCP to "buy in" or otherwise pay to mitigate for their impacts, mitigation measures have been identified in the Draft EIS/EIR to fully mitigate for the impacts of the Los Vaqueros Reservoir Expansion Project under any of the four alternatives, such that it is not necessary for the project to seek mitigation coverage via the HCP/NCCP.

3.8.9 Cumulative Effects

Comment Summary

This section of this master response responds to all or part of the following comments:

S_DFG-01	S_DFG-04	L_EBRPD2-22	L_EBRPD2-40
L_EBRPD2-41	O_EBCNPS-06	O_SMD-04	O_SMD-14
I_Graham-04	O_NASNF-04		

Summary of Issues Raised by Commenters

- The Draft EIS/EIR discussion of potential cumulative effects to wildlife corridors and habitat linkages does not consider a number of additional projects in the East Contra Costa and Alameda County areas.

- The cumulative impact analysis should have included impacts from past reservoir construction.
- The analysis of cumulative effects on potential wildlife movement corridors is incomplete.
- The analysis of cumulative effects on individual species should explain why mitigation of project impacts also will reduce the project's contribution to cumulative impacts to a less than significant level.

Analysis of Cumulative Biological Resource Impacts

Some commenters state that the discussion of cumulative project impacts does not consider the full breadth of existing past, present and reasonably foreseeable future projects or impacts. Projects that were specifically identified by commenters include the Mountain House Residential Development in the City of Tracy, the Delta College Tracy Campus, Vasco Road Improvements, Pittsburg Hillsides Development in Pittsburg, Cypress Corridor in Brentwood, the Aviano Adult Community project in the City of Antioch, and the Roddy Ranch project in Antioch, which the commenters state could each potentially affect kit fox movement corridors. The Byron Vernal Pool Regional Preserve project was also identified by EBRPD as a potential source of cumulative biological resource impacts. The cumulative effects analysis in the Draft EIS/EIR Biological Resources section analyzes the effects of the Mountain House Community in northwestern San Joaquin County, which includes the Delta Tracy Campus (Vol. 2, Section 4.6, pg. 4.6-177); the Zone 7 Altamont Water Treatment Plant and Pipeline (Draft EIS/EIR, Vol. 2, Section 4.6, pg. 4.6-177), which would result in the permanent loss of fewer than 40 acres of annual grasslands habitat near the terminus of Dyer Road in Alameda County; the California Department of Water Resources South Bay Aqueduct Enlargement project, presently under construction in northern Alameda County; and regional Road Safety Improvement and Widening projects. The following discussion was presented in the Draft EIS/EIR regarding the potential cumulative effects of the Mountain House Project:

> This phased, 5,000-acre residential and commercial development project, which is identified in the San Joaquin County Multiple Species Habitat Conservation Plan, occupies annual grasslands and former agricultural lands that presumably provided moderate to high habitat values for San Joaquin kit foxes. This project could present a barrier to north-south kit fox movement through agricultural portions of the Valley floor. The environmental reviews conducted for the Mountain House Specific Plan considered direct project effects upon occupied kit fox denning and foraging habitat; however, effects to movement corridors were not identified (County of San Joaquin, 2008). Because the Los Vaqueros Reservoir Project is over 10 miles from the Mountain House Community, and would not affect the same area of potential kit fox movement, the two projects would not result in a significant cumulative impact to kit fox movement corridors. (Draft EIS/EIR, Vol. 2, Section 4.6, pg. 4.6-177)

As indicated in Draft EIS/EIR, Vol. 1, Section 4.1, Table 4.1-2, Projects Considered in the Analysis of Cumulative Effects on Land-Side Resources, analysis of Road Safety Improvement and Widening projects included the Vasco Road project and the State Route 4 Improvement projects. These road improvement projects are identified in the Biological Resources cumulative analysis as the State Route 4 Highway Widening project, but also included an analysis of Vasco

Road improvements. As identified in the cumulative analysis, these improvement projects are expected to have only a minor, temporary impact on kit fox habitat and movement, principally because the improvements would be limited to the existing corridor and any improvements would be accompanied by corresponding modifications, upgrades or maintenance to existing wildlife undercrossings that are used by kit foxes.

The Pittsburg Hillsides Development and other Pittsburg projects were considered to be too far away and outside the geographic scope of the cumulative analysis. The Cypress Corridor in Brentwood was considered in the cumulative analysis, along with other projects approved in Brentwood (see Draft EIS/EIR, Vol. 2, Section 4.1, Table 4.1-2, pp. 4.1-11 through 4.1-13).

The Aviano Adult Community project, located in the mostly undeveloped southeastern outskirts of the City of Antioch approximately 7 miles north of the Los Vaqueros Watershed, is not analyzed in the Draft EIS/EIR cumulative analysis. The Aviano project EIR was reviewed, however, for this FEIR analysis. The cumulative analysis for that project found that the overall cumulative loss of wildlife and plant habitats as a result of the Aviano project was considered Less-than-Significant under CEQA for listed shrimp species, California tiger salamander, California red-legged frog, and San Joaquin kit fox. This conclusion was based on the fact that grasslands in the southern portion of the site and the site creek would remain undeveloped following project implementation (LSA, 2008). The Aviano Project is located at the northernmost extent of the San Joaquin kit fox range, on the edge of the City of Antioch and does not alter or interfere with any San Joaquin kit fox movement corridors. This project is sufficiently distant from the Los Vaqueros Reservoir Project that any cumulative impacts on kit fox habitat loss and movement would be Less-than-Significant.

The Roddy Ranch project, located in the City of Antioch, about 6 miles north of the Los Vaqueros Watershed, was not included in the Draft EIS/EIR cumulative analysis. This proposed project would develop 392 acres of residential, recreation, resort and hotel uses on a 540-acre site. The project is proposed within one of three valleys that provide the principal movement corridor for San Joaquin kit fox between Black Diamond Mines Regional Preserve and Cowell Ranch State Park. The Roddy Ranch project EIR concluded that the project would restrict wildlife movement through Horse Valley, but the adjacent Deer Valley and Lone Tree Valley would continue to provide potential wildlife movement corridors (Circlepoint, 2009). When taken into consideration with future development in Deer Valley that is anticipated by the City of Antioch General Plan, the Roddy Ranch EIR states, without specifically identifying the San Joaquin kit fox, that the project would substantially restrict potential wildlife movement and contribute to the ongoing loss of biological resources and habitat (Circlepoint, 2009).

The EBRPD Byron Vernal Pools Regional Preserve was recently established between Armstrong Road and Vasco Road and construction is underway at this site. The EBRPD (Comment L_EBRPD2-40) commented that the preserve project was not listed in the developments that were analyzed for cumulative effects and could be affected by the Los Vaqueros Reservoir Expansion Project. While the preserve parcel was still being acquired by the EBRPD at the time the Draft EIS/EIR was finalized, the biological resources on this site were fully characterized for

the Draft EIS/EIR analysis. The Transfer-Bethany Pipeline alignment does not cross the preserve parcel but does follow Armstrong Road adjacent to the property. The preserve site supported few wetland features, and construction of the proposed project would not adversely impact surface or groundwater hydrology or other characteristics of the preserve. The pipeline right-of-way, within Armstrong Road, is specifically designed to minimize impacts to the preserve parcel and similar sensitive habitat areas located east of Armstrong Road. Thus, the preserve site has been evaluated for direct and indirect impacts that could occur as a result of project construction. Based on a review of preliminary wetland creation schematics for the preserve, which show that wetland features would not be created or enhanced immediately adjacent to Armstrong Road, impacts to natural resources on this site and in particular, created wetlands, are not expected to change as a result of future conditions resulting from wetland creation.

The ECCC HCP/NCCP identified four potential San Joaquin kit fox movement routes or habitat linkages between Black Diamond Mines Regional Preserve and the Los Vaqueros Watershed. The ECCC HCP/NCCP (ECCCHCPA, 2006) identifies these kit fox movement corridors as: 1) the Round Valley corridor that includes annual grasslands that connect Round Valley to Black Diamond Mines Regional Preserve, measuring 7.5 to 8 miles in length; 2) the Briones Valley corridor that runs through Briones Valley and is approximately 4.5 miles long; 3) the Deer Valley corridor through Deer Valley that is about 4 miles long and includes the Roddy Ranch Golf Course; and 4) the Horse and Lone Tree Valleys that together form a corridor between Black Diamond Mines Regional Preserve and Cowell Ranch State Park. The ECCC HCCP/NCCP (ECCCHCPA, 2006) discusses the potential for the Roddy Ranch Golf Course facility to inhibit regional kit fox movement. The ECCC HCP/NCCP states that the Roddy Ranch Golf Course is not considered a barrier to kit fox because annual grassland is interspersed between the greens and fairways and kit fox are known to use golf courses in the southern part of their range.

Wildlife movement corridors provide connectivity between two or more non-contiguous habitat patches and function to facilitate wildlife movement. Corridors can exist as continuous strips or as a stepping stone arrangement of separated natural habitat. Such movement corridors are used locally by San Joaquin kit fox and other wildlife species, and are generally considered vulnerable to incremental effects. As stated in the project Draft EIS/EIR, the Los Vaqueros Reservoir Expansion project would reduce regional wildlife movement opportunities along the southern pathway into Round Valley Regional Preserve, which were already impacted by the existing Los Vaqueros Reservoir, through the elimination of the wildlife movement corridor located west of Los Vaqueros Reservoir (Vol. 2, Section 4.6, pg. 4.6-129). The analysis provided in the Draft EIS/EIR analysis states that additional north to south movement corridors exist on lands located north and east of Los Vaqueros Reservoir (Figure 4.6-24, Vol. 2, Section 4.6, pg. 4.6-130). Other than the Los Vaqueros Reservoir Expansion project, no other projects have been identified that would modify or otherwise affect wildlife movement corridors into Round Valley. The Roddy Ranch project and others considered in the cumulative analysis are distant from the Los Vaqueros Reservoir Expansion project. Of these, only the Roddy Ranch project was identified to have cumulative effects on wildlife movement. Because the Los Vaqueros Reservoir Expansion project would not alter or otherwise affect the wildlife movement corridors that would be impacted by the Roddy

Ranch project and the projects are relatively distant from each other, the projects together would not cause a significant cumulative impact on a regional wildlife movement corridor.

One comment (O_SMD-14) requests further cumulative analysis of Tres Vaqueros Wind Ranch and the Tamayo-Nunn minor subdivision adjacent to the CCWD Transfer Station, because sensitive biological resources could be affected. The impact analysis for these projects has not been released for review by the applicable lead agencies; thus it is difficult to identify potential cumulative project effects. The Tres Vaqueros project is a repowering project located generally south of the Los Vaqueros Watershed, though a few turbines would be replaced within the watershed. As the commenter indicates, the project would create new unpaved roads where the existing roads cannot accommodate access to the new turbines. Existing roads and tower sites in the Tres Vaqueros wind farm area that are abandoned as part of the project would be restored to annual grasslands, thus retaining the overall character of the project area. Because new towers would generally be constructed on hilltops and ridgelines, the Tres Vaqueros wind farm would have nominal effects on wetlands. Following construction, the use of roads and facility maintenance would be similar or less than existing road use. As a result, this project is not expected to have long-term effects on terrestrial wildlife species and no cumulative effects are anticipated.

In consideration of the Tamayo-Nunn Project, the CCWD Transfer Station would be constructed within the fence line of the existing Transfer Station facility. The effects of this Transfer Station facility are minimal, less than 2 acres in size, and no special-status plants or wildlife are known or expected to be impacted by this facility. Site fencing generally inhibits kit fox access to the existing Transfer Station facility. Because specific details on the Tamayo-Nunn Project area not available, it is unknown what impacts that development project will have on those biological resources identified by the commenter. However, because the proposed Transfer Facility improvements would have few, if any, effects on habitat and biological resources, these projects are not expected to have a significant cumulative effect on biological resources located in the same geographic area.

With respect to the past effects of the original Los Vaqueros Reservoir construction and operation on biological resources in the project area, these effects are reflected in the existing conditions both within the watershed and in the surrounding area. The existing conditions baseline used in the evaluation of biological resource impacts for the reservoir expansion project in accordance with CEQA reflects the past actions in the project area. The setting section describes the current condition of habitats and wildlife use in the project area and project impacts are assessed in light of the current condition and quality of biological resources. Evaluating the effects of the proposed project, in combination with the anticipated effects of other projects proposed in the area on top of the current environmental conditions effectively addresses impacts from past, present and future projects.

Another comment (L_EBRPD2-41) criticizes the Draft EIS/EIR analysis and conclusions related to cumulative impacts, stating that the EIS/EIR must explain why project mitigation measures are adequate to mitigate both project-specific impacts and the project's contribution to cumulative impacts since both types of impacts must be considered. As discussed above, the cumulative

analysis of project effects upon wildlife movement corridors is considered Less-than-Significant because the Los Vaqueros Reservoir Expansion Project is relatively distant from other projects that could affect similar resources, (e.g., the Roddy Ranch Project, which is located greater than six miles to the north), and the proposed project would not alter or otherwise diminish the quality of wildlife movement corridors that could be affected by other projects.

3.9 Master Response 9: Transportation and Circulation

3.9.1 Introduction

Overview

This master response addresses issues raised by two commenters about project-generated construction traffic including increased traffic congestion and potential hazards associated with haul trucks dropping debris.

This master response is organized by the following subtopics:

- 3.9.2 Traffic Impacts and Mitigation Measures

Commenters

Commenters that addressed this topic include:

Federal Agencies

- None

State Agencies

- None

Local and Regional Agencies

- Contra Costa County, Department of Conservation and Development – L_CCCDCD

Organizations

- None

Individuals

- Steven Navarro – I_Navarro

Draft EIS/EIR Section References

The Draft EIS/EIR addresses this topic area in the following locations: Vol. 1, Executive Summary, pp. ES-75 through ES-76; Vol. 2, Section 4.9, pp. 4.9-12 through 4.9-19; and Vol. 3, Appendix H, Table H-1.

3.9.2 Traffic Impacts and Mitigation Measures

Comment Summary

This section of this master response responds to all or part of the following comments:

L_CCCDCD-03	L_CCCDCD-04	I_Navarro-04
I_Navarro-05	I_Navarro-01	

Summary of Issues Raised by Commenters

- Onsite use and offsite disposal of excavated soil from project construction sites and traffic assumptions for offsite transport should be clarified.
- The geographic distribution of construction traffic should ensure that such traffic does not overwhelm rural roads.
- Construction-related traffic hazards should be addressed.
- Impacts to commute-time traffic conditions should be addressed.

Response

Transport of Excavated Soils. As discussed in the Draft EIS/EIR, two elements of the project involve substantial removal of soils and associated materials: partial removal of the existing dam at Los Vaqueros Reservoir under all alternatives, and the excavation for pipeline installation in Alternatives 1, 2 and 3. As the Draft EIS/EIR states, most of the material from the existing dam would be reused and any minor amounts of remaining material would be disposed of onsite within the reservoir inundation area (Vol. 2, Section 4.9, pg. 4.9-13). Although not expected to occur, based on experience from construction of the original dam, any spoils or waste not suitable for the reservoir inundation zone would be hauled to a suitable location for recycling or disposal, depending on the type and volume of material to be disposed. Types of solid waste that would be removed include a minor amount of construction debris, including miscellaneous wood scraps, metals, and packaging materials for equipment that would likely be hauled offsite to materials recycling facilities.

With respect to the pipeline trenches for Alternatives 1, 2 and 3, up to 75 percent of the materials removed from the trenches would be reused as backfill or spread out over adjacent grazing land, reducing the number of truck trips needed to haul this material offsite for disposal or to import additional backfill materials (Draft EIS/EIR, Vol. 2, Section 4.9, pg. 4.9-13). Clean excavation materials could be accepted for use at other construction sites; or stored at existing sand and gravel facilities until (re)used as clean fill; or sent to one of 19 regional construction materials recycling facilities. It is not anticipated that earthen materials would be disposed of in a landfill (Draft EIS/EIR, Vol. 2, Section 4.12, pg. 4.12-19).

One comment (L_CCCDCD-03) points out that on page 4.9-9, the Draft EIS/EIR states that "[a]n estimated 25 percent of the excavated soil would be hauled away from the work sites for disposal or reuse elsewhere." Although subsequent language on page 4.9-13, as mentioned in the previous paragraph, indicates that this sentence refers to the pipeline work sites rather than all project work sites, the first sentence could be clearer. Accordingly, this sentence (from the Draft EIS/EIR, Vol. 2, Chapter 4.9, pg. 4.9-9) is revised in Chapter 5 of this document to read:

> An estimated 25 percent of the excavated soil would be hauled away from the <u>pipeline</u> work sites for disposal or reuse elsewhere.

The comment also requests the details of the final destinations, routes and numbers of trucks for any off-site soil transport. As discussed in Vol. 1, Chapter 3.0, Project Description, a more

precise inventory of what final disposal areas would in fact be used would depend on the type and volume of material to be disposed (pg. 3-53). In addition, it is not known at this time what other construction sites might be available during the project construction timeframe to receive clean fill material from the pipeline trenches. While final disposal locations and haul routes are not known at this time, the number of truck trips and the main roadways that haul trucks would use to access the project area are presented in the Draft EIS/EIR.

As indicated above, one of the assumptions identified in the Draft EIS/EIR is that an estimated 25 percent of the soil excavated for pipeline installation under Alternatives 1-3 would be hauled away from the work sites for disposal or reuse elsewhere (Vol. 2, Section 4.9, pg. 4.9-9). Table H-1, Los Vaqueros Construction Traffic Assumptions, in Appendix H of the Draft EIS/EIR indicates the total number of equipment and materials haul trucks estimated for each facility component for the four build alternatives (Vol. 3, Appendix H, Table H-1). For the purposes of the impact analysis, it was assumed that construction activity would be occurring at all facility sites at the same time, representing a peak construction scenario. Construction characteristics, including proposed labor and equipment, location of construction, and rate of construction, were used to conservatively estimate the manpower level and number of vehicles that would be required for facilities installation.

Impacts to Rural Roads and Commute-time Traffic Conditions. As described in Section 4.9, Transportation and Circulation, of the Draft EIS/EIR, project construction activities would intermittently and temporarily increase traffic congestion on area roadways (Impact 4.9.1), including a substantial increase in traffic and congestion conditions during morning and evening peak commute hours during the construction period on four main roads that access from the highway system to the project area (Vasco Road, Byron Highway, State Route 4 (SR 4), and SR 4 Bypass) (Vol. 2, Section 4.9, pp. 4.9-12 through 4.9-17). Construction is expected to take about three years to complete for Alternatives 1, 2, and 3, and about two years for Alternative 4. The majority of construction traffic for the project is expected to access the project area via Interstate 5 (I-5), Interstate 205 (I-205), and Interstate 580 (I-580) with some construction workers and trucks delivering equipment and materials, accessing the project area from the west, using Interstate 680 (I-680), I-580, and/or SR 4. The main roads providing access from the highway system to the project area and access to specific facility sites include Vasco Road, Byron Highway, SR 4 and the SR 4 Bypass. The discussion in the Draft EIS/EIR addresses construction traffic impacts on these roadways during peak commute hours and concludes, using the conservative simultaneous-construction scenario described above, that impacts during peak commute hours would be significant without mitigation for Alternatives 1, 2 and 3 (Vol. 2, Section 4.9, pp. 4.9-12 through 4.9-17).

The Draft EIS/EIR determines that this impact would be Less-than-Significant with Mitigation for Alternatives 1, 2, and 3 and Less-than-Significant for Alternative 4. Impacts under Alternative 4 would be substantially less than those analyzed under Alternative 1 because Alternative 4 involves construction of a smaller reservoir expansion and upgrade, but not expansion of the Transfer Facility, and does not include any of the other major intake or pipeline facilities proposed under Alternative 1. Under Alternative 4, construction activity would occur

primarily within the Los Vaqueros Watershed, and the main access roads used would be Vasco Road and Walnut Boulevard, with some use of Byron Highway, SR 4, SR 4 Bypass, and Camino Diablo also expected.

The Draft EIS/EIR considers and acknowledges the potential temporary effects of the proposed project on area roadways and includes the following mitigation measures, applicable to Alternatives 1, 2, and 3, to minimize project construction traffic during peak commute hours (Vol. 2, Section 4.9, pg. 4.9-17).

> **Measure 4.9.1a:** Schedule project-generated construction truck trips on Vasco Road, Byron Highway, SR 4, and SR 4 Bypass outside the peak morning and evening commute hours such that the frequency of construction truck trips on these roads would be no greater than one every two minutes (i.e., 30 trucks per hour) during these peak commute periods.
>
> **Measure 4.9.1b**: Develop and implement a construction truck hauling plan that designates specific routes to be used to access the various project facilities when multiple facility sites are under construction concurrently so that project-generated construction traffic is dispersed over a number of roads in the project area.

Mitigation Measure 4.9.1a provides the mechanism by which project-generated construction-related truck trips would be limited and temporally distributed to reduce delays associated with truck traffic on main roads during peak commute hours. The effect of temporal spacing of trucks entering a specific roadway would be similar to that of metering on-ramps for major roadways. Mitigation Measure 4.9.1a would have the following effect:

Vasco Road. As discussed in the Draft EIS/EIR (Vol. 2, Section 4.9, pg. 4.9-15), under Alternative 1[2], the estimated number of total (worker and trucks) additional project-generated trips on Vasco Road would be approximately 200 trips per hour. Implementation of Mitigation Measure 4.9.1a would, under the worst-case scenario, reduce the maximum number of truck trips to 30 trips per hour during peak commute times.

SR 4 (between Old River and Byron Highway). As discussed in the Draft EIS/EIR (Vol. 2, Section 4.9, pg. 4.9-15), under Alternative 1, the estimated number of total (worker and trucks) additional project-generated trips on this segment of SR 4 would be approximately 78 trips per hour. Implementation of Mitigation Measure 4.9.1a would, under the worst-case scenario, reduce the maximum number of truck trips to 30 trips per hour during peak commute times.

Walnut Boulevard (between the north entrance of the Los Vaqueros Watershed and Vasco Road). As discussed in the Draft EIS/EIR (Vol. 2, Section 4.9, pg. 4.9-15), Walnut Boulevard carries a similar but slightly lower volume of existing daily traffic compared to Vasco Road. Some construction workers and haul trucks would use this road for some project construction-related trips, though not to the extent expected to use Vasco Road. Project construction traffic impacts to Walnut Boulevard would be similar but less than that described above for the peak project construction traffic scenario for Vasco Road.

[2] Project-related traffic estimates for Alternative 1 are used in this response since Alternative 1 would be expected to generate the highest number of project-related construction trips (Draft EIS/EIR, Vol. 2, Section 4.9, pp. 4.9-14 – 4.9-17).

***Byron Highway*.** As discussed in the Draft EIS/EIR (Vol. 2, Section 4.9, pg. 4.9-15), under Alternative 1, the estimated number of total (worker and trucks) additional project-generated trips on Byron Highway would be approximately 125 trips per hour. Implementation of Mitigation Measure 4.9.1a would, under the worst-case scenario, reduce the maximum number of truck trips to 30 trips per hour during peak commute times.

***SR 4 Bypass*.** Segment 3 of the SR 4 Bypass provides access to the Los Vaqueros Watershed from the north via its transition to Vasco Road at Marsh Creek Road and Vasco Road's subsequent connection to Walnut Boulevard. This roadway segment has been operational since late 2008. It can be expected that traffic volumes on the partial segment of the SR 4 Bypass between Walnut Boulevard and Marsh Creek Road are similar those for Vasco Road since these are, in fact, the same roadway; therefore, implementation of Mitigation Measure 4.9.1a would be expected to have similar effects on this roadway segment as those described for Vasco Road, above.

Assessment of the short-term effect that project construction traffic could have on local and regional roads included review of existing traffic volume information and consideration of both the percentage increase the project construction traffic would contribute over existing conditions and the capacity of the road to handle the additional traffic. Commute time alone does not figure into any of the established significance criteria in Appendix G of the CEQA Guidelines, on which the significance criteria in the Draft EIS/EIR are, in part, based.

The Draft EIS/EIR recognizes that "construction traffic to and from the eight different project facility sites would be distributed on each of the roads" (Vol. 2, Section 4.9, pg. 4.9-14) due to the different physical locales of these facility sites, and that different roadways would be used by construction vehicles to reach these different locations. Mitigation Measure 4.9.1b, above, provides the mechanism by which project-generated construction traffic, when multiple facility sites are under construction concurrently, would be geographically distributed so as to not overwhelm the rural roadways in the project area.

The suggestion that a new public roadway from Brentwood to Livermore be constructed for the purposes of mitigating temporary traffic congestion associated with the project is not warranted. The mitigation measures identified in the Draft EIS/EIR would mitigate the project's construction traffic impacts to Less-than-Significant and would not involve the environmental impacts or feasibility issues inherent in constructing an entirely new road.

Construction-related Road Hazards. One comment expresses concern about potential damage to vehicles and vehicle windshields due to construction trucks dropping rocks and other debris from their beds. The State of California Vehicle Code (Section 23114) states that

> *"… a vehicle shall not be driven or moved on any highway unless the vehicle is so constructed, covered, or loaded as to prevent any of its contents or load other than clear water or feathers from live birds from dropping, sifting, leaking, blowing, spilling, or otherwise escaping from the vehicle (DMV, 2009)."*

The Draft EIS/EIR includes the following element as part of Measure 3.9.1 (Section 4.10, pp. 4.10-28 through 4.10-29), applicable to all build alternatives, to comply with Section 23114 of the State Vehicle Code:

- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard.

The same commenter expresses concern about construction-related activities resulting in greater road hazards and unsafe driving conditions along Vasco Road. Vasco Road in general consists of one 12-foot lane in each direction with 6 to 8 foot outside shoulders. There are two three-lane sections for truck climbing and passing in the southbound direction, however none in the northbound direction. The posted speed limit is 55 mph (MTC, 2008).

Construction activities associated with the Transfer-Bethany Pipeline (Alternatives 1 and 2) would occur along approximately 3.0 miles of Vasco Road and would generally consist of excavation of trenches, pipeline installation, and backfill of open trenches. Because there are no homes or other structures along this portion of Vasco Road, these activities are expected to occur along the roadside in a construction easement and within the road right-of-way, and outside of the highway travel lanes. Vasco Road pipeline construction would be limited to the 3.0 mile distance between SR 4 and where the pipeline alignment moves southeast to meet with Armstrong Road. Note that this component is not included in Alternative 4.

As discussed in the Draft EIS/EIR Project Description (Vol. 1, Chapter 3, pg. 3-68), construction of the Transfer-Bethany Pipeline would proceed at a pace of about 120 feet per day. Accordingly, construction is estimated to occur over approximately 132 working days or approximately 4.5 months, assuming a six-day work week. Since construction equipment and workers would be accessing the pipeline work from Vasco Road, there is potential that, as discussed under Impact 4.9.2 (Vol. 2, Section 4.9, pp. 4.9-17 through 4.9-18), Alternative 1 or 2 would result in intermittent construction related delays in the project area due to construction activities. However, with implementation of Mitigation Measure 4.9.2a-c (Vol. 2, Section 4.9, pg. 4.9-19), this impact would be Less-than-Significant. Note that this component is not included in Alternative 4.

The Draft EIS/EIR considers and acknowledges the potential temporary effects of the proposed project on area roadways by construction-related traffic and construction activities adjacent to roadways within the project area, including Vasco Road. In response, the Draft EIS/EIR includes the following mitigation measure, applicable to Alternatives 1, 2, and 3, to minimize traffic hazards related to construction-related activities (Vol. 2, Section 4.9, pg. 4.9-19).

> **Measure 4.9.2c:** Install traffic control devices as specified in Caltrans' Manual of Traffic Controls for Construction and Maintenance Work Zones where needed to maintain safe driving conditions. This measure includes the use of signage to alert motorists of construction activities, potential hazards and travel detours as well as the use of flaggers when appropriate.

Since 2003 there have been a number of signing, striping and other road improvements made to Vasco Road, and more are planned for the future. Improvements made to date include signing and

striping, adding no passing zones, shoulder grading to remove sight distance obstruction, and adding additional vertical delineators in the median, and adding rumble strips along the shoulder (MTC, 2008).

It should be noted that Contra Costa County's (County) Capital Road Improvement & Preservation Program (program) includes the Vasco Road Safety Improvement Project (CCCPW, 2007). The project includes the installation of a median barrier on Vasco Road at selected locations between Camino Diablo and the Contra Costa/Alameda county line. The median barrier is expected to be installed along approximately 2.5 miles of Vasco Road in an area of Vasco Road where prior improvements have not occurred near Brushy Creek. The County has completed the federal and state environmental processes[3] for this project, and has received federal stimulus funds to provide a solid median barrier (k-rail) to replace the vertical delineators, a new truck passing lane in the area approximately three miles north of the Alameda County line, and turn pockets along the northbound (one-lane) roadway (Lai, 2010). The County expects to receive final approvals in the next few months and install this portion of the median barrier starting in April 2010 and continuing through 2011. Funding for the remainder of the project is still being sought (Carlson, 2009). In addition, the County implemented a roadway overlay (re-paving) project on Vasco Road, generally between Camino Diablo and the Contra Costa/Alameda county line in 2009 (Carlson, 2009). Therefore, safety features have already been designed and constructed and additional features will soon be completed.

[3] Federal process = National Environmental Policy Act; state process = California Environmental Quality Act.

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3.10 Master Response 10: Hazardous Materials/Public Health and Utilities

3.10.1 Introduction

Overview

This master response addresses issues raised by commenters regarding the potential for existing hazardous materials and the locations of historic and existing utility pipelines in the project area.

This master response is organized by the following subtopics:

- 3.10.2 Hazardous Materials
- 3.10.3 Chevron Facilities and Operations

Commenters

Commenters that addressed this topic include:

Federal Agencies

- None

State Agencies

- None

Local and Regional Agencies

- None

Organizations

- Chevron Environmental Management – O_CEMC

Individuals

- Gary Collier – I_Collier

Draft EIS/EIR Section Reference

The Draft EIS/EIR addresses hazardous material-related topics in the following locations: Vol. 1, Executive Summary, ES-83 and ES-84; and Vol. 2, Section 4.13, pp. 4.13-1 through 4.13-22. Utility- related topics are addressed in these locations: Vol. 1, Executive Summary, ES-80 through ES-83; and Vol. 2, Section 4.12, pp. 4.12-1 through 4.12-23.

3.10.2 Hazardous Materials

Comment Summary

This section of this master response responds to all of the following comment:

I_Collier-01

Summary of Issues Raised by Commenter

- The Draft EIS/EIR did not identify or address polychlorinated biphenyls (PCBs) and radioactive nucleotides in the project vicinity from releases at former military facilities such as McClellan Air Force Base.

Response

The comment states that numerous military facilities have purposely released PCBs and radioactive nucleotides, with the worst violator being McClellan Air Force Base. However, no military facilities are currently or were historically located within the proposed Los Vaqueros Reservoir Expansion Project vicinity, and McClellan Air Force Base is located northeast of the City of Sacramento and approximately 70 miles from the nearest segment of the Los Vaqueros Reservoir Watershed boundary.

Based upon the Environmental Data Resources, Inc. (EDR) review of regulatory agency environmental databases in March 2007 (see Table 4.13 from Draft EIS/EIR, Vol. 2, Section 4.13, pg. 4.13-6), no PCBs or radioactive nucleotides were identified and no superfund sites were found (as indicated by a search of the National Priority List database) to occur in the project vicinity. The project vicinity includes southeastern Contra Costa County, California, and a portion of eastern Alameda County, California. Figures 3-1 and 3-2 in the Draft EIS/EIR (Vol. 1, Chapter 3, pp. 3-17 through 3-18) show the project area graphically.

Water quality in the Delta is monitored for a variety of constituents (see the regulatory setting for Section 4.2, Delta Hydrology and Water Quality in the Draft EIS/EIR, Vol. 1, Section 4.2, pp. 4.2-1 through 4.2-11). As noted in the discussion of the Clean Water Act (Draft EIS/EIR, Vol. 1, Section 4.2, pg. 4.2-1), Delta waterways are included on the Central Valley Regional Water Quality Control Board's list of 303(d) impaired waterways for a several constituents; the list of constituents does not include PCBs or radioactive nucleotides.

Furthermore, per Contra Costa Water District's (CCWD) most recent Annual Water Quality Report, sanitary surveys of the watershed that provides CCWD water are conducted every five years by CCWD, with the most recent updates conducted in 2006 and 2007. These surveys indicate that the Delta could be affected by contamination from multiple sources. The surveys concluded that potential contamination is regularly mitigated by the natural flushing of the Delta, controls at the contamination sources, existing water treatment practices, or the Los Vaqueros Reservoir serving as a ready supply of high quality water for blending or direct use (CCWD, 2008).

Unforeseen hazardous conditions are addressed in the Draft EIS/EIR (Vol. 2, Section 4.13, pg. 4.13-15). Existing federal, state and local worker safety and emergency response regulations (Draft EIS/EIR, Vol. 2, Section 4.13, pp. 4.13-1 through 4.13-4) require that if any unforeseen hazardous materials are discovered during construction, the contractor coordinate with the appropriate agencies for the safe handling, sampling, transportation, and disposal of encountered materials. Alameda and Contra Costa counties have adopted County Hazardous Materials Area Plans (for their respective jurisdictions) that outline the procedures that county regulatory and response agencies will use to coordinate management, monitoring, containment, and removal of hazardous materials in the event of an accidental release. The contractor would also be required to comply with Cal-OSHA worker health and safety standards that ensure safe workplaces and work practices. In the event that PCBs, radioactive nucleotides or other previously undiscovered hazardous materials are found during project construction or operation, these measures would be used to address unexpected hazardous conditions.

3.10.3 Chevron Facilities and Operation

Comment Summary

This section of this master response responds to all of the following comments:

O_CEMC-01 O_CEMC-02

Summary of Issues Raised by Commenters

- Chevron Environmental Management Company (CEMC) representatives request that information concerning its historical and current pipelines to be added to the EIS/EIR record because the proposed Delta-Transfer Pipeline would intersect both historical and active pipelines.
- There is the potential for subsurface soil along and near the historical pipeline right of ways to be affected by undocumented residual weathered crude oil; therefore the commenter also requests that CCWD notify them of any future updates and ongoing developments concerning the project.

Response

Information provided by CEMC on Chevron's historical and current pipelines will be used to update the EIS/EIR and project planning information. The CEMC letter includes information on two historical and two active pipelines, three of which (the Active Kettleman - Los Medanos Pipeline, the Historical Old Valley Pipeline and the Historical Tidewater Associated Oil Company Pipeline) are not included on the Draft EIS/EIR map of potential utility crossings (Vol. 2, Section 4.12, pg. 4.12-3, Figure 4.12-1).

In order to include the information provided by CEMC, as described above, Figure 4.12-1, Potential Utility Crossings, and the description of existing utility infrastructure located to the northeast of the Los Vaqueros Reservoir watershed has been revised as follows :

Utility Infrastructure

Major utility infrastructure within the Los Vaqueros Reservoir watershed includes three buried natural gas pipelines; an overhead PG&E electricity transmission line; two buried PG&E gas lines; and a buried fiber-optic communications line operated by Sprint. To the northeast of the Los Vaqueros Reservoir watershed lie several irrigation lines owned by BBID, ~~two~~ multiple buried petroleum pipelines (active and historical) owned and operated by Chevron/Unocal and Kinder Morgan, a few Sprint fiber-optic cable lines, a PG&E natural gas line, and an overhead electricity line operated by Western.

In order to include the information provided by CEMC, as described above, the description of existing pipelines that may potentially be disrupted during construction of Alternatives 1 and 2 (Draft EIS/EIR, Vol. 2, Section 4.12, pg. 4.12-5 and pg. 4.12-12) has been revised as follows:

As shown in Figure 4.12-1, the Delta-Transfer Pipeline would cross as many as six BBID irrigation lines; three active petroleum pipelines (Chevron's Kettleman-Los Medanos Pipeline, Chevron's Bay Area Products Line, and one Kinder Morgan pipeline) and two historical petroleum pipelines (Chevron's double Tidewater Associated Oil Company Pipeline and Old Valley Pipeline); a Sprint fiber-optic cable line; a Western transmission overhead line; and two PG&E 500 kV overhead transmission lines. The Delta-Transfer pipeline would also cross the Union Pacific Railroad tracks. As described in Section 3.5.2, Pipeline Construction, the bore-and-jack method would be used to pass under the railroad crossing.

These text changes and the updated Figure 4.12-1 are included in Chapter 5, Revisions to the Draft EIS/EIR, in this document (Vol. 4).

The potential for intersecting known and/or previously unidentified utility pipelines or other utility facilities during construction is addressed in the Draft EIS/EIR in Vol. 2, Section 4.12, Utilities and Public Services Systems. A comparison of the pipelines evaluated in the Draft EIS/EIR impact analysis and newly identified pipelines cited by the commenter indicates that there is no new information that would change the conclusion for Impact 4.12.1, which addresses the project's potential to result in disruption to utilities and public service systems (Draft EIS/EIR, Vol. 2, Section 4.12, pp. 4.12-9 through 4.12-15). The Draft EIS/EIR determined that this impact would be Less-than-Significant with Mitigation for all four action alternatives. Implementation of Mitigation Measure 4.12.1a would avoid or minimize potential utility disruptions or conflicts identified in Impact 4.12.1. This mitigation measure would apply to the CEMC pipelines that were emptied, cleaned and decommissioned in the early 1970s as indicated in the CEMC letter as well as to the pipelines identified in the Draft EIS/EIR.

The CEMC comment also describes the potential for subsurface soil along and near the historical pipeline right of ways to be affected by undocumented residual weathered crude oil. CEMC indicates in their comment letter that "[g]overnment agencies agreed with the testing and analytical results from human health risk assessments performed at several known historic pipeline release sites, which confirm that soils affected by the historic release of production from the pipelines is non-hazardous, and does not pose significant health risks." As discussed in Section 3.10.2 above, unforeseen hazardous conditions, such as unidentified materials, are addressed in the Draft EIS/EIR (Vol. 2, Section 4.13, pg. 4.13-15), which discusses how, in the

event unforeseen hazardous materials are discovered, the contractor will coordinate with appropriate agencies in conformance with the relevant County Hazardous Materials Area Plan.

As identified in the Draft EIS/EIR and above, the Delta-Transfer Pipeline, which is a component of Alternatives 1, 2 and 3, could cross as many as three active petroleum pipelines. The Draft EIS/EIR also acknowledges construction of project components would disturb subsurface soils and that some of the project components could be in or near areas with a history of hazardous materials use (Vol. 2, Section 4.13, Impact 4.13.1, pg. 4.13-14). The historical petroleum pipelines and possibility of the presence of residual crude oil in subsurface soils, as discussed in CEMC's letter, do not constitute different types of hazardous materials that have not been discussed in or would not be addressed by the actions and regulations already identified in Section 4.13 of the Draft EIS/EIR (Vol. 2, pg. 4.13-4 and pg. 4.13-15).

CEMC also requests that CCWD notify them of any future updates and ongoing developments concerning the project. To comply with this request, the CEMC representatives listed in the letter have been added to the project mailing list in order to be automatically notified of project developments.

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3.11 Master Response 11: Recreation

3.11.1 Introduction

Overview

This master response addresses the issues raised by commenters about potential effects upon recreational facilities resulting from closure of the Los Vaqueros Reservoir watershed during project construction; replacement of recreational facilities within the watershed; the inclusion of additional multi-use trails in the watershed; and applicability of Reclamation and EBRPD reports upon the operation of recreational facilities.

This master response is organized by the following subtopics:

- 3.11.2 Closure of Recreational Activities within Los Vaqueros Watershed during Project Construction
- 3.11.3 Effects on other Recreational Facilities/Areas
- 3.11.4 Replacement of Recreational Facilities Within the Los Vaqueros Watershed
- 3.11.5 Construction of New Recreational Trails in the Los Vaqueros Watershed
- 3.11.6 Applicability of U.S. Bureau of Reclamation Recreation Manual and EBRPD Master Plan

Commenters

Commenters that addressed this topic include:

Federal Agencies

- None

State Agencies

- None

Local and Regional Agencies

- Contra Costa County, Department of Conservation and Development – L_CCCDCD
- Contra Costa County, Public Works Department – L_CCCPW
- East Bay Regional Park District – L_EBRPD
- Richmond Community Redevelopment Agency – L_RCRA

Organizations

- Delta Peddlers Bicycle Club – O_DPBC
- East Bay Area Trails Council – O_EBATC
- East Bay Bicycle Coalition – O_EBBC
- Save Mount Diablo – O_SMD

Individuals

- Mark Birnbaum – I_Birnbaum
- Michael Desmond – I_Desmond
- Dave Fontaine – I_Fontaine
- Joyce Gunn – I_Gunn
- Adrienne Harris – I_Harris
- Dr. Brian L. Horejsi – I_Horejsi
- Bob Mankin – I_Mankin
- Dick Quigley – I_Quigley
- Michael Sagehorn – I_Sagehorn
- Mike Vandeman – I_Vandeman

Draft EIS/EIR Section Reference

The Draft EIS/EIR addresses this topic area in the following locations:

Draft EIS/EIR Vol. 1, Executive Summary, pg. ES-32, pp. ES-85 through ES-86 (Table ES-7), Vol. 1, Chapter 3, pp. 3-81 through 3-87; and Vol. 2, Section 14.15, pp. 4.15-1 through 4.15-20.

3.11.2 Closure of Recreational Activities within Los Vaqueros Watershed during Project Construction

Comment Summary

This section of this master response responds to all or part of the following comments:

L_CCCPW-06 L_EBRPD2-08 L_EBRPD2-09 I_Fontaine-02 I_Mankin-02

Summary of Issues Raised by Commenters

- Clarify the duration of the project construction period, distinguishing the time period that the reservoir would be drained and out of service as well as the time period for closure of the watershed, in order to ascertain recreation-related construction impacts.
- Keep areas of the watershed and reservoir not directly involved in dam construction open for recreation during project construction.
- Avoid or minimize killing of existing fish in the reservoir before draining.

Response

Recreational Restrictions and Closures during Construction

As stated on page 3-46 of the Draft EIS/EIR (Vol. 1, Chapter 3), for Alternatives 1, 2 and 3, the existing reservoir would need to be drained prior to construction. It would remain drained and out of service throughout the estimated 3-year construction period and would be refilled following construction completion. Later on page 3-53, the Draft EIS/EIR states that the reservoir would be out of service for about four years from the time the reservoir was completely drained through

refilling. The Draft EIS/EIR notes that the time needed to refill the reservoir would be dependent on hydrological conditions and Delta water quality; however, for purposes of the Draft EIS/EIR, it was assumed to take approximately one year. Therefore, to clarify the anticipated closure of the reservoir under Alternatives 1, 2 and 3, the following text has been modified on page 3-46.

> The existing reservoir would need to be drained prior to construction, which is projected to take 6 months to one year to accomplish. During the reservoir draining period, recreation activities at the reservoir would be increasingly restricted as water levels drop. The reservoir~~It~~ would remain drained and out of service throughout the estimated 3-year construction period. ~~and refilled f~~ Following construction completion, the reservoir would be refilled, which would take approximately one year. During this refilling period, recreation activities would be reopened in phases in response to the increasing water levels. The process of draining the reservoir is described below (see "Construction").

Similarly, the text on (Draft EIS/EIR, Vol. 2) page 4.15-12 under Summary is modified as follows:

> Alternative 1 has the potential to impact recreational opportunities and experiences in the short-term due to the 3-year closure of the watershed, additional 1-year reservoir draining period when recreation activities at the reservoir would be increasingly restricted and 1-year refilling period when recreation activities would be reopened in phases, ~~2-year restriction on water-related activities are restricted (i.e., water recreation would be closed a total of 5 years to allow for reservoir drainage, dam modification construction and expanded reservoir refill)~~, and a potential …

And the text on page 4.15-19, immediately under Impact 4.15.3, is modified as follows:

> As described under Impact 4.15.1, the project under Alternatives 1, 2, and 3 would result in a short-term reduction of recreational opportunities during ~~the~~ reservoir ~~drawdown~~ construction ~~and subsequent refilling~~ due to the need to close the Los Vaqueros Watershed and all recreational activities to public use, and during the 1-year pre-construction draining period and 1-year post-construction refill period when recreation activities would be restricted.

Regarding the statement on page 3-54 that "construction of the 275 TAF reservoir dam, including appurtenant facilities, is estimated to require 24 to 30 months" (Draft EIS/EIR, Vol. 1, Chapter 3), this time table is specifically related to construction of the dam and appurtenant facilities and does not included other activities required to prepare the site for construction activities and/or implement recreation or habitat restoration activities upon completion of dam construction.

For Alternatives 1, 2 and 3, during the draining and refilling of the reservoir, water-related recreational activities would be restricted. During the 3-year active construction period the reservoir and the watershed would be closed to recreational visitors and non-essential CCWD staff, with the exception of a short segment of the Miwok Trail to maintain connectivity between Round Valley and Morgan Territory Regional Preserves (Draft EIS/EIR, Vol. 2, pg. 4.15-9). Draining the reservoir would be accomplished primarily by the planned release of the water into the Transfer Pipeline, which could take six months to one year to accomplish. Impact 4.15.1 in the Draft EIS/EIR discussed the short-term effects on recreation related to closure of the

watershed to the public during the construction period (Draft EIS/EIR, Vol. 2, Section 4.15, pp. 4.15-9 through 4.15-15). As stated on page 4-15.9, water-related activities (i.e., boating and fishing) would be restricted during the 1-year period prior to the start of construction activities when the reservoir would be drawn down as well as during the 1 year after project completion when the reservoir would be filled.

For enlargement of the reservoir to 160 TAF under Alternative 4, partial draining of the reservoir would be accomplished similar to the manner as described above for Alternatives 1, 2, and 3 by the planned release into the Transfer Pipeline. During the partial draining of the reservoir and refilling of the reservoir, water-related activities would be restricted. However, it is anticipated that shoreline fishing opportunities would be available, and boating may be available depending on the water level retained after draw down, up until the watershed is closed during facility construction. Determination of the drawdown level would be made through consultation with the California Department of Water Resources' Division of Safety of Dams during the final design (Draft EIS/EIR, Vol. 1, Chapter 3, pg. 3-46). As under Alternatives 1, 2, and 3, during the 2-year active construction period the reservoir and the watershed would be closed, with the exception of a short segment of the Miwok Trail to maintain connectivity between Round Valley and Morgan Territory Regional Preserves (Draft EIS/EIR, Vol. 2, pg. 4.15-9). Access to water-related activities would be reinstated in phases during refilling.

While CCWD understands that some commenters would like CCWD to further minimize or avoid the need to close the watershed to public access as well as the restrictions on water recreation by allowing some recreation to continue during project construction, as discussed on page 4.15-9 of the Draft EIS/EIR (Vol. 2, Section 4.15), restriction of public access and use is necessary for public safety during the construction period due to the substantial amount of construction activity that would be occurring within the watershed.

On-going construction activities would include daily commute and work travel by construction crews, delivery of large pipeline segments and/or other large volumes of materials, movement of heavy equipment and materials between stockpile areas and the dam site, excavation for borrow materials and some blasting near the dam site. By closing the watershed to public access during construction, work would occur unimpeded by non-construction activities and the duration of construction will be kept to a minimum time period. In addition, these access restrictions help to protect worker safety and maintain site security. Finally, it is unlikely that the contractor would be willing to assume the liability of allowing visitors near or in an active construction site.

Reservoir Fisheries Management during Construction

Prior to draw down or draining of the reservoir, the ongoing fish stocking activities will be modified and recreational fishing will continue, thus reducing the number of fish in the reservoir. The reservoir is not considered habitat for any special-status fish species and the project does not propose to transfer any fish stock prior to the initiation of draining or construction. For Alternative 4, reservoir water quality will continue to be monitored during construction to maintain adequate conditions for the fish that remain in the reservoir.

3.11.3 Effects on other Recreational Facilities/Areas

Comment Summary

This section of this master response responds to all or part of the following comments:

L_EBRPD2-08	L_EBRPD2-10	L_EBRPD2-11	L_EBRPD2-12
L_EBRPD2-13	L_EBRPD2-18	O_EBATC2-04	

Summary of Issues Raised by Commenters

- The Draft EIS/EIR should substantiate its conclusion that the number of anglers is relatively small and that they would disperse over a wide geographic area. Nearby EBRPD facilities, like Del Valle Reservoir, could face operational conflicts and management costs, which CCWD should mitigate by committing to fund measures to protect or restore natural resources at facilities affected by recreational demand displaced from the reservoir.
- The project would result in a temporary loss of recreational opportunities for residents of the region who cannot afford private recreational alternatives and therefore CCWD should contribute funds during the construction period to provide offsite recreational facilities.
- The EIS/EIR should explain how water operations would affect recreation at other reservoirs, such as Del Valle, that receive water from Los Vaqueros.
- Notifying the public of recreational closures does not mitigate the temporary loss of recreational facilities during construction, and could burden the operators of other recreational facilities near the reservoir.

Response

Effects on Anglers

All of the project alternatives would necessitate closure of Los Vaqueros Reservoir during project construction and water-related recreation would be restricted during the 1-year reservoir draining and refilling periods. As stated in the Draft EIS/EIR (Vol. 2, Section 4.15, pg. 4.15-15), "Data gathered between September 2001 and June 2002 show 15,292 cars entering at both the north and the south entries and show that 74 percent of the visitors to the reservoir use the south entry. Visitor data, documenting attendance by month over a 7-year period (July 2001 through June 2008), indicates that annual attendance ranges by year from 28,966 (year ending June 30, 2002) to 23,717 (year ending June 30, 2008) with most visitors to the watershed during the spring (March to May) and autumn (September and October)."

Review of the data gathered by CCWD to respond to comments brought to light a minor error on page 4.15-16 in the Draft EIS/EIR (Vol. 2, Section 4-15), which is corrected as follows:

> According to CCWD staff, in 2002, about 90 percent of Los Vaqueros visitor use was for fishing (Nuzum, 2002). More recently, during the 2007-2008 fiscal year, 17,913 ~~20,237~~, or 75 ~~85~~ percent of the visitors to the reservoir, purchased daily fishing access pass permits.

Over the last 4-year period, use of the watershed for fishing varied from 65 to 80 percent of the annual visitors (Mueller, 2008). Assuming that 90 percent of the visitors recorded in the highest use year (i.e., 26,069 anglers in 2002) use the watershed for fishing, this would result in an average of 71 users per day[4]. However, most fishing occurs during the cooler spring and fall months, and some periods shortly after restocking of fish are especially busy. Marina records indicate that as many as 300 anglers per weekend (i.e. – 150 per day) purchase fishing permits during the busiest 10 to 20 days of the season. Therefore, a range of about 71 anglers per day (averaged over a year) to about 150 anglers per day during peak days could seek other fishing facilities during closure of the reservoir (Mueller, 2010). Data collected during October 2001 from 1,000 cars showed that 51 percent of the watershed users came from CCWD's service area, 17 percent from the Livermore-Pleasanton-San Ramon Tri-Valley area, 20 percent from the South Bay, 7 percent from the Peninsula, and 5 percent from other areas (Mueller, 2008). This data shows that these users travel from a wide variety of locations in order to take advantage of the recreational opportunities at the Los Vaqueros Watershed. Accordingly the 71-150 daily anglers displaced by closure of Los Vaqueros Reservoir would be expected to seek similar fishing opportunities from a similarly wide variety of locations.

There are numerous fishing opportunities within Contra Costa and Alameda Counties. This includes 11 lakes and reservoirs with 25 lake fishing docks, in addition to over 25 miles of Bay/Delta shoreline with 5 bay/river fishing piers owned or operated by the East Bay Regional Park District (EBRPD). EBRPD plants catchable rainbow trout (fall through spring) and channel catfish (summer) in cooperation with CDFG at Del Valle (Livermore), Lake Chabot (Castro Valley/San Leandro), Shadow Cliffs (Pleasanton), Horseshoe Lake at Quarry Lakes (Union City/Fremont), Contra Loma (Antioch), Don Castro (Hayward), and Lake Temescal (Oakland). Other public fishing sites/access in Contra Costa County include the City of Antioch's Municipal Boat Ramp and Fishing Pier on the San Joaquin River, the California Department of Water Resource's Clifton Court Forebay in Italian Slough; Frank's Tract State Recreation Area (fishing from boats only); the City of Pittsburgh's Riverview Park on the Sacramento River; and East Bay Municipal Utility District's San Pablo and Lafayette Recreation Areas. Further, as illustrated in the Alameda County Parks, Recreation and Historic Sites Directory (Alameda County, 2003), public fishing is allowed at the Berkeley Marina, Emeryville Marina; Oakland's Estuary Park, Lakeside Park/Lake Merritt, Middle Harbor Shoreline Park, Portview Park and McCrea Memorial Park; Fremont's Central Park/Elizabeth Lake and Niles Community Park; as well as other areas within the County including the Marina Park near San Leandro; Bethany Reservoir State Recreational Area; Cull Canyon, Garin/Dry Creek Pioneer, and Tilden/Lake Anza Regional Parks; Hayward, Martin Luther King Jr., and Oyster Bay Regional Shorelines; Robert Crown Memorial State Beach; Temescal Regional Recreational Area, as well as land along the 300 miles of the Bay Trail.

[4] Visitor numbers for year ending June 30, 2002 were 28,966. Ninety percent of total visitors is approximately 26,069. This calculates to approximate 71 per day based on 365 days.

Assuming that all the anglers that come to the Los Vaqueros Watershed (i.e., a range of 71 to 150 anglers per day) would choose other venues within Contra Costa and Alameda Counties, they would have 35 recreational areas, many miles of shoreline, and access from hundreds of miles of trails to choose from for fishing. It is reasonable to assume that given the existing Los Vaqueros users' location of origin, users would disperse to a variety of facilities, including many not listed above. As a result, no one facility would be expected to experience substantial increase in use such that its facilities would be deteriorated. Please see Table 3.11-1 for additional information about fishing opportunities in Contra Costa and Alameda Counties. Therefore, as stated in the Draft EIS/EIR, the increase of users at other facilities, including Del Valle, would result in a Less-than-Significant impact.

Public Notification of Temporary Closure

Comment L_EBRPD2-13 states that "notifying the public of the closure does nothing to mitigate the temporary loss of recreational opportunities onsite". The intent of notifying the public in advance of activities that may affect public access to recreational facilities or opportunities within the watershed is to enable users to plan ahead by choosing other facilities, rather than traveling to the reservoir, only to be turned away, potentially resulting in a missed recreational opportunity. These notices typically include information about the construction period, closure and re-opening dates, and other recreational opportunities in the area, thus allowing potential visitors the choice to pursue activities at other facilities or to pursue other activities altogether. Further, by listing numerous other locations, the notices decrease the likelihood that a substantial number of Los Vaqueros users will choose to use a single alternative facility.

Effect on Availability of Regional Park and Recreation Areas

To respond to comments about the effect on availability of regional park and recreation areas, CCWD researched information on federal, state and local recreational facilities within Contra Costa and Alameda Counties, as summarized in Section 3.11.3, Table 3.11-1. It should be noted that the regional recreational opportunities that are available are comparable in cost to the Los Vaqueros Watershed and, in many instances, are free. Therefore, temporary closure of Los Vaqueros would not disproportionately disadvantage people who cannot afford private recreational alternatives.

Operational Effects on Recreational Reservoirs

EBRPD raised the concern that other reservoirs, specifically Lake De Valle, which could receive water from an expanded Los Vaqueros Reservoir via the South Bay Connection and the existing SBA system, might be affected by operational changes or differences in water movement or water availability that, in turn, would adversely affect recreation at these facilities. Project Alternatives 1 and 2 are designed to deliver water to project participants in a manner that is more reliable and results in less environmental impact to Delta water and aquatic resources. Project participants could include DWR and one or more of its South Bay water agency contractors and thereby deliver water through the SBA to Del Valle Reservoir. Project operating objectives and assumptions, described in Chapter 3 of the Draft EIS/EIR and analyzed in Section 4.2, are based on the delivery needs of the South Bay water agencies served by the SBA. By design, and as

substantiated in the Draft EIS/EIR, Project Alternatives 1 and 2 would deliver water to the SBA system on a schedule based on current and projected system demands and with improved reliability. The project would not change the SBA system demands. There would be no effect on water storage volumes or water levels in Del Valle Reservoir as a result of the project, and no related adverse effect on recreation at this park.

Alternative 4, the 160-TAF reservoir expansion, does not include the South Bay Connection and would not be designed to deliver water directly to DWR's SBA system. Alternative 4 would not adversely affect reservoir storage or water levels in Del Valle Reservoir or other area reservoirs.

3.11.4 Replacement of Recreational Facilities Within the Los Vaqueros Watershed

Comment Summary

This section of this master response responds to all or part of the following comments:

L_CCCDCD-01 L_CCCDCD-02 L_CCCPW-06 L_EBRPD2-15

Summary of Issues Raised by Commenters

- The EIS/EIR should describe the inundation of recreational facilities and recreational opportunities lost due to the project as a significant impact, and identify the replacement of such facilities as a mitigation measure.
- Considering the information in the Draft EIS/EIR regarding growth-inducing effects, recreational facilities should be replaced at greater than a 1:1 rate.
- The EIS/EIR should examine whether it will be feasible to both replace trails within the watershed and replace habitat and associated mitigation restrictions on land that will be inundated.

Response

Impact Summary

The replacement of recreational facilities that will be lost due to inundation caused by expanding the reservoir is part of the project description for each of the alternatives (Draft EIS/EIR, Vol. 1, Chapter 3, pp. 3-81 through to 3-87). Table 3-5 (Draft EIS/EIR, Vol. 1, Chapter 3, pg. 3-81), describes all of the existing recreational facilities in the watershed that would be affected by the project, including: shoreline hiking trails, marina facility, fishing piers, and parking and picnic areas. Under all alternatives, existing recreational facilities within the Los Vaqueros Watershed that are disturbed or displaced by the reservoir expansion project would be relocated or replaced (Draft EIS/EIR, Vol. 1, Chapter 3, pg. 3-20). Proposed recreational facilities are included in each of the project alternatives to replace the recreational facilities that would be displaced by reservoir expansion and, in some cases, to enhance recreational opportunities (Draft EIS/EIR, Vol. 1, Chapter 3, Section 3.5.5, pp. 3-81 through 3-86). Proposed recreational enhancements for Alternatives 1, 2, and 3 include additional fishing access areas, trails, and an expanded Marina

TABLE 3.11-1
RECREATIONAL OPPORTUNITIES IN CONTRA COSTA AND ALAMEDA COUNTIES SIMILAR TO THOSE OFFERED AT THE LOS VAQUEROS WATERSHED

	Location (City)	Owned/Operated by	Hours	Boat Launch	Boat Launch Fee	Fishing Permit/ Fee	Parking Fee	Dog Fee	Boat Rental Available
Los Vaqueros Reservoir & Watershed									
Los Vaqueros Reservoir & Watershed	Near Byron	Contra Costa Water District	Open seven days a week; hours change with the season; summer hours are 6am to 8pm	Private boats not allowed on reservoir; rental boats are available at the marina.	Private boats not allowed on reservoir; rental boats are available at the marina.	CA State Fishing License & a CCWD Daily Fishing Permit ($3.75 per day for persons age 16 and older)	$6 per vehicle; $5 per vehicle for seniors; $4 per vehicle for CCWD residents; $12 daily per van/bus (10-20 passengers); $20 daily per van/bus (21+ passengers)	No dogs allowed	Yes
Contra Costa County									
Antioch Municipal Marina (Boat Launch and Fishing Pier)	Antioch	Antioch	Sunrise to Sunset	No boat launch at marina; boat launch located ~1mile up the San Joaquin River	No fee	CA State Fishing License	Free parking	No fee	No
Antioch/Oakley Regional Shoreline	Antioch	EBRPD	5am-10pm; pier open 24 hours a day	No boat launch	N/A	CA State Fishing License	No fee	No fee	No
Brannan Island State Recreation Area	South of Rio Vista	California State Parks Department	Sunrise to Sunset	The park has a 6-lane launch ramp.	$6 per boat	CA State Fishing License	$5 per vehicle per day	Beaches off-limits to dogs; dogs allowed in the picnic area	No
Clifton Court Forebay – Italian Slough	Near Byron	California Department of Water Resources	No vehicle access	No boat launch	N/A	CA State Fishing License; no defined fishing spot – can fish from banks and levees	No fee; no parking inside of gates	No fee	No
Contra Loma Regional Park	Antioch	East Bay Regional Park District (EBRPD)	Jan: 7am-5:30pm Feb: 7am-6pm Mar: 7am-7pm Apr: 6am-8pm May-Labor Day: 6am-8:30pm Sept: 6am-8pm Oct: 7am-7pm Nov: 7am-6pm Dec: 7am-5:30pm	Visitors may launch boats of up to 17 ft.; electric motors only; no gasoline-powered engines are permitted; personal watercraft not permitted	$4 per day trailered boat (electric motors only); $2 per day car-top or inflatable; $1 per day windsurf board; windsurfers must take a shower and wear a wetsuit	CA State Fishing License & an EBRPD Daily Fishing Permit ($4 per day for persons age 16 and older)	$5 per vehicle; $4 per trailered vehicle; $25 per bus	$2 per dog	No
Franks Tract State Recreation Area	NE of Antioch	California State Parks Department	Sunrise to Sunset	No boat launch	N/A	CA State Fishing License	Only accessible by boat via Brannan SRA	Beaches off-limits to dogs	No
Lafayette Recreation Area	Near Lafayette	EBMUD	Jan: 6:30am-5:30pm Feb: 6:30am-6pm Mar: 6am-6:30pm Apr: 6am-8pm May: 6am-8:30pm Jun: 6am-9pm Jul: 6am-9pm Aug: 6am-8:30pm Sept: 6:30am-7:30pm Oct: 6:30am-6:30pm Nov: 6:30am-5:30pm Dec: 6:30am-5:30pm	Multiple launching docks	$4 per day; $45 annual for boats; $4 per day for float tubes; $50 season pass for float tubes	CA State Fishing License; $4 per day fishing access permit	$6 per vehicle; $120 per season (new); $110 per season (renewal); $17 per van (10-20 passengers); $31 per bus (21+ passengers)	No fee	Yes
Riverview Park	Pittsburg	Pittsburg	8am-6pm	No boat launch	N/A	No fishing	No fee	No fee; dogs must be on leash	No
San Pablo Recreation Area	Between Orinda & El Sobrante	East Bay Municipal Utilities District (EBMUD)	Feb: 6:30am-5pm Mar: 6am-5:30pm Apr: 6am-6pm May: 6am-7:30pm Jun: 6am-8pm Jul: 6am-8pm Aug: 6am-7:30pm Sept: 6:30am-7:30pm Oct: 6:30am-6pm	One paved, 8-boat launch ramp; only 4-cycle engines using MTBE- free gasoline allowed	$4.50 per day motor boat launch; $3.50 per day kayak/skull/car top launch; $4 per day float tube launch	CA State Fishing License; Fishing Access Ticket: $4.50 per day	$6.50 per vehicle; $2 per vehicle after 4pm; $4 per vehicle for 4 hrs; $17 per van (10-20 passengers); $31 per bus (21+ passengers)	$2 per dog	Yes

TABLE 3.11-1
RECREATIONAL OPPORTUNITIES IN CONTRA COSTA AND ALAMEDA COUNTIES SIMILAR TO THOSE OFFERED AT THE LOS VAQUEROS WATERSHED

	Location (City)	Owned/Operated by	Hours	Boat Launch	Boat Launch Fee	Fishing Permit/ Fee	Parking Fee	Dog Fee	Boat Rental Available
Alameda County									
Berkeley Municipal Pier at the Berkeley Marina	Berkeley	Berkeley	Open 24 hours a day, 7 days a week	No boat launch	N/A	No fees or permits required	No fee	No dogs allowed pier	No
Bethany Reservoir State Recreation Area	Northeast of Livermore	CA State Parks Department	8am-Sunset	Public boat launch facility	$5 per boat per day	CA State Fishing License	$5 per vehicle	No fee; dogs must be on leash	No
Central Park & Lake Elizabeth	Fremont	Fremont	Sunrise to 10pm	One boat launch; boats may also be stored at Lake Elizabeth	$7 per day; $50 annual launch card; no motor boats may be started in the lake	CA State Fishing License; restricted in designated areas	No fee	No fee; dogs must be on leash	Yes
Cull Canyon Regional Recreation Area	Castro Valley	EBRPD	5am-10pm unless otherwise posted	No boat launch	N/A	CA State Fishing License & an EBRPD Daily Fishing Permit ($4 per day for persons age 16 and older)	No fee	No fee; no dogs allowed inside the fenced swim area	No
Del Valle Regional Park	~10 mi. south of Livermore	EBRPD	Varies by season	Visitors may launch any size boat at the public boat launch ramp; jet skis are not permitted	$4 per day trailered boat; $2 per day car-top or inflatable; $1 per day windsurf board	CA State Fishing License & an EBRPD Daily Fishing Permit ($4 per day for persons age 16 and older)	$6 per vehicle; $4 per trailered vehicle; $3 per vehicle at Arroyo staging; $25 per bus	$2 per dog	Yes
Don Castro Regional Recreation Area	Hayward	EBPRD	8am-10pm; 8am-8pm in winter months	None	N/A	CA State Fishing License & an EBRPD Daily Fishing Permit ($4 per day for persons age 16 and older)	$5 per vehicle weekends & holidays; $25 per bus	$2 per dog	No
Emeryville Marina	Emeryville	Privately owned (Marinas International)	The gates locked at 10 pm; reopened at 6am	One launching ramp	No charge	Fishing is allowed from the pier	No fee	No fee; dogs must be on leash	No
Estuary Park	Port of Oakland	Oakland	Open 24 hours a day, 7 days a week	One launching ramp	No charge	No fees or permits required	No fee	No dogs allowed on the pier	No
Garin/Dry Creek Pioneer Regional Parks	Hayward	EBRPD	5am-10pm unless otherwise posted	No boat launch	N/A	CA State Fishing License	$5 per vehicle (when kiosk is attended); $4 per trailered vehicle; $25 per bus	$2 per dog	No
Halcyon Park	San Leandro	San Leandro	Sunrise to Sunset	No boating facilities	N/A	No fishing facilities	No fee	No fee; dogs must be on leash	No
Hayward Regional Shoreline	Hayward	EBRPD	5am-10pm unless otherwise posted	No boat launch	N/A	CA State Fishing License. Fishing is allowed from the levees, except in the marsh areas	No fee	No fee	No
Lake Chabot	Castro Valley	EBRPD	5am-10pm	No boat launch facility	$2 car-top canoes, kayaks, & scull-craft only, 20 ft. or less	CA State Fishing License & an EBRPD Daily Fishing Permit ($4 per day for persons age 16 and older)	$5 per vehicle; $4 per trailered vehicle; $25 per bus	$2 per dog	Yes
Lakeside Park-Lake Merritt	Oakland	Oakland	6am-10pm	Multiple launching ramps	$2 per day to use your own boat or small vessel; no motor boats allowed	Fishing in Lake Merritt is very poor. No fish live in Lake Merritt year-round because of ever changing salinity conditions: freshwater in winter, brackish in spring, saltwater in summer and fall.	No fee & parking meter spaces	No fee; dogs must be on leash	Yes, at the Lake Merritt Boating Center
Marina Park	San Leandro	San Leandro	Sunrise to Sunset	No boat launch	N/A	CA State Fishing License – fishing available along the shoreline	No fee	No fee	No

TABLE 3.11-1
RECREATIONAL OPPORTUNITIES IN CONTRA COSTA AND ALAMEDA COUNTIES SIMILAR TO THOSE OFFERED AT THE LOS VAQUEROS WATERSHED

	Location (City)	Owned/Operated by	Hours	Boat Launch	Boat Launch Fee	Fishing Permit/ Fee	Parking Fee	Dog Fee	Boat Rental Available
Alameda County (cont.)									
Martin Luther King Jr. Regional Shoreline	Oakland	EBRPD	5am-10pm unless otherwise posted	A two-lane boat launch located on the west side of the park off Doolittle Drive; watercraft may launch, but are not allowed in the 50-acre Arrowhead Marsh; motorized vessels restricted during certain times of the year due to bird migration and nesting in the marshes	No fee	CA State Fishing License	No fee	No fee; leash required in marsh area	No
McCrea Memorial Park[a]	Oakland	Oakland	Sunrise-Sunset	No boat launch	N/A	Fishing allowed; Trout pond and casting pool facilities available to public; home to Oakland Casting Club; free fly-casting clinics (10 a.m. to 2 p.m. on 3rd Saturdays of the month, March through July)	–	–	No
Middle Harbor Shoreline Park	Port of Oakland	EBRPD	8am-10pm	No boat launch	N/A	CA State Fishing License is required to fish at the Park; no CA State Fishing license is required to fish from the pier at the end of Port View Park	No fee	No dogs allowed	No
Niles Community Park	Fremont	Fremont	Park is closed at night	No boat launch	N/A	CA State Fishing License	No fee	–	No
Oyster Bay Regional Shoreline	San Leandro	EBRPD	5am-10pm unless otherwise posted	No boat launch	N/A	CA State Fishing License	No fee	No fee	No
Pleasanton Ridge Regional Park	Pleasanton	EBRPD	5am-10pm unless otherwise posted	No boat launch	N/A	Not allowed	No fee	No fee	No
Port View Park	Port of Oakland	Oakland	8am-10pm	No boat launch	N/A	A CA State Fishing License is required to fish at the shoreline; no California State fishing license required to fish from the pier at the end of Port View Park	No fee	No dogs allowed	No
Quarry Lakes Regional Recreation Area - Horseshoe Lake	Fremont	EBRPD	Sept: 6am-8pm Oct: 6am-7pm Nov-Jan: 7am-6pm Apr: 6am-8pm May-Labor Day: 6am-9pm	Visitors may launch boats of up to 17 ft. Electric motors only; no gasoline-powered engines or personal watercraft are permitted	$4 per day trailered boat; $2 per day car-top or inflatable	CA State Fishing License & an EBRPD Daily Fishing Permit ($4 per day for persons age 16 and older)	$5 per vehicle; $4 per trailered vehicle; $25 per bus	$2 per dog	No
Robert W. Crown Memorial State Beach	Alameda	EBRPD	5am-10pm unless otherwise posted	No boat launch facility; only sailboards, kayaks & car-top inflatables are permitted at Crown Beach	$2 per day for car-top or inflatable; $1 per day windsurf board or sailing craft. No charge if carried into the park.	CA State Fishing License; fishing is allowed from the shore	$5 per vehicle (when kiosk is attended); $4 per trailered vehicle; $25 per bus	No fee; no dogs allowed on beach	Yes; kayaks and sailboards are available for rental
Shadow Cliffs Regional Recreation Area	Pleasanton	EBRPD	Jan: 7am-6pm Feb/Mar: 6am-7pm Apr: 6am-8pm May-Labor Day: 6am-9pm Post Labor Day-Sept: 6am-8pm Oct: 6am-7pm Nov: 7am-6pm Dec: 7am-6pm	Visitors may launch boats of up to 17 ft. Electric motors only; no gasoline-powered engines or personal watercraft permitted	$4 per day trailered boat; $2 per day car-top or inflatable; $1 per day windsurf board	CA State Fishing License & an EBRPD Daily Fishing Permit ($4 per day for persons age 16 and older)	$6 per vehicle; $4 per trailered vehicle; $25 per bus	$2 per dog	Yes

TABLE 3.11-1
RECREATIONAL OPPORTUNITIES IN CONTRA COSTA AND ALAMEDA COUNTIES SIMILAR TO THOSE OFFERED AT THE LOS VAQUEROS WATERSHED

	Location (City)	Owned/Operated by	Hours	Boat Launch	Boat Launch Fee	Fishing Permit/ Fee	Parking Fee	Dog Fee	Boat Rental Available
Alameda County (cont.)									
Temescal Regional Recreation Area	Oakland	EBRPD	5am-10pm unless otherwise posted	No boat launch	N/A	CA State Fishing License	April through October $5 per vehicle (when kiosk is attended); $4 per trailered vehicle; $25 per bus	$2 per dog	No
Tilden Regional Park (Lake Anza)	Berkeley	EBRPD	5am-10pm unless otherwise posted	No boat launch	N/A	CA State Fishing License	No fee	No fee	No
Trails									
Bay Trail (~300 mi)	~300 mi. shoreline trail along San Francisco Bay	San Francisco Bay Trail Project	N/A	The Bay Trail provides access to several public boat launch facilities	N/A	The Bay Trail provides access to several fishing piers as well as areas to fish along the shoreline. CA State Fishing License required along the shore; no permit required on fishing piers	No fee	No fee; no dogs allowed in designated areas	No

[a] There was limited information available for McCrea Memorial Park located in the City of Oakland. McCrea Memorial Park, managed by the City of Oakland Parks and Recreation District, is a neighborhood park open to the public with fly fishing and trout pond facilities (Oakland Casting Club, 2009). After several attempts of contacting the City of Oakland, it is unknown if there are any fishing permit requirements, fishing or parking fees, or dogs allowed at the park.

N/A = Not applicable

SOURCES: California State Parks, 2009(a-b); Camron-Stanford House, 2009; City of Antioch, 2009; City of Berkeley, 2009; City of Fremont, 2008; City of Fremont, 2009(a-b); City of San Leandro, 2009; CCWD, 2009; EBMUD, 2009(a-c); EBRPD, 2009; EBRPD, 2009(a-p); Hueseff, 2009; Loberg, 2009; Lutton, 2009; Nogare, 2009; Port of Oakland, 2009(a-b); Oakland Casting Club, 2009; San Francisco Bay Trail, 2009; Villanueva, 2009.

complex to include an additional interpretive center and more berths for rental boats. Proposed recreation enhancements for Alternative 4 include additional trails, picnic areas and potentially an additional fishing pier. These facilities will be replaced as described in the project description, and completed as part of the project construction within the planned construction timeframe. None of the alternatives will result in a net loss of recreational facilities. However, Mitigation Measure 4.15-1 in the Draft EIS/EIR (Vol. 2, Section 4.15, pp. 4.15-14 through 4.15-15) has been expanded to include Measure 4.15-1c to ensure timely replacement of recreational facilities.

The Draft EIS/EIR text (Vol. 2, Section 4.15, pg. 4.15-15) is revised as shown below. These text changes and all other document revisions are included in Final EIS/EIR, Chapter 5, Section 5.1, Revisions to the Draft EIS/EIR.

> **Measure 4.15.1c:** Recreational facilities displaced by reservoir expansion would be replaced within one year of completion of construction activities associated with all major facility components.

Recreational Impacts and Growth

Project implementation would not directly result in growth inducement. However, the project alternatives could remove water supply reliability as an obstacle to growth by providing adequate water supply to meet the needs of existing customers and growth that has been planned in each service area by the respective city and county land use agencies; therefore, the project could have indirect growth-inducement potential within these service areas (Draft EIS/EIR, Section 4.20, pg. 4.20-2).

Comment L_CCCDCD-02 states that because of the potential growth-inducing effects of the project, recreation facilities inundated by the expanded reservoir should be replaced at a ratio greater than 1:1. However, mitigation is not required for indirect growth inducement under any of the alternatives because it is not known whether or to what extent the city and county land use agencies in each service area would in fact use the improved water supply reliability afforded by the project to support future growth, or if that growth would require new recreation facilities. If new recreation facilities are required as a result of growth, the facilities would typically be provided along with the growth through conditions of approval, permit terms or other tools within the authority of the governing land use agency.

Although not required as mitigation, the Los Vaqueros Reservoir Expansion Project includes, consistent with CCWD Board Principles (see Draft EIS/EIR pg.2-12), more miles of trails than are impacted, as well as additional recreation facilities to improve opportunities for public use of the watershed over those currently in place.

Responses to other comments related to growth are found in **Section 3.13, Master Response 13, Growth-Inducing Effects**.

Feasibility of Trail Relocation and Construction

Commenter L_EBRPD2 requests that the EIS/EIR provide additional information as to whether it is feasible to replace hiking trails lost due to inundation, construct a new Eastside Trail, and also

replace the habitat mitigation lands that will be lost due to inundation. The commenter points out that there may be conflicts between these project elements. As explained in more detail in Chapter 2 of this volume, the majority of the Eastside Trail has been eliminated from all of the alternatives. Only a short segment of new trail is proposed. There is adequate land available within the watershed to construct the reduced Eastside Trail and the other recreational facilities, including the Westside Trail realignment, proposed by the alternatives (see Figures 2-2 and 2-3 in Chapter 2 of this document).

3.11.5 Construction of New Recreational Trails in the Los Vaqueros Watershed

Comment Summary

This section of this master response responds to all or part of the following comments, which focus on requests for additional multi-use trails. Replacement of existing facilities is addressed above in, 3.11.3, Effects on other Recreational Facilities/Areas.

L_EBRPD2-16	L_RCRA-01	O_DPBC1-01	O_DPBC2-01
O_DPBC2-02	O_DPBC3-01	O_DPBC3-02	O_DPBC3-03
O_DPBC4-01	O_DPBC4-02	O_DPBC4-03	O_DBPC5-01
O_DPBC6-01	O_DPBC7-01	O_DPBC7-02	O_EBATC1-01
O_EBATC2-01	O_EBATC2-02	O_EBATC2-03	O_EBBC-01
O_EBBC-02	O_EBBC-03	I_Birnbaum-01	I_Desmond-01
I_Gunn-01	I_Harris-01	I_Horejsi_01	I_Quigley1-01
I_Sagehorn-01	I_Vandeman-01	I_Vandeman-02	

Summary of Issues Raised by Commenters

- Provide a new path for cyclists to enter the watershed from either entrance and ride completely through from entrance to entrance. Establishment of a trail between the two entrances would enhance safety of bicyclists and would discourage use of illegal trails or cross country riding.
- Provide access to multi-use trails, including the Eastside Trail, for mountain bikes.
- Establish a multi-use trail link between Brushy Peak and Los Vaqueros Reservoir.
- Request for mitigation for reservoir expansion through increasing multi-use trail connections for equestrians and mountain bikes.
- Widen shoulder/bike lane along Walnut Blvd., leading to Marsh Creek Road and then Camino Diablo.
- Provide bicycle trail connections to neighboring parks.
- Develop bike and trail access; develop a paved multi-use path; consider placing lights and benches in visitor areas; develop bike connections to neighborhood parks.
- Against expanded use by mechanized mountain bikes; reconsider existing use by mountain bikes due to destruction of vegetation, water pollution, wildlife displacement, etc. Restrict bicycles and other vehicles to paved roads.

- CCWD committed to provide more multi-use trails (i.e. – including bicycles) as part of the original reservoir project. Planned trails are not multi-use and therefore inconsistent with CCWD Resource Management Plan (RMP) (Brady/LSA, 1999) for the Los Vaqueros Watershed.
- The Los Vaqueros RMP promised "public access at reasonable costs that are distributed equally among all users".
- Include an outdoor education site for schools, hiking, camping, and trails for cycling, shooting range and limited access to CCWD lands for hunting.

Response

Impact Summary

Access to Recreational Facilities

Under all alternatives, after project construction is completed, there would continue to be access to recreational facilities on the northern and southern end of the reservoir. Existing recreational facilities include a number of picnic areas with benches for the public. Under Alternatives 1, 2, and 3, the Marina Complex would be constructed at the northern end of the reservoir. Under Alternative 4, while the Marina Complex would remain at the southern end, a new fishing pier could potentially be constructed in the northern portion of the reservoir. Under all alternatives, the existing points of vehicle access to the watershed, from Walnut Avenue in the north and off Vasco Road in the south, would be unchanged. Access to the watershed is limited by season, but generally allowed from dawn to dusk, therefore lighting is not required. As discussed above in Section 3.11.4, proposed recreational facilities are included in each of the project alternatives (Draft EIS/EIR, Vol. 1, Chapter 3, Section 3.5.5, pp. 3-81 through 3-86). Proposed recreational enhancements for Alternatives 1, 2, and 3 include additional fishing access areas, trails, and an expanded Marina complex to include an additional interpretive center and more berths for rental boats. Proposed recreation enhancements for Alternative 4 include additional trails, picnic areas and potentially an additional fishing pier. None of the alternatives will result in a net loss of recreational facilities, and no additional mitigation is required.

Multi-Use Trails

CCWD acknowledges the public's desire for more multi-use trails within the Los Vaqueros Watershed. Currently, there are 15.8 miles of trails within the watershed designated as multi-use. As proposed, none of the project alternatives would impede or reduce the extent of existing multi-use trails. If the project were revised to include additional multi-use trails, use of such trails could result in a range of environmental effects that are beyond the scope of the effects analyzed in the Draft EIS/EIR prepared for the proposed project, including but not limited to destruction of vegetation on unpaved trails, soil erosion, loss of top soil, water quality effects, effects on biological and cultural resources, and others.

The multi-use trails in the watershed were developed consistent with Recreation and Public Access objectives adopted by CCWD as part of the Los Vaqueros Resource Management Plan (Brady/LSA, 1999). The objectives that have a bearing on multi-use trails include the following:

- Objective D2: Provide recreational activities, including water-based recreation, within the Watershed at a level consistent with maintaining the District's primary water quality and reliability goals.

- Objective D6: Provide recreational facilities and programs that are consistent with protection of the Watershed's natural and cultural resources.

- Objective D8: Provide recreational facilities and programs that are compatible with continued operation of wind farms and agricultural uses.

- Objective D9: Provide a trail network within the Watershed that has connections to regional trails.

- Objective D10: Establish and manage trails for pedestrians, bicyclists and equestrians in a manner that minimizes conflicts among trail users and impacts on natural and cultural resources.

The existing multi-use trails established in the watershed provide regional trail connections including links to multi-use trails in Morgan Territory and Round Valley Regional Preserves. About 12.5 miles of multi-use trails were opened originally as part of a pilot program to allow CCWD to evaluate management and operational issues associated with the trails including prevention of adverse water quality impacts associated with trail use, maintaining the Watershed's beauty and remote qualities, protection of special-status species and cultural resource sites, unauthorized use of areas not included in the pilot program, public safety and emergency response in remote areas, conflicts among users and administrative costs related to trail patrol and maintenance. Additional multi-use trails, consistent with these objectives and the findings of the pilot program, have been added since the pilot program, bringing the total to 15.8 miles.

The existing multi-use trails are located in areas of the Los Vaqueros property that do not drain into the reservoir in order to prevent water quality impacts. Grazing is allowed in parts of the property that do drain to the reservoir, but the grazing operations are strictly managed to ensure there are no water quality issues and grazing is kept outside of a buffer established around the reservoir to further help protect water quality. Expansion of multi-use trails would increase the risk of conflicts among users—bicyclists go too fast and scare the horses and have the potential to run into hikers; hikers do not like what the horses leave behind; bicyclists do not like the way the trails are chewed up by the horses and therefore seek new off trail paths resulting in potential harm to natural and cultural resources. Many of the hiking only trails in the watershed are too steep for bicycles, again providing incentive to seek off trail passage. Because of the greater risk of off trail activities, additional patrols would be needed increasing operating costs. For these reasons, CCWD generally considers expansion of multi-use trails in the watershed to be contrary to the objectives set forth above.

Several commenters (O_EBATC2, I_Quigley1 and I_Quigley2) raise the specific prospect of a multi-use trail connection from Brushy Peak through the Los Vaqueros Watershed, and on to Morgan Territory and/or Round Valley. The Los Vaqueros Watershed and Brushy Peak are separated by a small piece of land owned by a third party. CCWD has a gate, and a hiking-only

trail, the Black Hills Trail, in this vicinity. Hiking-only access to the Black Hills Trail from Brushy Peak would be available through this gate once a connection through the intervening lands is established. As stated above, multi-use trails in the watershed are limited to the existing 15.8 miles that have been developed consistent with CCWD objectives of protecting water quality, minimizing impacts on natural and cultural resources and minimizing conflicts among trail users.

Two comments (L_EBRPD2-16 and O_EBATC2-01) raise concerns that the proposed trails are inconsistent with CCWD's 1997 RMP based on an incorrect interpretation of one of the plan's stated goals. The commenters believe that the intent of Goal D is to provide recreational facilities, programs and public access that are distributed equally among users. However, this goal specifically states "Provide recreation facilities and programs and public access *at reasonable costs* that are distributed *equitably* among users" [emphasis added]. The plain meaning of the goal is clear; distribute the cost of providing recreational opportunities *equitably* (i.e., just and fair) among the users, not to provide *equal* amounts of different types of recreational opportunities. The development of the existing multi-use trail network was consistent with the RMP, and as discussed above, since there are no impacts to multi-use trails under any project alternatives, mitigation requiring new multi-use trails is not required. The watershed after implementation of the project would continue to offer recreational opportunities to the public at reasonable cost.

One commenter requested consideration of additional activities and facilities in the watershed, like hunting and a shooting range. Hunting and shooting activities are not part of the project description or any CCWD plans for the Los Vaqueros Reservoir Watershed. Implementation of such facilities and activities would be generally incompatible with the existing recreational activities within the watershed and could also result in increased liability related to public safety.

3.11.6 Applicability of Reclamation's Recreation Manual and EBRPD Master Plan

Comment Summary

This section of this master response responds to all or part of the following comments:

L_EBRPD2-05	L_EBRPD2-14	L_EBRPD2-17	L_EBRPD2-19
L_EBRPD2-20	O_EBBACT2-03	O_SMD-17	I_Quigley1-01
I_Quigley2-01			

Summary of Issues Raised by Commenters

- Reclamation's *Recreation Project Management Manual* may be applicable to the project and should be discussed.
- Draft EIS/EIR does not mention EBRPD Master Plan and recently updated 2007 Master Plan map, or analyze consistency with the master plan.

- Potential recreation-related impacts (access to the preserve, safety due to road closures/congestion) to the Byron Vernal Pools Regional Preserve during project construction should be addressed.
- Evaluate potential recreation-related impacts to planned Morgan Territory (Diablo Trail) to Brushy Peak Regional Trail which is a segment of the Juan Batista de Anza National Historic Trail.
- The project's impacts to the Byron Pools Regional Preserve would interfere with planned restoration of wetlands at that location.

Response

The Reclamation Recreation Project Management Manual Directives and Standards is an implementation program that supports the Reclamation Manual Policy (LND P04) for the Reclamation Recreation Program Management (Reclamation, 2008). This policy "defines the Bureau of Reclamation's overall roles and responsibilities in providing public outdoor recreation facilities and opportunities." Specifically, the policy states that it "applies to the recreation management of lands and waterbodies that *remain under the jurisdiction of Reclamation* [emphasis added], including those lands and waterbodies managed by a partner (i.e., non-Federal entity or another Federal agency)." The Los Vaqueros Watershed is solely owned and operated by, and under the jurisdiction of, CCWD; therefore, according to the Reclamation Policy, the Reclamation Manual Directives and Standards would not apply to the project. Reclamation has no role in the development, maintenance or management of CCWD's watershed facilities.

Regarding the East Bay Regional Parks Master Plan, EBRPD notes that Section 15125(d) of the CEQA Guidelines states that an EIR "shall discuss any inconsistencies between the proposed project and applicable general plans and regional plans." The Draft EIS/EIR discusses applicable general plans and regional plans in accordance with the CEQA checklist which specifically states "would the project conflict with any applicable land use plan, policy, or regulation of *an agency with jurisdiction over the project* [emphasis added]…adopted for the purpose of avoiding or mitigating an environmental effect." Because EBRPD does not have jurisdiction over the proposed project or project area, analysis of project consistency with its master plan is not required. However, the Draft EIS/EIR did analyze EBRPD plans and project activities in the cumulative effects analysis.

The Draft EIS/EIR considered the potential for the project alternatives to affect future potential projects depicted in the 2007 Master Plan Map (see the Planned Recreational Facilities subsection on page 4.15-12 of the Draft EIS/EIR). In addition, the Draft EIS/EIR preparers contacted the EBRPD's Trails Development Program Manger, Jim Townsend, during fall 2008 to determine if implementation of the project could impact any project plans that the EBRPD had during the timeframe for implementation of the project. The proposed Morgan Territory to Brushy Creek Trail shown on the 2007 EBRPD Master Plan Map extends through the Los Vaqueros Watershed. As discussed in the Draft EIS/EIR, the expanded reservoir inundation area under any of the four project alternatives would not impact this potential future trail as it is shown on the Master Plan Map.

For any future potential projects including the multi-use Morgan Territory to Brushy Creek Trail that the EBRPD or Save Mount Diablo would want to see implemented within the Los Vaqueros Watershed, EBRPD would need to coordinate with CCWD and adhere to any requirements that encumber the land. For the proposed Morgan Territory to Brushy Creek Trail this would include compliance with the USFWS Biological Opinion for Alameda Whipsnake, which prohibits traffic or construction activities without prior approval by USFWS in the area where the trail is shown.

Byron Vernal Pools Regional Preserve

Several comments indicate that the future EBRPD Byron Vernal Pools Regional Preserve was not specifically identified or discussed in the Draft EIS/EIR. The only project component proposed to be located near the future Byron Vernal Pools Regional Preserve is the Transfer-Bethany pipeline (Alternatives 1 and 2). No component of Alternative 4 would be located in the vicinity of the future preserve. EBRPD's potential future preserve was not discussed in the Draft EIS/EIR because in EBRPD's 2007 Master Plan Map this "future preserve area" is shown to the west of Vasco Road on the other side of the road and approximately 1,000 feet away from the proposed Transfer-Bethany pipeline, which is a component of Alternatives 1 and 2. Inquiries to the EBRPD during the Draft EIS/EIR preparation did not uncover the fact that EBRPD was moving ahead with private property acquisition in this area or refinement/modification of its future preserve location until shortly before publication of the Draft EIS/EIR. However, although the Preserve is not mentioned by name, the land purchased by EBRPD for this preserve was evaluated during EIS/EIR preparation, the Transfer-Bethany pipeline alignment was moved from its initial location to avoid bisecting the future preserve property and relevant figures and tables are correctly shown in the Draft EIS/EIR.

Once CCWD became aware of plans for protecting and restoring the Byron Vernal Pools Regional Preserve, it continued its efforts to avoid impacts by further limiting the width of the proposed Transfer-Bethany pipeline construction zone in the Armstrong Road area of the proposed preserve while also protecting other vernal pools on the Byron Airport property to the east.

Construction activities within the vicinity of the future Byron Vernal Pools Regional Preserve would include installation of a portion of the Transfer-Bethany Pipeline. Approximately 3,000 feet of pipe would be installed in Armstrong Road in the area along the Byron Vernal Pools Regional Preserve property. A portion of the preserve in this area is planned for wetland restoration, which would occur prior to implementation of the Los Vaqueros Reservoir expansion. As discussed in the Draft EIS/EIR project description (Vol. 1, Chapter 3, pg. 3-68), construction of the pipeline would proceed at a pace of about 120 feet per day. Accordingly, construction is estimated to occur over approximately 25 working days or approximately one month, assuming a six-day work week. Since construction equipment and workers could be accessing the site from Armstrong Road, there is potential that, as discussed under Impact 4.15.1 (Vol. 2, Section 4.15, Recreation), Alternative 1 or 2 could result in a short-term reduction of recreational opportunities in the future preserve area due to construction activities. However, with implementation of **Measure 4.15.1b**, including the following text modifications, this impact would be a Less-than-Significant with Mitigation.

> **Measure 4.15.1b:** If EBRPD's proposed Delta Trail Extension or Byron Vernal Pools Regional Preserve is developed and open to the public before or during construction of the new Delta Intake and Pump Station and Transfer-Bethany Pipeline, respectively, CCWD shall provide EBRPD with an anticipated closure schedule; prepare and implement a public outreach program and promote the program via the web, billing inserts, and other methods to inform current and potential recreational trail users of the temporary closure of the Delta Trail Extension or Byron Vernal Pools Regional Preserve and inform customers of other recreational ~~trail~~ opportunities in the area; and place signage to the north and south of the new Delta Intake and Pump Station site or Byron Vernal Pools Regional Preserve along the trail or Armstrong Road to inform recreational users of the trail/preserve closure, alternative ~~trail~~ recreational options, and anticipated timing for the reopening.

In summary, to the extent possible, construction activities and pipeline placement will be limited to the Armstrong Road right of way to avoid, minimize and mitigate impacts to the Byron Vernal Pools Regional Preserve's biological, recreational and other resources. This topic is also discussed in Final EIS/EIR Section 4.8.3 (Vol. 4). The text modifications to Draft EIS/EIR Measure 4.15.1b are also found with other text changes in Final EIS/EIR Chapter 5 (Vol. 4).

3.12 Master Response 12: Cultural Resources

3.12.1 Introduction

Overview

Three comment letters express concern about potential impacts and mitigation related to cultural resources. The East Bay Regional Park District (EBRPD) and the Native Alliance of the Sierra Nevada Foothills (NASNF) ask about potential effects upon cultural resources at Vasco Caves Regional Preserve and other potential impact areas outside the Los Vaqueros Watershed, as well as the type and level of protection needed to mitigate effects upon archaeological resources. The California Department of Transportation (Caltrans) requests that Caltrans District 4 cultural resources staff be notified if undiscovered archaeological or burial resources are found on State right-of-way (ROW) during project construction.

This master response is organized by the following subtopics:

- 3.12.2 Vasco Caves Regional Preserve and Other Cultural Resources
- 3.12.3 Caltrans Construction-Related Mitigation Measures

Commenters

Commenters that addressed this topic include:

Federal Agencies

- None

State Agencies

- California Department of Transportation – S_Caltrans

Local and Regional Agencies

- East Bay Regional Park District – L_EBRPD

Organizations

- Native Alliance of the Sierra Nevada Foothills – O_NASNF

Individuals

- None

Draft EIS/EIR Section Reference

The Draft EIS/EIR addresses this topic in the following locations: Vol. 1, Executive Summary, pp. ES-86 through ES-90; Vol. 2, Section 4.16, Cultural and Paleontological Resources, pp. 4.16-1 through 4.16-56; Vol. 3, Appendix G – Cultural Resources Technical Report.

3.12.2 Vasco Caves Regional Preserve and Other Cultural Resources

Comment Summary

This section of this master response responds to all or part of the following comments:

L_EBRPD2-06 L_EBRPD2-07 O_NASNF-02 O_NASNF-03

Summary of Issues Raised by Commenters

- The area of potential effect should include the Vasco Caves Regional Preserve.
- Evaluate potential for indirect impacts to the Vasco Caves related to theft and vandalism that could result from increased accessibility during construction periods and from project-related recreational facilities.
- To mitigate impacts to the Vasco Caves, particularly during construction, CCWD should consult with EBRPD to develop a management plan that includes 24/7 security and closure of some roads during project construction to prevent unnecessary access to sensitive areas.
- Past and present vandalism in and near the Vasco Caves Regional Preserve should be repaired and further damage stemming from these past acts should be prevented.
- A native person, or a non-native person with established connections to Central California indigenous nations, should be hired to represent Native American religious interests in protecting the Vasco Caves and their resources.
- Reservoir enlargement (all alternatives) will result in inundation of two documented rock art sites.
- Increasing recreational access to the east side of the reservoir conflicts with CCWD's goals of protecting caves in the Kellogg Creek and Brushy Creek watersheds.

Response

Background

The Vasco Caves Regional Preserve (Preserve) is one of EBRPD's 55 parks situated throughout Alameda and Contra Costa Counties. It is located, generally, about two miles east of Los Vaqueros Reservoir and a substantially lesser distance from Vasco Road. All access is by guided tour only. The Preserve is not open to general public access in order to protect the Preserve's unique resources.[5]

The Vasco Caves cultural site is jointly owned by CCWD and EBRPD and is located within the larger Vasco Caves Regional Preserve which includes lands owned exclusively by EBRPD (EBRPD, 2000). The Vasco Caves cultural site is managed by EBRPD under the Vasco Caves Regional Preserve Long-term Operating Agreement (EBRPD, 2000). The most recent Agreement (dated June 6, 2000) indicates that the Preserve is currently operated under a Management Plan that

[5] Specific information about the caves is contained in the Draft EIS/EIR Appendix G – Cultural Resources Technical Report, a document that is available for review only by qualified cultural resource professionals.

was circulated for public review prior to its adoption. The Agreement states that EBRPD is responsible for all site security, "which may include the provision of an onsite caretaker." Information from an October 22, 2007 meeting of the EBRPD Advisory Committee indicates that there is an on-site caretaker residing on Preserve land, providing patrol services at the Preserve, and that helicopter patrols oversee activity on the site (EBRPD, 2007). The Vasco Caves Regional Preserve is located outside and adjacent to the Los Vaqueros Watershed. The Vasco Caves cultural site is located within the Preserve more than one-half mile from the watershed boundary.

Relevant Project Components

As originally proposed, the project included the option for the addition of six miles of hiking-only trails connecting 8.5 miles of existing access roads (currently used to access existing wind power facilities) on the east side of the reservoir. The resulting 14.5-mile trail was described as an optional Eastside Trail (Draft EIS/EIR Vol. 1, Section 3, pp. 3-86 through 3-87; Figures 3-28 and 3-29, and Table 3-6, pg. 3-87.) However, in response to concerns raised by the public and the resource agencies regarding impacts on biological resources and cultural resources, CCWD has eliminated the majority of the Eastside Trail as a proposed component of any of the project alternatives (see also Master Response 8, Biological Resources, Section 3.8.3). The retained portion of the trail extends about 5.1 miles from the gate on Los Vaqueros Road near Vasco Road to the reservoir then around the south/southeast side of the reservoir (See Figure 2-2 in Vol. 4, Chapter 2, Project Description Update). The shorter Eastside Trail would, at its closest point, be located nearly 2 miles (about 9,875 feet) away from the boundary of the Vasco Caves Regional Preserve, with multiple substantial elevation changes in the intervening area.[6] The Preserve's cave entrances are located approximately 4,000 feet from the eastern boundary with Los Vaqueros Watershed and are therefore closer to access roads outside the watershed than they are to any Los Vaqueros Watershed facilities or infrastructure. (See Vol. 4, Chapter 2, Project Description Update, for information about and evaluation of reductions in the length of the Eastside Trail.)

Analysis of Impacts

Given the distances and hilly terrain involved, it would be unlikely that casual hikers or project construction workers in the Los Vaqueros Watershed would discover and/or vandalize the caves. The geography, as well as the elimination of most of the proposed Eastside Trail (as originally proposed), minimize the risk that providing recreational facilities on the east side of the reservoir would conflict with CCWD's goal of protecting the Preserve.

Concern was raised by EBRPD that construction workers might access the Vasco Caves Regional Preserve from area roads, including Howden Road. There is no road officially named "Howden Road" in the project area; however, there is a private dirt road off Vasco Road and outside of the Los Vaqueros Watershed that accesses wind generators built and operated by Howden Wind Park, Inc. This and other private, gated roads provide restricted access to service wind generators

6 Even in its original conception, at its closest point to the Vasco Caves Regional Preserve, the Eastside Trail would have been more than one-half mile (about 2,725 feet) from the Watershed/Preserve property line. Access to the caves would have required walking an additional distance from the Preserve's property line to the cave entrance. As mentioned in the main text, there is substantial topographic rise and fall between the potential trail and the preserve, making increased access to the Vasco Caves cultural site improbable even under the original Eastside Trail option.

operated in the project vicinity. Locks and keys for the numerous gates within the watershed were recently changed by CCWD in order to further limit access (Mueller, 2009).

With reduction of the Eastside Trail (as described in Final EIS/EIR, Chapter 2, Section 2.3.1), which applies to Alternatives 1 through 4), there is no project construction planned for areas near the Preserve or in the vicinity of the wind generators; therefore, these gated watershed roads would not be available for travel to and from worksites by project contractors and other workers[7]. Workers would be limited to project construction areas near Walnut Boulevard or, as needed for marina area construction, from Los Vaqueros Road (Mueller, 2009).

In summary, access to the Preserve is closed to private vehicles and is only available to the public by naturalist-led tours. While the Preserve does sit close to some watershed roadways, locked gates, steep terrain and/or visual obstruction greatly inhibit access to the caves. Even where roads do pass near the caves, as is the case with Vasco Road, there is no basis to conclude that construction workers traveling to and from work sites would result in a greater risk of vandalism and theft than currently exists. Therefore, any impact to the Preserve in terms of increased accessibility from the Los Vaqueros watershed or area roads would be Less-than-Significant.

Mitigation Measures

A comment states that past and present vandalism in and near the Preserve should be repaired. CEQA, however, requires mitigation only for the impacts of a proposed project, not for remediation of existing conditions.

Preserve Management

A commenter expresses concern that decision-making relating to the care, management, and protection of the Preserve be more inclusive (i.e., be expanded beyond the participation of senior and middle management), and that a native person or someone with established connections with Central California indigenous nations be hired to represent Native American religious interests in protecting the Vasco Caves. The request that CCWD and EBRPD develop a more inclusive process is not relevant to the Los Vaqueros Reservoir Expansion Project or its EIS/EIR process; as previously explained, the NEPA/CEQA process only would generate programs or policies with regard to management of the Preserve to the extent the project would have impacts on its resources. Rather, the desire to broaden the number of voices in management of the Preserve is relevant to the adopted, long-term Vasco Caves Regional Preserve Management Plan and that document's public review process.

Inundation of Rock Art

A comment states that inundation of the expanded reservoir would damage two documented rock art sites; however, the cultural studies prepared for the project do not indicate that any known rock art sites would be subject to inundation under any of the project alternatives. However, the

[7] Removal of two existing wind generators in the southern part of the watershed (associated with a 275 TAF reservoir inundation area) would be completed by wind generation facility operators who already have site access, if an applicable alternative is constructed (Mueller, 2009).

commenter may be referring to two known petroglyph boulders, one located outside the inundation area, and one located in the inundation area of the 275 TAF reservoir. The Draft EIS/EIR includes study of 44 documented cultural resources, including rock art sites (Vol. 2, Section 4.16, pg. 4.16-11), and one sensitive location partially within the Area of Potential Effect, as depicted in Figure 4.16-1 (Vol. 2, Section 4.16, pg. 4.16-11). This area includes the entirety of the inundation area under the 275 TAF alternatives, which would generate the greatest area of flooding.

Rock art sites include the painting, pecking, or engraving on rock faces, which can occur in isolation or in association with bedrock milling stations, midden, rockshelters, and/or subsurface deposits. The rock faces may be found on isolated or grouped boulders or rock shelter interiors (Draft EIS/EIR, Vol. 2, Section 4.16, pg. 4.16-18). Two petroglyph boulders are the sole examples of a rock art site within the study area (Draft EIS/EIR, Appendix G, pg. 46). This site is in the area of the proposed Transfer-Bethany Pipeline (Vol. 2, Section 4.16, pg. 4.16-29), which is a component of Alternatives 1 and 2, and this area would not be subject to inundation. Within the potential reservoir inundation area there is another reported petroglyph boulder (CA-CCO-0, noted as a milling station) that contains linear grooves on the face of the stone. Impact assessment and mitigation for this site and other cultural resources that may potentially be affected by the project is included in the Draft EIS/EIR (Vol. 2, Section 4.16.2, pp. 4.16-34 through 4.16-49). It should be noted that Mitigation Measures 4.16.1a through 4.16.1h address both identified and previously undiscovered cultural resources. No additional mitigation is needed.

Lastly, there was a comment indicating that by increasing recreational access to the east side of the reservoir, the project would conflict with CCWD's goals of protecting caves in the Kellogg Creek and Brushy Creek watersheds. As discussed above, the project description has been modified to exclude most of the optional Eastside Trail and given the distances and terrain in the vicinity, the risk that providing recreational facilities on the east side of the reservoir would conflict with CCWD's goal of protecting caves and other natural resources in the Los Vaqueros watershed is minimal.

3.12.3 Caltrans Construction-Related Mitigation Measures

Comment Summary

This section of this master response responds to all or part of the following comments:

S_Caltrans-02

Summary of Issues Raised by Commenters

Caltrans is in agreement with the findings and mitigation measures of the Cultural Resource section of the Draft EIS/EIR. In the event ground-disturbing activities take place within the state right-of-way (ROW) and there is an inadvertent archaeological or burial discovery, Caltrans has requested that its Office of Cultural Resources Studies be contacted in order to have a Caltrans staff archaeologist evaluate the resources and approve a data recovery plan, as needed (S_Caltrans-02).

Response

The Draft EIS/EIR assesses the potential for excavation and other construction activities to occur along existing roadways, as shown on Table 4.9-1, Roadways Used and/or Affected During Project Construction (Draft EIS/EIR, Vol. 2, Section 4.9, pg. 4.9-2). The Draft EIS/EIR does not identify a need for improvements to state highways or improvements that would encroach into a Caltrans ROW as a result of project construction or operations, and no such improvements are anticipated. It is noted that the proposed Delta-Transfer Pipeline (Alternatives 1, 2 and 3) is proposed to occur adjacent to (but not within) portions of State Route 4 (SR 4) between Old River and west to Bixler Road. There is also possible new powerline construction proposed along SR 4 from just east of Bixler Road to Bixler Road under Power Supply Option 1 – Western Only (Alternatives 1, 2 and 3) (Vol. 2, Section 4.9, pg. 4.9-18). The Delta-Transfer Pipeline, if constructed, would parallel the existing Old River Pipeline. Because this ROW area was disturbed during construction of the existing pipeline, there is a low potential for undiscovered buried cultural resources along this pipeline alignment (Draft EIS/EIR, Vol. 2, Section 4.16, pg. 4.16-40).

Although there is a low potential for archaeological or burial discovery within the ROW for SR 4, Mitigation Measures 4.13-1e and 4.13-1f (Draft EIS/EIR, Vol. 2, Section 4.16, pg. 4.16-48) plus Mitigation Measure 4.16-3 (Draft EIS/EIR, Vol. 2, Section 4.16, pg. 4.16-54) provide detailed procedures that CCWD would use to address any inadvertent archaeological or burial discovery during project construction. Such measures provide that a qualified archeologist assess any findings of previously undiscovered cultural resources or burial sites, and in certain circumstances develop appropriate treatment measures in consultation with CCWD. In addition, Mitigation Measure 4.16-1 in the Draft EIS/EIR (Vol. 2, Section 4.16, pp. 4.16-47 through 4.16-49) has been expanded to include Measure 4.16-1i to ensure that a staff archeologist with the Caltrans Office of Cultural Resources Studies also is contacted and coordinated with in the event that there is an inadvertent archaeological or burial discovery within state ROW.

The Draft EIS/EIR text (Vol. 2, Section 4.16, pp. 4.16-47 through 4.16-49) is revised as follows:

> **Measure 4.16.1i:** Los Vaqueros Reservoir Expansion; Dam Modification; and Other Sites Where Cultural Resources Cannot Be Avoided. In the event there is an inadvertent archaeological or burial discovery within State ROW, the Caltrans Office of Cultural Resources Studies, District 4, Oakland, shall be immediately contacted at (510)286-5618. A staff archaeologist will evaluate the finds within one business day of being contacted by CCWD representatives. A data recovery plan and all subsequent reports for investigations within State ROW will need to be approved by the Office of Cultural Resources Studies, District 4.

These text changes and all other document revisions are included in Final EIS/EIR, Chapter 5, Revisions to the Draft EIS/EIR.

Note the Delta-Transfer pipeline and the Power Supply Option 1 - Western Only are not components of Alternative 4.

3.13 Master Response 13: Growth-Inducing Effects

3.13.1 Introduction

Overview

This master response addresses the issues raised by commenters about the growth-inducement analysis in the Draft EIS/EIR. Specifically, two commenters assert that the proposed project would result in growth-inducing effects that are not acknowledged or mitigated in the Draft EIS/EIR.

Commenters

Commenters that addressed this topic include:

Federal Agencies

- None

State Agencies

- None

Local and Regional Agencies

- None

Organizations

- East Bay California Native Plant Society – O_EBCNPS
- Save Mount Diablo – O_SMD

Individuals

- None

Draft EIS/EIR Section Reference

The Draft EIS/EIR addresses this topic area in the following locations: Vol. 1, Executive Summary, Section ES 4.5, pg. ES-30 and Table ES-7, pg. ES-92; Vol. 1, Chapter 3.0; Vol. 1, Section 4.2; and Vol. 2, Section 4.20.

3.13.2 Growth-Inducing Effects

Comment Summary

This section of this master response responds to all or part of the following comments:

O_EBCNPS-06 O_EBCNPS-07 O_SMD-15 O_SMD-16

Summary of Issues Raised by Commenters

- In assessing whether the project's benefit of increased water supply reliability would induce growth, the EIS/EIR must compare the project's effects to water supply levels that water agencies would be likely to actually receive rather than comparing to water supply levels that the agencies previously had planned to receive.
- The EIS/EIR should include an official document describing the policies and standards for uses of water in the reservoir, to include requirements restricting the use of some of the water supply for emergency storage.
- The Draft EIS/EIR does not acknowledge or mitigate direct project-related growth-inducing effects even though other jurisdictions are relying on increased water supply from the project to support growth.

Response

The Draft EIS/EIR considers the potential for each of the alternatives to induce growth in Section 4.20, Growth-Inducing Effects (Vol. 2). As discussed in Section 4.20, none of the project alternatives involve the construction of new housing; therefore, none of the alternatives would result in direct growth inducement. Further, none of the alternatives would result in a substantial number of new permanent employment opportunities (less than 10). Therefore, none of the alternatives would result in indirect effects on population growth related to the establishment of new permanent jobs (Draft EIS/EIR, Vol. 2, Section 4.20, pg. 4.20-2).

The Draft EIS/EIR acknowledges that the project could have the potential to result in indirect growth-inducing effects related to removing an obstacle to population growth (Draft EIS/EIR, Vol. 2, Section 4.20, pg. 4.20-2). One of the project's Primary Objectives is to:

> Increase water supply reliability for water providers within the San Francisco Bay Area, to help meet municipal and industrial water demands during drought periods and emergencies or to address shortages due to regulatory and environmental restrictions.

Although only Alternative 1 is designed to include Delta Supply Restoration, each alternative includes project operations that are designed, through Dry-Year Storage and Emergency Storage, to provide some level of improvement in water supply reliability to the three South Bay water agencies: Alameda County Water District (ACWD), Alameda County Flood Control and Water Conservation District, Zone 7 (Zone 7), and Santa Clara Valley Water District (SCVWD); as well as to the CCWD (Draft EIS/EIR, Vol. 2, Section 4.20, pp. 4.20-4 through 4.20-11.) As stated in the Draft EIS/EIR, increasing water supply reliability for Bay Area water providers does have the potential to remove an obstacle to growth (Draft EIS/EIR, Vol. 2, Section 4.20, pg. 4.20-2).

Each of these agencies (ACWD, Zone 7, SCVWD, and CCWD) has prepared a long-term future water supply plan. These long-term water supply plans have been designed to provide adequate water supply to meet the needs of both existing customers and the growth that has been planned in each service area by the respective city and county land use agencies (Draft EIS/EIR, Vol. 2, Section 4.20, pg. 4.20-12).

Comment O_SMD-15 notes that the Draft EIS/EIR "asserts that the project would not have any growth-inducing impacts" and that the Draft EIS/EIR draws this conclusion because the project would "provide the agencies with the amount of water for which they had already planned." These statements misunderstand the Draft EIS/EIR. First, as noted above, the Draft EIS/EIR acknowledges that the project alternatives have the potential to remove an obstacle to growth by increasing water supply reliability. The Draft EIS/EIR discusses this potential effect for each of the four project alternatives. Second, the comparison of Alternative 1 (which would have the greatest water supply reliability effect of the four alternatives) with the approved plans of the South Bay Agencies, CCWD and their customers is only one of the comparisons included in the Draft EIS/EIR. Evaluating whether the growth that could occur with the project is consistent with planned growth is not a way to deny that growth could take place, but rather to acknowledge that the impacts of growth have already been identified and mitigated, to the extent feasible, through general plan or other land use planning processes. The comment does not acknowledge that the Draft EIS/EIR includes two additional comparisons to the water supply reliability made available by Alternative 1: future water supply levels without the project and historic, actual water supplies made available to the various water agencies (Draft EIS/EIR, Vol. 2, Section 4.20, pp. 4.20-4 through 4.20-9). The latter is the comparison the commenter seeks; it is provided in the Draft EIS/EIR.

The modeling analysis prepared for the Draft EIS/EIR indicated that Alternative 1, which would provide for the greatest improvement of water supply reliability, could restore, on average, about 30 TAF of Delta supply to the three South Bay water agencies. This represents about 10 percent of the total Delta supply these agencies had been expecting from Delta supply sources (294.3 TAF), as reflected in their current Urban Water Management Plans, and about 5 percent of their total water demands (about 596.7 TAF) (Draft EIS/EIR, Vol. 2, Section 4.20, pg. 4.20-9). Subsequently, the updated modeling performed for the Final EIS/EIR indicates that Alternative 1 could restore, on average, about 6 TAF of Delta supply to these agencies (see updated Section 4.2 in Vol. 4, Chapter 5, Section 5.3 of this document). This represents 2 percent of the total 294.3 TAF of Delta supply these agencies had been expecting and about 1 percent of their total water demands (about 596.7 TAF). Based on the updated modeling analysis, Alternative 1 would not provide more water than the average annual amount that these agencies historically received.

As the Draft EIS/EIR explains, Alternatives 2, 3 and 4 include no Delta Supply Restoration component, so the likelihood that any of these alternatives would induce significant growth is lower than that identified for Alternative 1 (Vol. 2, Section 4.20, pp. 4.20-10 through 4.20-11.)

Comment O_SMD-16 also requests that "an official document describing the policy and standards of the uses of the water in the reservoir" should be developed, presumably to ensure that the water for emergency purposes is not used for growth. If one of the project alternatives is approved, operations of the expanded reservoir will be documented in biological opinions and other permits as well as in partnership agreements with any agencies that decide to participate in the project, and will be consistent with CCWD Board principles and the mitigation commitments in the EIS/EIR.

Comment O_ECNPS-06 states that the expansion project will have a direct impact on growth because the increased capacity has been mentioned at City Council meetings and in EIR documents associated with local development projects in CCWD's service area. The commenter does not provide specific evidence to support this statement. CCWD is not aware of any development project that has stated it is relying on an expanded Los Vaqueros Reservoir for its water supply. CCWD cooperates with the cities within its service area to comply with Senate Bill (SB) 221 and SB610 for new development, and participates in the CEQA review of significant projects. Through these processes, CCWD consistently relies upon its Future Water Supply Study and Urban Water Management Plan, not upon any expansion of Los Vaqueros Reservoir. CCWD has not indicated that expansion of the Los Vaqueros Reservoir is required in order to provide supply for any new developments within its service area nor has it become aware of any misunderstandings or misstatements regarding the purpose of the Los Vaqueros Reservoir Expansion Project. Any statement that a specific development project is relying on expansion of Los Vaqueros Reservoir for its supply would be inaccurate and the CCWD would seek to correct it immediately. CCWD has conducted an extensive outreach program on the expansion project within its service area since 2001 and all presentations and written material have been clear that the purpose of the expansion project is to provide environmental water management benefits and improve water supply reliability including dry year and emergency storage; the purpose is not to provide yield for growth (Vol. 1, Chapter 2, pp. 2-11 through 2-14.)

As described in Vol. 1, Chapter 2, Project Background, CCWD has an adopted long-term plan to provide water supply within its service area. CCWD's Future Water Supply Study (FWSS), adopted in 1996, projected future demand within CCWD through 2040 and identified a preferred program to reliably meet those demands with high quality water at the lowest cost possible, in an environmentally responsible way (CCWD, 1996). A key element of the FWSS was that implementation would be accomplished incrementally so that growth was not encouraged beyond that which was already planned and permitted by local land use agencies. CCWD updates the FWSS regularly to address changing conditions. The last update was in 2002 (CCWD, 2002). The FWSS also forms the basis for CCWD's latest Urban Water Management Plan (UWMP) (CCWD, 2005). None of these documents, the FWSS, the 2002 update to the FWSS (CCWD, 2002), or the UWMP, relies in any way on the expansion of Los Vaqueros Reservoir to meet future demands within the service area. CCWD supplies for growth remain its existing water right supplies at Mallard Slough, Central Valley Project supply and East Contra Costa Irrigation District supply, with any additional supplies to be obtained from permanent water transfers when and if needed, with or without an expansion of Los Vaqueros Reservoir.

Additional information on the FWSS, the accompanying programmatic EIR (certified by the CCWD Board in 1999) (CCWD, 1999) and the related Biological Opinion (USFWS, 2000) can be found in the Draft EIS/EIR (Vol. 1, Chapter 2, Project Background, pp. 2-10 through 2-11 and Vol. 2, Section 4.20, Growth Inducing Effects, pp. 4.20-9 through 4.20-12).

3.14 Master Response 14: Climate Change

3.14.1 Introduction

Overview

This master response addresses the single comment received regarding the proposed project's greenhouse gas emissions and potential effects on climate change. The East Bay California Native Plant Society (EBCNPS) expressed the opinion that the Draft EIS/EIR did not describe the release of carbon from disturbed soils associated with building the reservoir and the reservoir's contribution to climate change. EBCNPS also expressed the opinion that the Draft EIS/EIR did not consider the proposed project's direct impact on current day carbon emissions and climate change.

This master response includes the following subtopic:

- 3.14.2 Air Quality and Greenhouse Gas Emissions

Commenters

Commenters that addressed this topic include:

Federal Agencies

- None

State Agencies

- None

Local and Regional Agencies

- None

Organizations

- East Bay California Native Plant Society – O_EBCNPS

Individuals

- None

Draft EIS/EIR Section Reference

The Draft EIS/EIR addresses this topic area in the following locations: Vol. 1, Executive Summary, Table ES-7, pg. ES-78; and Vol. 2, Section 4.10, pp. 4.10-33 through 4.10-37.

3.14.2 Air Quality and Greenhouse Gas Emissions

Comment Summary

This section of this master response responds to all or part of the following comments:

O_EBCNPS-05

Summary of Issues Raised by Commenters

- The effect of building the reservoir (disturbed soils release carbon and greatly impact carbon balances) and the actual reservoir's contribution to climate change were not described in the Draft EIS/EIR.
- The Draft EIS/EIR did not examine the direct impact of the project on current day emissions and climate change.

Response

Impacts to climate change associated with construction and operational emissions of greenhouse gases (GHGs) are discussed in the Draft EIS/EIR (Vol. 2, Section 4.10, pp. 4.10-32 through 4.10-37). The Draft EIS/EIR addresses direct and indirect sources of GHGs associated with construction and operation of Los Vaqueros Reservoir.

Construction emissions

The Draft EIS/EIR quantifies emissions from construction equipment and trucks hauling materials to and from the construction sites. The Draft EIS/EIR calculates that, for the duration of construction, Alternatives 1 and 2 are expected to produce 22,550 metric tons of carbon dioxide equivalents (CO_2E) from hauling activities and construction equipment operation; Alternative 3 is expected to produce 22,285 metric tons CO_2E; and Alternative 4 is expected to produce 19,600 CO_2E (Draft EIS/EIR, Vol. 2, Section 4.10, pg. 4.10-33).

Operational emissions

The Draft EIS/EIR quantifies the operational (direct and indirect) emissions of GHGs for the four action alternatives (Vol. 2, Section 4.10, pp. 4.10-33 through 4.10-35). More specifically, the analysis addresses indirect emissions due to the increased energy use (associated with increased water diversion and pumping), expected increases in the rate of decomposition of organic matter due to increased reservoir volume, and carbon releases associated with the introduction of more water into the reservoir (Vol. 2, Section 4.10, pp. 4.10-34 through 4.10-35). Operational emissions associated with electricity use have been revised with an additional comparison to existing conditions and are described below.

Based on the analysis of project-related GHG emissions, projections of Bay Area and statewide GHGs, and consideration of energy-reducing project features, the Draft EIS/EIR concludes emissions of GHGs would not be cumulatively considerable. The comparison to current day emissions, presented below, does not change this determination.

Scope of Analysis

The comment (O_EBCNPS-05) states that the Draft EIS/EIR does not describe the climate change effect of building the reservoir, parenthetically noting that "disturbed soils release carbon and greatly impact carbon balances." While there is influx and efflux of gases between soil and the atmosphere, the primary and quantifiable source of anthropogenic GHGs during construction activities would be generated from the combustion of fossil fuels associated with off-road equipment and on-road vehicle operations. In addition, there are no available emission factors, requirements, established protocols, or emission models to quantify carbon release from disturbed soil during construction. While soil disturbance does result in release of carbon, such emissions during construction would be a one-time event to the affected soil (unlike the combustion of fossil fuels in vehicles that can be refueled to continuously release GHGs). A search of references related to soil disturbance and GHG emissions finds that these references primarily discuss farming activity, especially plowing, that recur on an annual basis. An obvious difficulty in establishing protocols for general construction emission calculations is that the soil organic matter (SOM) is highly variable between different soil types, including spatial and temporal variability. Without established protocols and detailed knowledge of the SOM content throughout the portion(s) of the construction area that would be disturbed, which would not be practical and would likely result in more GHG emissions from disturbed soils than the releases during construction, estimates would be speculative. For these reasons, the Draft EIS/EIR appropriately focused its analysis on quantification of GHGs associated with construction equipment and trucks hauling construction materials to and from the project sites.

The commenter also states that the Draft EIS/EIR does not describe the actual reservoir's contribution to climate change. However, emissions associated with decay of organic material due to inundation of plant material and emissions from release of carbon by the water in the expanded reservoir are quantified in the Draft EIS/EIR (Vol. 2, Section 4.10, pp. 4.10-34 through 4.10-35).

Comparison to Current Day Emissions

The commenter states that the Draft EIS/EIR did not examine the direct impact of the project on current day emissions. Table 4.10-10 in the Draft EIS/EIR identifies the net increase in emissions from reservoir operation in comparison to future emissions without the project (Vol. 2, Section 4.10, pp. 4.10-34 through 4.10-35). Since the preparation of the Draft EIS/EIR, the California Natural Resources Agency (Resources Agency) has adopted and approved amendments to the CEQA Guidelines to address the analysis and mitigation of the effects of GHG emissions. These amendments are anticipated to become effective on March 18, 2010 (Resources Agency, 2010). The amendments to the CEQA Guidelines indicate that a comparison of future GHG emissions to existing emissions levels would be appropriate. The comparison of the "future without" and "future with" the project is required for NEPA analysis and thus remains an important part of the assessment.

The Resources Agency's CEQA Guidelines on climate change do not dictate a specific metric threshold in order to determine whether project-related GHGs are cumulatively considerable. Instead, the CEQA Guidelines do the following (Resources Agency, 2009a):

- Provide that, in defining the scope of other projects necessary to carry out a cumulative impact analysis, an agency may use a summary of projects adopted in a local, regional, or statewide plan, or some related planning document, such as a general plan, regional transportation plan, or a greenhouse gas reduction plan. CEQA Guidelines § 15130(b)(1)(B).

- Provide that an analysis of GHG emissions may rely on qualitative or quantitative analysis. Proposed Guidelines § 15064.4(a)(1)&(2). The California Resources Agency has explained that emissions should be quantified where possible. See *Initial Statement of Reasons for Regulatory Action* (Resources Agency, 2009b).

- Suggest methods for assessing the significance of an impact, such as reviewing:

    - The extent to which a project increases or decreases GHG emissions as compared to the existing environmental setting. Guidelines § 15064.4(b). "All project components, including construction and operation, equipment and energy use, and development phases must be considered." *Initial Statement.*
    - Whether a project exceeds a threshold of significance (with the lead agency retaining the discretion to choose a threshold). Guidelines § 15064.4(b).
    - The extent to which a project complies with regulations adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. Note that such plans must previously have undergone a public review process, such as CEQA, and must include specific requirements that reduce or mitigate the project's incremental contribution. Guidelines § 15064.4(b); *see also* Guidelines § 15183.5 (authorizing agencies to use previous plan for tiering or streamlining purposes, and setting out requirements for a greenhouse gas reduction plan). Also, an agency must discuss the extent to which a project is inconsistent with such plans. Proposed Guidelines § 15125(d). Compliance with a plan creates a rebuttable presumption that a project's incremental contribution is not cumulatively considerable. CRA, *Initial Statement.*

- Allow agencies to, when adopting thresholds of significance, consider those previously adopted or recommended by other public agencies, or recommended by experts, provided that substantial evidence informs such thresholds. Guidelines § 15064.7(c).

- Provide options for mitigation measures, including (1) those incorporated into an existing plan or program, ordinance, or regulation; (2) modification of project features, design, or other measures to reduce GHG emissions; (3) off-site measures, including offsets; and (4) measures that sequester GHGs. Guidelines § 15126.4(c).

The approach used to analyze GHG emissions in the Draft EIS/EIR generally conforms with the amendments to the CEQA Guidelines. Notably, the project would not result in a direct impact on current day emissions, but rather a cumulative contribution to a global impact. The Draft EIS/EIR quantifies GHG emissions associated with project construction and operation, identifies applicable summaries of projections, and uses both quantitative data and a qualitative analysis to determine significance.

A comparison of project-related emissions to existing GHG emissions associated with operation of Los Vaqueros Reservoir has been prepared and the text of the Draft EIS/EIR is revised to incorporate this additional information, including **revised Table 4.10-10**, below.

Table 4.10-10 (Draft EIS/EIR, Vol. 2, Section 4.10, pg. 4.10-34) is revised as shown below. This revised table is included in Chapter 5, Revisions to the Draft EIS/EIR, in this document (Vol. 4).

TABLE 4.10-10 (REVISED)
INDIRECT GHG EMISSIONS FROM PROJECT ELECTRICITY USE
(METRIC TONS/YEAR)[1]

Operational Emissions	Total Metric Tons/Year CO_2E	Incremental Increase (vs Existing)[3]	Incremental Increase (vs Future Without Project)[4] ~~Increase in Metric Tons/Year CO_2E~~[3]
Existing	23,300	n/a	n/a
Future Without Project[2]	26,000	2,700	n/a
Alternative 1	33,800	10,500	7,900
Alternative 2	34,900	11,600	9,000
Alternative 3	30,400	7,100	4,400
Alternative 4	26,400	3,100	500

1 Metric tons/year of CO_2E were calculated using the *California Climate Action Registry General Reporting Protocol* emission factors and methodology. See Appendix H for more details.

2 "Future Without Project" includes power required for pumping at Banks and Jones Pumping Plants needed to deliver water to the SBA, SCVWD via San Luis Reservoir, and power required at CCWD's pumping facilities.

3 "Incremental Increase (vs Existing)" shows the increase in the total emissions for each alternative compared existing conditions.

~~3~~4 "Incremental Increase (vs Future Without Project)"~~"Increase in Metric Tons/Year"~~ shows the increase in the total emissions for each alternative compared to the emissions for "Future Without Project" conditions

SOURCE: ESA, 2008; California Climate Action Registry, 2008; CCWD, 2008

In addition, relevant text in the Draft EIS/EIR (Vol. 2, Section 4.10, pg.4.10-36) has been revised as shown below. This text change is included in Chapter 5, Revisions to the Draft EIS/EIR, in this document (Vol. 4).

> With implementation of the project alternatives GHG emissions during construction for a worse-case year would range from approximately 19,600 metric tons CO_2E (Alternative 4) to 22,550 metric tons CO_2E (Alternatives 1 and 2). These construction emissions represent approximately 0.02 to 0.03 percent, of Bay Area GHGs emitted in 2002, respectively.[8] As shown in Table 4.10-10, the increase in indirect GHG emissions from project electricity use for each alternative versus the "Existing" scenario would be no more than 11,600 metric tons/year CO_2E. Also~~As~~ shown in Table 4.10-10~~8~~, the increase in indirect GHG emissions from project electricity use for each alternative versus the "Future Without Project" scenario would be no more than 9,000 metric tons/year CO_2E. In comparison to Bay Area GHG emissions, the project alternatives' ~~future~~ increases in annual operational emissions versus "Existing" and versus "Future Without Project", respectively, represent approximately 0.01 and 0.009 percent (Alternative 1), 0.01 and 0.01 percent (Alternative 2), 0.008 and 0.005 percent (Alternative 3), and 0.004 and 0.0006 percent (Alternative 4) of total Bay Area GHGs emitted in 2002. The 2020 GHG emissions limit for California, as adopted by CARB in December of 2007 is approximately 427 million metric tons of CO_2E. In comparison to this emissions limit, ~~T~~the proposed project's annual ~~contribution~~ operational

8 The Bay Area Air Quality Management District reported regional Bay Area GHGs emissions in 2002 at approximately 85 million CO_2E tons. Bay Area 2002 GHG emissions are used as the baseline for determining whether a project's contributions are significant as these are the most recent emissions inventory for the Bay Area.

emissions versus "Existing" and versus "Future without Project", respectively, represent ~~would be~~ approximately 0.002 and 0.002 percent (Alternative 1), 0.003 and 0.002 percent (Alternative 2), 0.002 and 0.001 percent (Alternative 3), and 0.0007 and 0.0001 percent (Alternative 4) of this total 2020 emissions limit.

3.15 Master Response 15: Procedural Issues

3.15.1 Introduction

Overview

This master response addresses comments regarding procedural requirements of CEQA. Relevant comments addressed the following issues: extension of the CEQA comment period, requirements for a Notice of Preparation, and conditions triggering recirculation of the Draft EIS/EIR.

This master response is organized by the following subtopics:

- 3.15.2 Recirculation
- 3.15.3 Review Period
- 3.15.4 Notice of Preparation

Commenters

Commenters that addressed this topic include:

Federal Agencies

- None

State Agencies

- None

Local and Regional Agencies

- East Bay Regional Park District – L_EBRPD

Organizations

- East Bay California Native Plant Society – O_EBCNPS

Individuals

- None

Draft EIS/EIR Section Reference

The Draft EIS/EIR addresses this topic in the following locations: Vol. 1, Executive Summary, ES-33; Vol. 1, Chapter 3, Project Description, pp. 3-37 through 3-41.

3.15.2 Recirculation

Comment Summary

This section of this master response responds to all or part of the following comments:

L_EBRPD2-03 L_EBRPD2-44

Summary of Issue Raised by Commenter

- The Draft EIS/EIR must be recirculated, as significant new information and clarifications are necessary in order to give the public a meaningful opportunity to review and comment on the Project.

Response

Comments L_EBRPD2-03 and L_EBRPD2-44 assert that the Draft EIS/EIR should be recirculated for another round of public review and comment. However, the commenter does not identify the new significant information triggering the need to recirculate the Draft EIS/EIR.

Given the EIR process contemplates the development of responses to comments received on a draft EIR, the fact that comments are received and responded to in order to clarify, amplify, or correct statements in a draft EIR does not trigger the requirement to recirculate the document. Rather, recirculation is mandated only in certain prescribed circumstances. As provided in the CEQA Guidelines section 15088.5:

> A lead agency is required to recirculate an EIR when significant new information is added to the EIR after public notice is given of the availability of the draft EIR for public review under Section 15087 but before certification. As used in this section, the term "information" can include changes in the project or environmental setting as well as additional data or other information. New information added to an EIR is not "significant" unless the EIR is changed in a way that deprives the public of a meaningful opportunity to comment upon a substantial adverse environmental effect of the project or a feasible way to mitigate or avoid such an effect (including a feasible project alternative) that the project's proponents have declined to implement. "Significant new information" requiring recirculation includes, for example, a disclosure showing that:
>
> 1. A new significant environmental impact would result from the project or from a new mitigation measure proposed to be implemented.
> 2. A substantial increase in the severity of an environmental impact would result unless mitigation measures are adopted that reduce the impact to a level of insignificance.
> 3. A feasible project alternative or mitigation measure considerably different from others previously analyzed would clearly lessen the environmental impacts of the project, but the project's proponents decline to adopt it.
> 4. The draft EIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded.

In completing the Final EIS/EIR, the lead agencies have not identified "significant new information", as defined in the CEQA Guidelines. Consequently, there is no need or obligation to recirculate the Draft EIS/EIR.

3.15.3 Request for Extended Review Period

Comment Summary

This section of this master response responds to the following comment:

O_EBCNPS-01

Summary of Issues Raised by Commenter

- The comment period should have been extended.
- CCWD was not responsive to requests for documents.

Response

Comment O_EBCNPS-01 states the time period for public review of the Draft EIS/EIR should have been extended, and that CCWD misled the public as to the amount of time that would be allowed to comment on the project. The comment also states that CCWD was not responsive in requests for documents during this period.

The Draft EIS/EIR was released on February 20, 2009. A 60-day comment period ending April 21, 2009 followed, in which members of the public reviewed the Draft EIS/EIR and submitted comments. Pursuant to CEQA Guidelines Section 15203(a), CCWD notified the public and reviewing agencies of this 60-day time period in the Draft EIS/EIR itself (Vol. 1, Executive Summary, pg. ES-33) and a Notice of Availability (Draft EIS/EIR, Vol. 3, Appendix A-3).

Where a draft EIR is submitted to the State Clearinghouse, CEQA requires a minimum review period of 45 days. Moreover, the CEQA Guidelines recommend the review period not exceed 60 days [CEQA Guidelines § 15105(a)]. The 60-day review period thus was compliant with CEQA.

The statement that CCWD misled the public as to the duration of the review period appears to be based on a personal, oral communication from a CCWD staff member to the East Bay California Native Plant Society representative that there was a possibility that the comment period would be extended. However, neither CCWD nor any of its staff promised the review period would be extended, nor took any official action to extend the period.

Finally, CEQA requires that the public be provided notice of where the Draft EIR and all documents it references will be available for public review. These locations must be readily accessible to the public during the lead agency's normal working hours. Here, the Draft EIS/EIR was available in numerous locations throughout CCWD's service area and in Sacramento, and the documents referenced in the Draft EIS/EIR were available for public review at CCWD's offices in Concord, as well as various locations in Sacramento, during working hours, and throughout the review period.

3.15.4 Adequacy of Notice of Preparation

Comment Summary

This section of this master response responds to all or part of the following comments:

L_EBRPD2-42

Summary of Issues Raised by Commenter

- The Notice of Preparation was inadequate because the Draft EIS/EIR studied a different pipeline alignment than that identified in the Notice of Preparation.

Response

Comment L_EBRPD2-42 asserts the Notice of Preparation was inadequate because the Draft EIS/EIR studied a different alignment for the Transfer-Bethany pipeline than that identified in the Notice of Preparation. Specifically, the comment states the alignment evaluated in the Draft EIS/EIR, which involves an intermediary transfer facility and follows a trajectory that could affect the Byron Vernal Pools Regional Preserve, is different than the alignment identified in the Notice of Preparation, which involved more direct trajectories between the dam and the South Bay water agency facilities, with no transfer station.

Published January 2006, the Notice of Preparation stated that the lead agencies contemplated a range of siting options for each facility, but that "the most appropriate size and location of each facility under each alternative [was] still being refined," and that the more refined alignments would be presented in the EIS/EIR (Draft EIS/EIR, Vol. 3, Appendix A1, Notice of Preparation [Appendix B-1], pg. 8). With regard to the pipeline alignment in question, the Notice of Preparation contained: (1) a graphic with two arrows that showed potential, conceptual alignments of the pipeline, with the arrows being markedly distinct from graphics used to indicate the comparatively more precise alignments of other facilities (Notice of Preparation, Figure 2, pg. 9); and (2) a short description identifying a number of general options for the pipeline alignment that included the possibilities of pump stations and tunnels (Notice of Preparation, pg. 10). The description of the Transfer-Bethany pipeline in the Notice of Preparation is not inconsistent with the refined alignment in the Draft EIS/EIR.

It also bears noting that the alignment for the Transfer-Bethany pipeline was designed specifically to avoid crossing the future planned Byron Vernal Pools Regional Preserve. In the vicinity of the future preserve, the alignment would be within the Armstrong Road right-of-way, to the extent possible.

CHAPTER 4
Individual Responses to Comments

4.1 Federal Agencies

TABLE 4-1
FEDERAL AGENCIES THAT SUBMITTED COMMENTS ON THE DRAFT EIS/EIR

Comment Format	Comment ID	Name of Commenter	Title	Organization/ Affiliation	Page Number
Email	F_EPA	Kathleen M. Goforth	Manager, Environmental Review Office, Region IX	Environmental Protection Agency	4-1

Environmental Protection Agency, Kathleen M. Goforth, Manager, Environmental Review Office, Region IX, April 21, 2009.

F_EPA-01 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Sections 3.5.2 and 3.5.3).

F_EPA-02 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.6).

F_EPA-03 The commenter recommends examining the effects of a 3-foot sea level rise on the Delta, Delta water quality, the Central Valley Project (CVP) and State Water Project (SWP), and Los Vaqueros Reservoir operations.

RESPONSE

An attempt to analyze the effects of a 3-foot sea level rise on the Delta, Delta water quality, the CVP and SWP, and Los Vaqueros Reservoir operations would be speculative for the following reasons:

- Tidal Amplitude: To be conservative, the Draft EIS/EIR's analysis of a 1-foot sea level rise assumed that the observed increase in tidal amplitude that has been observed over the past 100 years in San Francisco Bay was due uniquely to sea level rise. In fact, it is not clear why sea level rise would increase the tidal amplitude except through hydrodynamic changes that are also greatly affected by factors such as draining tidal marshland around San Francisco Bay and the Delta, dredging of ship channels (which affects hydrodynamics of the tides), levee construction, and changes in

Bay morphology due to sediment movement. All these factors occurred at the same time as sea level rise over the past century and the individual effects have not been separated and are not known. The effect of a 3-foot sea level rise alone on tidal amplitude cannot be assessed using available tools.

- Responses to recommendation to analyze a 3-foot sea level rise: The response to a 3-foot sea level rise would require dramatic changes to the current Bay and Delta landscape. Many highly developed areas would be subject to inundation: levees would be built to protect them or they would be abandoned, and it cannot be predicted whether: more tidal marshland in the Delta would be created or levees would be built higher; islands would be allowed to flood and remain deep open-water bodies or would they be strategically altered to minimize flooding. None of these possible responses is known and each would have dramatic effects on the water quality response. For example, paleosalinity data suggest that while Suisun Bay had significant salinity intrusion during century-long droughts in the past, the Delta did not. This is completely different from the salinity response seen today and suggests a significant buffering from salinity intrusion and dampening of tidal effects in the Delta resulted from the extensive tidal marshland. If tidal marshland is created in the Delta in response to sea level rise, salinity intrusion could decrease, exactly the opposite of the assumption made in the comment.

Without further information on what the response would be to a 3-foot sea level increase, it is not possible to describe the effects of such a scenario on the Delta, CVP and SWP operations or Los Vaqueros Reservoir operations. However, it is clear from the analysis done that an increase in storage would allow a better response to such a scenario as it would allow more stored water to provide high quality water for longer periods of time than would be available in the No Project/No Action Alternative.

F_EPA-04 Please refer to **Section 3.2, Master Response 2, Relationship to Other Initiatives and Projects** (Chapter 3, Section 3.2.3).

4.2 State Agencies

TABLE 4-2A
STATE AGENCIES THAT SUBMITTED COMMENTS ON THE DRAFT EIS/EIR

Comment Format	Comment ID	Name of Commenter	Title	Organization/ Affiliation	Page
Fax	S_Caltrans	Lisa Carboni	District Branch Chief	California Department of Transportation	4-3
Mail	S_CVFPB	James Herota	Staff Environmental Scientist	Central Valley Flood Protection Board	4-3
Email	S_DFG	Charles Armor	Regional Manager, Bay Delta Region	California Department of Fish and Game	4-4
Fax	S_DOC	Dan Otis	Williamson Act Program Manager	California Department of Conservation	4-5
Mail	S_DSOD	David A. Gutierrez	Chief	California DWR, Division of Safety of Dams	4-5
Mail	S_SWRCB	Katherine Mrowka	Chief Inland Streams Unit	California State Water Resources Control Board	4-5

California Department of Transportation, Lisa Carboni, District Branch Chief, April 6, 2009.

S_Caltrans-01 Please refer to **Section 3.4, Master Response 4, Approvals and Permits** (Chapter 3, Section 3.4.2).

S_Caltrans-02 Please refer to **Section 3.12, Master Response 12, Cultural Resources** (Chapter 3, Section 3.12.3).

S_Caltrans-03 Please refer to **Section 3.4, Master Response 4, Approvals and Permits** (Chapter 3, Section 3.4.2).

Central Valley Flood Protection Board, James Herota, Staff Environmental Scientist, April 23, 2009.

S_CVFPB-01 The commenter notes that in the Regulatory Setting in Section 4.5, Local Drainage, Hydrology and Groundwater of the Draft EIS/EIR, the State Reclamation Board is acknowledged for its role in maintaining floodways and levees, and that construction of the proposed intake structure and reservoir expansion would be subject to Board approval (Vol. 1, pg. 4.5-5). The commenter states that the State Reclamation Board has been renamed as the Central Valley Flood Protection Board.

RESPONSE

The information about the agency's name change is acknowledged and the agency will be referred to as the Central Valley Flood Protection Board in future actions associated with the project. In addition, the name of the

agency has been updated in Table 3-8, Permits And Approvals Potentially Needed For Implementation Of Los Vaqueros Reservoir Expansion Alternatives, in Chapter 3, Description of Project Alternatives (Draft EIS/EIR, pp. 3-92 through 3-93). The text in Table 3-8 is revised as follows. Specific text changes to the EIS/EIR are also included in Chapter 5, Section 5.2, in the Final EIS/EIR.

Encroachment Permit	~~State of California Reclamation Board~~ Central Valley Flood Protection Board	Facilities within designated floodway or floodplain Facilities affecting levees under state authority

S_CVFPB-02 Please refer to **Section 3.4, Master Response 4, Approvals and Permits** (Chapter 3, Section 3.4.2).

California Department of Fish and Game, Charles Armour, Regional Manager, Bay Delta Region, March 20, 2009.

S_DFG-01 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Sections 3.8.4 and 3.8.9).

S_DFG-02 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.3).

S_DFG-03 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.7).

S_DFG-04 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.9).

S_DFG-05 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.7).

S_DFG-06 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.2).

S_DFG-07 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.6).

S_DFG-08 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.6).

S_DFG-09 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.2). The comment's specific requests regarding mitigation for impacts to special status plants under Alternatives 1, 2 and 3 are consistent with Mitigation Measure 4.6.3b.

S_DFG-10 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.4).

S_DFG-11 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.4).

S_DFG-12 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Sections 3.8.2 and 3.8.4).

S_DFG-13 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Sections 3.8.2 and 3.8.4).

S_DFG-14 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Sections 3.8.2 and 3.8.4).

S_DFG-15 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Sections 3.8.2 and 3.8.4).

S_DFG-16 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Sections 3.8.4 and 3.8.7).

California Department of Conservation, Dan Otis, Williamson Act Program Manager, April 21, 2009.

S_DOC_01 Please refer to **Section 3.7, Master Response 7, Agriculture** (Chapter 3, Section 3.7.2).

S_DOC_02 Please refer to **Section 3.7, Master Response 7, Agriculture** (Chapter 3, Section 3.7.2).

S_DOC_03 Please refer to **Section 3.7, Master Response 7, Agriculture** (Chapter 3, Section 3.7.3).

S_DOC_04 Please refer to **Section 3.7, Master Response 7, Agriculture** (Chapter 3, Section 3.7.4).

S_DOC_05 Please refer to **Section 3.7, Master Response 7, Agriculture** (Chapter 3, Section 3.7.3).

California DWR, Division of Safety of Dams, David A. Gutierrez, Chief, March 16, 2009.

S_DSOD_01 Please refer to **Section 3.4, Master Response 4, Approvals and Permits** (Chapter 3, Section 3.4.2).

California State Water Resources Control Board, Katherine Mrowka, Chief Inland Streams Unit, April 9, 2009.

S_SWRCB-01 [*Excerpt from S_SWRCB*] The existing Los Vaqueros Reservoir (or Los Vaqueros) is operated in accordance with the requirements of Decision 1629. Water is stored in the reservoir pursuant to Permits 20749 and 20750 on Applications 20245 and 25516A, and water is also directly diverted or released from upstream storage in U.S. Bureau of Reclamation (Reclamation) reservoirs and re-diverted to storage in Los Vaqueros pursuant to change petitions on 17 Reclamation water rights. Collection to storage is limited to 95,850 afa under Permit 20749. An additional 9,640 afa can be stored pursuant to Permit 20750.

It is unclear how additional water will be stored in Los Vaqueros Reservoir without obtaining an additional appropriative right. Although the EIR indicates that water will be stored in the facility pursuant to petitions to change either SWP or CVP water rights, it appears that the project is still undefined because the specific rights that will be modified are not identified. If the project proceeds pursuant to change petitions on existing rights, there will be a very limited storage window and it is unclear whether CCWD has properly modeled this limitation. Whenever the upstream reservoirs, such as Lake Oroville, are filling, water passing through these facilities is considered direct diversion. This water cannot be stored in Los Vaqueros. The water could be directly diverted, provided that the SWP and/or CVP direct diversion rights are not exceeded. Direct diversion is restricted by Decision 1629 and is not allowed from April 1 through April 30 (30 days).

In order to store water in Los Vaqueros, water must be released from upstream storage and subsequently re-stored in Los Vaqueros. As mentioned above, this could not occur during storm events or upstream reservoir fill periods, because water is not being released from upstream storage then. The EIR did not discuss which upstream reservoirs would release stored water for re-storage in Los Vaqueros and the timing for such releases. This constraint, coupled with the Decision 1629 75-day no fill period from March 15 through May 31 (unless Los Vaqueros is below specified minimums) creates a significant restriction on filling Los Vaqueros. The SWP or CVP water rights cannot be enlarged as a result of sending water to storage in Los Vaqueros. Therefore, refill of the upstream reservoirs to offset water conveyed to storage in Los Vaqueros would not be authorized. The impact of shifting water to storage in Los Vaqueros and holding reservoir storage down by a commensurate amount in upstream reservoirs was not evaluated in the EIR. Division staff requests that the EIR identify the quantity that can be put in storage and the timing for storage, after considering these issues.

RESPONSE

As this commenter correctly notes, Los Vaqueros Reservoir is operated in accordance with the requirements of State Water Resources Control Board Decision 1629 (SWRCB D1629) (SWRCB, 1994). Under current conditions, water is diverted under CCWD's water right permits and is also diverted pursuant to CCWD's CVP contract under Reclamation's water right permits. Water is diverted to storage under both CCWD's and Reclamation's permits, and water is also directly diverted under Reclamation's permits. All operations are for the benefit of CCWD's customers. CCWD and Reclamation have petitions pending before the SWRCB to add CCWD's Alternative Intake Project as a point of diversion to the water rights permits that currently allow diversion at the Old River Intake. The EIS/EIR analysis has been done under the assumption that these petitions have been approved.

Water operations modeling analysis for Existing and Future Without Project conditions and Alternatives 1 through 4 was presented in the Draft EIS/EIR, and updated modeling analysis for Existing and Future Without Project conditions and Alternatives 1, 2, and 4 is presented in the Final EIS/EIR (Section 5.3, Vol. 4). Alternative 3 has not been included in the updated modeling analysis because of significant unavoidable fishery impacts identified in the Draft EIS/EIR that remain under the updated modeling assumptions. The treatment of Alternative 3 in the Final EIS/EIR is more fully explained in Chapter 2 of the Final EIS/EIR (Vol. 4). The Draft and Final EIS/EIR modeling assumptions, inputs, results, and analysis are described in the original and revised Section 4.2 and Appendix C, and are used here to respond to portions of this comment.

As analyzed in the Final EIS/EIR, the diversion, storage, and delivery of water for CCWD's use would continue to be governed by D1629 under each of the project alternatives, with a proposed modification to shift the timing of the periods when diversions are restricted to align with Old and Middle River flow requirements as described in the updated Section 4.2, set forth in Section 5.3, herein. Under Alternative 1, water would also be both directly diverted and diverted to storage in Los Vaqueros Reservoir for the benefit of another CVP contractor [Santa Clara Valley Water District (SCVWD)], and for the benefit of SWP contractors who receive water through the South Bay Aqueduct. Under Alternative 2, water would also be directly diverted and diverted to storage in Los Vaqueros Reservoir for the benefit of federal wildlife refuges in the San Joaquin Valley. Under both Alternatives 1 and 2, water diverted for CCWD's use would continue to be diverted under CCWD's and Reclamation's permits and would continue to be subject to D1629 limitations on diversion rates and amounts. Water diverted for other users would require changes to existing permits

held by the California Department of Water Resources (DWR) and/or to existing permits held by Reclamation.

Under Alternative 4, diversions under CCWD's and Reclamation's water right permits would continue to be made as they are under current conditions and would continue to be subject to D1629 limitations on diversion rates and amounts. The timing of the periods during which D1629 restricts diversions at CCWD's intakes for the benefit of fish may be shifted, as explained in the revised Section 4.2. Average annual diversions under Alternative 4 would be equal to average annual diversions under the Existing and Future Without Project conditions, and all diversion rates and amounts under Alternative 4 would be within D1629 limits.

The points raised in this comment are addressed in detail in the following sections of this response, and the locations of relevant data in the EIS/EIR are shown in **Table 4-2B** below.

TABLE 4-2B
LOCATION OF PERTINENT INFORMATION IN EIS/EIR

Water Rights affected	Direct Diversions, Diversions to Storage & Deliveries to Others	Timing of Diversions	Changes in Storage	Water Supply Impacts Analysis
Table 4.2-3 below, under "Specific Rights to Be Modified"	Table 4.2-3[1]	Table C4-3[2] Table C4-9[2]	Table 4.2-9[1], Table C4-1[2] Table C4-7[2]	Impact 4.2.1[1]

1. See Chapter 5, Section 5.3 in Volume 4 for updated versions of Draft EIS/EIR Section 4.2 Delta Hydrology and Water Quality and Section 4.3 Delta Fisheries and Aquatic Resources.
2. See Appendix C, Volume 4, provided on CD only.

Diversion of CVP water to storage under D1629

As the commenter states, D1629 allows diversions to storage in Los Vaqueros Reservoir under CCWD's Permits 20749 and 20750, and allows for direct diversions and for rediversion of previously stored CVP water to storage in Los Vaqueros Reservoir under Reclamation's water rights permits. However, D1629 also allows diversion of water that has not been previously stored by Reclamation to storage in Los Vaqueros Reservoir under Reclamation's water rights permits. Term 3 on page 84 of D1629 reads:

- Add to Permits 12721, 11967, 12722, 12723, 11315, 11316, 16597, 11968, 11969, 11971, 12364, 13776, 16600, and 15735 (Applications 5626, 5628, 9363, 9364, 13370, 13371, 14858, 15374, 15375, 16767, 17376, 18115, 19304 and 22316) the following term:

- The maximum rate of ***diversion and rediversion*** [emphasis added] to offstream storage in Los Vaqueros Reservoir shall not exceed 200 feet per second.

Thus, Los Vaqueros Reservoir can be filled under Reclamation's permits during storm events or upstream reservoir filling in the Existing and Future Without Project conditions and in Alternative 4. In Alternatives 1, 2, and 3, diversions to storage for CCWD's use can also be made during storm events or upstream reservoir filling. Diversions to storage for CVP or SWP use would require modifications to Reclamation's and DWR's permits; these modifications are likely to be similar to the modifications made to Reclamation's permits for the original Los Vaqueros Project, which added the Old River intake as a point of both diversion to storage and rediversion to storage. The modeling for the EIS/EIR reflects D1629 conditions on diversions to storage (in the Existing and Future Without Project conditions and all alternatives) and the proposed modifications to DWR's and/or Reclamation's permits (in Alternatives 1, 2, and 3).

Specific Rights to Be Modified

Specific water right permits held by Reclamation and DWR that may be modified under Alternatives 1, 2, and 3 are shown in **Table 4-2C** below. These are the permits that are currently used by Reclamation and DWR for CVP and SWP Delta diversions.

TABLE 4-2C
RECLAMATION AND DWR DELTA WATER RIGHT PERMITS

Application	Permit	Permittee
A005626	P012721	Reclamation
A005628	P011967	Reclamation
A009363	P012722	Reclamation
A009364	P012723	Reclamation
A009366	P012725	Reclamation
A009367	P012726	Reclamation
A013370	P011315	Reclamation
A013371	P011316	Reclamation
A014858A	P016597	Reclamation
A015374	P011968	Reclamation
A015375	P011969	Reclamation
A016767	P011971	Reclamation
A017374	P011973	Reclamation
A017376	P012364	Reclamation
A018115	P013776	Reclamation
A019304	P016600	Reclamation
A022316	P015735	Reclamation
A005630	P016478	DWR
A014443	P016479	DWR
A014445A	P016481	DWR
A017512	P016482	DWR
A017514A	P16483	DWR

No Diversion and No Fill Periods

CCWD's diversion and filling operations are restricted for the benefit of listed fish species under Biological Opinions (BOs) from the U. S. Fish and Wildlife Service (USFWS) (USFWS, 1993) and the National Marine Fisheries Service (NMFS) (NMFS, 1993) and under CCWD's Incidental Take Permit (ITP) from the California Department of Fish and Game (CDFG) (CDFG, 2009). The ITP was issued in November of 2009, and replaces a 1994 Memorandum of Understanding (MOU) with CDFG covering CCWD's operations. The restricted periods required by the BOs and the MOU are also required by the ITP, and the ITP includes an additional 0 to 15 day period in February during which diversions to storage in Los Vaqueros Reservoir may not be made. The BO and MOU restrictions are reflected in D1629. The updated modeling done for the Final EIS/EIR used both the D1629 restrictions and the additional filling restriction from the ITP. The default timing of the restricted periods was shifted to better align with Old and Middle River flow restrictions; the ITP, the BOs, and D1629 all allow for such shifts. The modifications to the default timing of the restricted periods are described in more detail below. If operational restrictions are modified in new or revised BOs and a new or revised ITP issued for the project, CCWD and Reclamation may petition to have the same modifications made in their water right permits.

As the commenter correctly notes, D1629 imposes a 30-day period during which no diversions from the Delta are permitted unless Los Vaqueros Reservoir is below the designated minimum storage level. The default timing for the no diversion period is April 1 to April 30, with a mechanism for shifting the timing at the request of CDFG, USFWS, or NMFS. This restriction was included in the modeling for the Existing and Future Without Project conditions and all alternatives, on diversions for all users. It was assumed that any changes made to Reclamation or DWR permits for Alternatives 1, 2, and 3 would include this restriction. In the modeling that was done for the Draft EIS/EIR, the no diversion period occurred in April, and in the updated modeling that was done for the Final EIS/EIR, the no diversion period was shifted to March (as described in the updated Section 4.2, set forth in Section 5.3, herein).

The CDFG MOU, the USFWS BO, the NMFS BO, and D1629 also impose a period from March 15 through May 31 during which Los Vaqueros Reservoir may not be filled unless it is below the designated minimum storage level, and the ITP imposes an additional period when the reservoir may not be filled in February. This additional period lasts for 0 to 15 days, depending upon the reservoir storage level at the beginning of February. Here again, there is a mechanism for shifting the timing of the restricted period at the request of the fisheries agencies.

In the Draft EIS/EIR, the no fill restriction was included in the modeling for the Existing and Future Without Project conditions and Alternative 4. It was not included in Alternatives 1, 2, and 3, as it was assumed that the fisheries benefits of these alternatives would lead to the removal of this restriction in the CDFG MOU and the BOs, and that this change would be reflected in similar changes to the water rights permits granted and modified by D1629.

In the Final EIS/EIR, the no fill restriction was included in the modeling for the Existing and Future Without Project conditions and for all alternatives, with the timing shifted to February, March, and June (as described in the updated Section 4.2, set forth in Section 5.3, herein). Diversions to storage in Los Vaqueros Reservoir under Alternatives 1 and 2 for non-CCWD CVP users and for SWP users were modeled with both the no fill period and additional restrictions on diversions to storage based on Old and Middle River flow criteria set under the USFWS and NMFS BOs for the joint CVP-SWP Operations Criteria and Plan (OCAP) (USFWS, 2008; NMFS, 2009).

CVP and SWP Storage Rights

None of the alternatives cause an increase of CVP or SWP storage rights. In Alternatives 1, 2, and 3, diversions to storage in Los Vaqueros Reservoir for non-CCWD uses occur only during surplus conditions. Since there are no additional releases from upstream reservoirs to fill Los Vaqueros Reservoir, there is no draining and subsequent refilling of the upstream reservoirs associated with non-CCWD uses.

In all alternatives, diversions of CVP water to storage for CCWD uses can occur during balanced conditions, when upstream reservoirs are releasing. Since more water can be released to fill an enlarged reservoir, there may be years when there is more refilling of the upstream reservoirs in the alternatives than in the Existing and Future Without Project conditions. In addition, water diverted to Los Vaqueros Reservoir during surplus conditions for CCWD uses in all alternatives and for non-CCWD uses in Alternatives 1, 2, and 3 may increase the total CVP or SWP storage in some years over the Future Without Project condition. However, CVP and SWP diversions to storage would be less than the amounts allowed under existing CVP and SWP permits, and the increases in diversion to storage under any of the alternatives are far too small to cause exceedences of CVP or SWP storage rights. The CVP has storage rights on the Trinity, Sacramento, and American Rivers for more than 10 million acre-feet per year (MAFA), and the SWP has storage rights on the Feather River for 3.9 MAFA. The maximum annual diversions to upstream storage and to Los Vaqueros Reservoir in the Existing and Future Without Project conditions as modeled for the Final EIS/EIR are 5.87 MAFA and 2.95 MAFA for the CVP and SWP, respectively. The maximum modeled

diversions to storage under any of the alternatives are 5.90 MAFA for the CVP and 2.97 MAFA for the SWP, well within the permitted amounts.

While diversions to storage for the benefit of the CVP and SWP would not exceed existing water rights, such diversions could cause small increases in diversions to storage over baseline quantities in some years. The environmental impacts of such diversions are fully analyzed in the EIS/EIR, which reflects changes from existing conditions rather than changes compared to permitted limits.

S_SWRCB-02 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Sections 3.5.2 and 3.5.3).

S_SWRCB-03 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.6).

S_SWRCB-04 The comment states that the Executive Summary, Table ES-7, List of Mitigation Measures (Draft EIS/EIR, Vol. 1, pp. ES-37 through ES-92), does not include as mitigation measures the following items which are included in the project description to avoid or reduce potential project impacts: water treatment at the cofferdam; soils disposal due to cofferdam construction; installation of the cofferdam as mitigation during installation of the new pump; noise and vibration impacts associated with soil loading at the new pump location; and reduced pumping at the SWP and CVP pumps commensurate with new diversion at the Los Vaqueros facilities.

RESPONSE

Most of the items identified in comment S_SWRCB-04, as listed above, are elements of the project or regulatory requirements and therefore are not considered mitigation. See discussion for each item below.

Water treatment at the cofferdam. As discussed in the Draft EIS/EIR Chapter 3, Project Description, under Alternatives 1 and 2, a sheet pile cofferdam would be installed in Old River to isolate the work area for a new Delta Intake and Pump Station from the water. After installation of the cofferdam, the water in the cofferdam enclosure would be pumped out and either disposed of on land or treated (as necessary) and discharged back to Old River (Draft EIS/EIR, Vol. 1, pg. 3-59).

As discussed under “Dewatering Discharges to Surface Waters Permit” in the Regulatory Setting in the Draft EIS/EIR, Section 4.5 (Vol. 1), any discharges associated with construction of the new intake and pump station, including installation of the cofferdam, would require compliance with Regional Water Quality Control Board (RWQCB) General Order No. 5-00-175 (Waste Discharge Requirements General Order for Dewatering and Other Low Threat Discharges to Surface Waters) to

protect the water quality of receiving waters (Draft EIS/EIR, Section 4.5, pg. 4.5-4). Therefore, the water in the cofferdam enclosure would be treated (as necessary) and discharged back to Old River in accordance with the requirements of RWQCB Order No. 5-00-175, as required. Compliance with these requirements and obtaining said permit is mandatory; therefore, no mitigation measure is required.

Soils disposal due to cofferdam construction. As discussed in the Draft EIS/EIR, Chapter 3, Project Description, if excavation is required to prepare the cofferdam site, this excavated material would be contained within a designated containment area or areas on the land side of the levee. An earthen dike or siltation fences would enclose the containment area(s). Excavated soils would be stored on site until used in grading or would be immediately removed from the site for reuse or disposal (Draft EIS/EIR, Vol. 1, pg. 3-59). Since reuse or disposal of these soils is included as part of the project description, no mitigation is required.

Installation of the cofferdam as mitigation during installation of the new pump. Installation of the cofferdam during construction of the new Delta Intake and Pump Station is identified as a component of the description of Alternatives 1 and 2 (Draft EIS/EIR, Vol. 1, Chapter 3, pg. 3-59). Since the cofferdam is already included as part of the project description, it is not proposed as a mitigation measure in any of the impact analyses and, therefore, it is not included as a mitigation measure in the Draft EIS/EIR, Executive Summary, Table ES-7, List of Mitigation Measures.

Noise and vibration impacts associated with soil loading at the new pump location. Noise and vibration impacts and mitigation measures associated with construction of the new Delta Intake and Pump Station under Alternatives 1 and 2 are described in the Draft EIS/EIR under Impact 4.3.2 (Section 4.3, pp. 4.3-55 through 4.3-58) and Mitigation Measure 4.3.2 (Section 4.3, pp. 4.3-58 through 4.3-59); Impact 4.11.1 (Section 4.11, pp. 4.11-20 through 4.11-25) and Mitigation Measures 4.11.1a through e (Section 4.11, pp. 4.11-25 through 4.11-26); and Impact 4.11.1 (Section 4.11, pp. 4.11-28 through 4.11-29). Mitigation Measures 4.3.2 and 4.11.1a through e are included in Table ES-7 (pp. ES-39 through ES-40 and pp. ES-78 through ES-79, respectively).

As discussed in Section 4.3 (Draft EIS/EIR, Vol. 1, pg. 4.3-49), preloading of the soils beneath the setback levee at the new Delta Intake and Pump Station may be required to reduce long-term settlement of the levee. Preloading of soils entails deposition of soil on the site of the proposed levee prior to construction of the new levee. Settlement of the preload would be passive (i.e., would occur due to the weight of the preload and soil conditions). No manual compaction of preload would occur. Soils would be delivered and deposited using typical construction equipment,

similar to those listed in Table 4.11-5 in the Draft EIS/EIR (Section 4.11, pg. 4.11-20). Table 4.11-5 describes the noise levels associated with these types of equipment. Mitigation for noise impacts due to construction activities is addressed in Mitigation Measures 4.11.1a through 4.11.1e (Section 4.11, pp. 4.11-25 through 4.11-26). These mitigation measures are included in Table ES-7, List of Mitigation Measures (Draft EIS/EIR, Vol. 1, pp. ES-37 through 79). The analysis in the Draft EIS/EIR determined that vibration impacts to sensitive receptors would be less than significant (Section 4.11, Impact 4.11.3, pp. 4.11-28 through 4.11-29); therefore, no mitigation measures are required.

Preloading of soils beneath the setback levee at the new Delta Intake and Pump Station would not require in-water construction activity. Therefore preloading of soils would not generate underwater sound-pressure levels that could result in behavioral avoidance or migration delays for special-status fish species.

Reduced pumping at the SWP and CVP pumps commensurate with new diversion at the Los Vaqueros facilities. This is part of the Project Description and is not considered mitigation. (See **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.3) for more information).

S_SWRCB-05 The comment states that while the EIR discusses using water from the SWP and CVP interchangeably, the EIR does not, however, evaluate any changes in place of use of the various water rights needed to implement the proposed project. The commenter suggests that the EIR should state whether new lands would be served as a result of increasing the place of use of each project and evaluate any impacts.

RESPONSE

Place of Use

All lands served by the project are within the existing SWP and CVP places of use. In Alternatives 1 and 2, SWP water is used to supply the SWP contractors on the South Bay Aqueduct (Alameda County Water District (ACWD), Alameda County Flood Control and Water Conservation District, Zone 7 (Zone 7), and SCVWD). CVP water is used to supply SCVWD's CVP contract demand and for federal refuges in the San Joaquin Valley. The place of use for SWP water falls within the existing place of use for DWR's water right permits, and the place of use for CVP water falls within the existing place of use for Reclamation's water right permits.

S_SWRCB-06 [*Excerpt from S_SWRCB*] The EIR states that Reclamation will be able to retain cold water stored in upstream reservoirs because CCWD could

refrain from pumping from the Delta and instead draw from the stored Los Vaqueros Reservoir.

To implement this project, Reclamation must provide released stored water for re-storage in Los Vaqueros Reservoir. At times, the quantity of water provided to CCWD by the CVP will be greater than under current conditions, because CCWD will continue to take water needed for direct use while it also stores water in Los Vaqueros Reservoir. The EIR states that in below normal water years, CCWD may forego some diversion and instead use its stored water. Nonetheless, since storage in Reclamation's reservoirs would be initially lowered to fill Los Vaqueros Reservoirs, it is unclear how there is a net gain in the cold-water pool. Reclamation could not refill the storage that it sends to CCWD during the same water year, because it would be considered an expansion in Reclamation's storage right.

RESPONSE

Cold Water Retention in Upstream Reservoirs

This comment refers to the description of Alternative 3**.** Alternative 3 has not been included in the updated modeling analysis because of significant unavoidable fishery impacts identified in the Draft EIS/EIR that remain under the updated modeling assumptions. The treatment of Alternative 3 in the Final EIS/EIR is more fully explained in Chapter 2 of Volume 4 of the Final EIS/EIR.

None of the alternatives will cause a modification in Reclamation's storage rights. See the response to S_SWRCB-01.

S_SWRCB-07 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.2).

S_SWRCB-08 [*Excerpt from S_SWRCB*] This section does not state the water rights and/or contracts held by the South Bay agencies. Moreover, this section does not explain how CCWD will obtain sufficient water to fill Los Vaqueros Reservoir when its contract with Reclamation is for delivery of up to 195,000 afa. Division staff requests an explanation of the water contracts of all participating parties, with information on how much water is available under the contracts on a monthly basis (by water year type) to fill the reservoir, while still maintaining customer service.

RESPONSE

Water Rights and Water Service Contracts

This comment applies to Alternative 1, and it refers to the sub-section entitled "Water Rights and Water Service Contracts" in Section 4.2.1, Affected Environment.

The South Bay water agencies (ACWD, SCVWD and Zone 7) have water service contracts for SWP water, and SCVWD also has a water service contract for CVP water. Water delivered pursuant to the South Bay water agencies' CVP and SWP contracts would be diverted under the Reclamation and DWR water right permits listed in the response to S_SWRCB-01.

In all alternatives, water diverted pursuant to CCWD's CVP contract would be diverted under the terms of D1629 and would be used only to meet CCWD's needs. In Alternative 1, water for the South Bay water agencies would be diverted under Reclamation's and DWR's water right permits, amended as necessary. Diversions to storage in Los Vaqueros Reservoir for the South Bay water agencies would occur only under surplus conditions in the Delta. As explained in the response to Comment 1, the Reclamation's and DWR's water right permits allow diversions to storage far in excess of actual diversions being made in the present or anticipated diversions in the future and the relatively small additional amounts diverted to storage in Los Vaqueros Reservoir have no potential to cause an increase of Reclamation's and DWR's storage rights.

S_SWRCB-09 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.2).

4.3 Local and Regional Agencies

TABLE 4-3
LOCAL AND REGIONAL AGENCIES THAT SUBMITTED COMMENTS ON THE DRAFT EIS/EIR

Comment Format	Comment ID	Name of Commenter	Title	Organization/ Affiliation	Page
Email	L_ACWD	Paul Piraino	General Manager	Alameda County Water District	4-18
Email	L_CCCDCD	John Cunningham	Senior Transportation Planner	Contra Costa County, Department of Conservation and Development	4-18
Email	L_CCCFC	Tim Jensen	Senior Civil Engineer	Contra Costa County, Flood Control and Water Conservation District	4-18
Email	L_CCCPW	Julia R. Bueren	Public Works Director	Contra Costa County, Public Works Department	4-19
Public Hearing	L_CCCSD1	Ann E. Farrell	Director of Engineering	Central Contra Costa Sanitary District	4-20
Courier	L_CCCSD2	Ann E. Farrell	Director of Engineering	Central Contra Costa Sanitary District	4-21
Fax	L_DDSD	Gary W. Darling	General Manager	Delta Diablo Sanitation District	4-21
Mail	L_DSRSD	David A. Requa	Assistant General Manager/District Engineer	Dublin San Ramon Services District	4-21
Email	L_EBMUD	Alexander R. Coate	Director of Water and Natural Resources	East Bay Municipal Utility District	4-22
Email	L_EBRPD1	Brad Olson	Environmental Programs Manager	East Bay Regional Park District	4-22
Mail	L_EBRPD2	Kristin B. Burford and Matthew D. Zinn	Shute, Mihaly & Weinberger LLP	East Bay Regional Park District	4-23
Email	L_ECCCHC	John Kopchik	Executive Director	East Contra Costa County Habitat Conservancy	4-28
Email	L_RCRA	Craig K. Murray	Development Project Manager II	Richmond Community Redevelopment Agency	4-29
Mail	L_RD800	Jeffrey D. Conway	District Manager	Reclamation District 800	4-29
Email	L_SCVWD	Sandy Oblonsky	Assistant Officer, Office of Water Utility Enterprise Planning	Santa Clara Valley Water District	4-29
Email	L_SRCSD	Stan R. Dean	District Manager	Sacramento Regional County Sanitation District	4-30
Email	L_SWC	Terry L. Erlewine	General Manager	State Water Contractors	4-30
Email	L_Zone 7	G.F. Duerig	General Manager	Zone 7 Water Agency	4-31

Alameda County Water District, Paul Piraino, General Manager, April 21, 2009.

L_ACWD-01 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.2).

L_ACWD-02 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.4).

L_ACWD-03 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.4).

L_ACWD-04 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.5).

L_ACWD-05 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.6).

Contra Costa County, Department of Conservation and Development, John Cunningham, Senior Transportation Planner, April 21, 2009.

L_CCCDCD-01 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.4).

L_CCCDCD-02 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.4).

L_CCCDCD-03 Please refer to **Section 3.9, Master Response 9, Transportation and Circulation** (Chapter 3, Section 3.9.2).

L_CCCDCD-04 Please refer to **Section 3.9, Master Response 9, Transportation and Circulation** (Chapter 3, Section 3.9.2).

Contra Costa County, Flood Control and Water Conservation District, Tim Jensen, Senior Civil Engineer, April 21, 2009.

L_CCCFC-01 Please refer to **Section 3.6, Master Response 6, Local Hydrology and Drainage** (Chapter 3, Section 3.6.2).

L_CCCFC-02 Please refer to **Section 3.6, Master Response 6, Local Hydrology and Drainage** (Chapter 3, Section 3.6.2).

L_CCCFC-03 Please refer to **Section 3.6, Master Response 6, Local Hydrology and Drainage** (Chapter 3, Section 3.6.3).

L_CCCFC-04 Please refer to **Section 3.4, Master Response 4, Approvals and Permits** (Chapter 3, Section 3.4.2).

L_CCCFC-05 The commenter requests that the text about the Contra Costa County, Flood Control and Water Conservation District (CCCFC) in the Regulatory Setting in Chapter 4.5 in the Draft EIS/EIR be revised to more accurately state that CCCFC works with local communities to provide flood protection and stormwater management for their residents (Section 4.5, pg. 4.5-6).

RESPONSE

The text is revised as follows. Specific text changes to the Draft EIS/EIR are also included in Chapter 5, Section 5.2, in the Final EIS/EIR.

> **Contra Costa County, Flood Control and Water Conservation District**
>
> The Contra Costa County Flood Control and Water Conservation District (CCCFC~~FCWCD~~) works with local communities to provide flood protection and stormwater management for areas within its jurisdiction. ~~is empowered to control flooding and stormwater within its service area.~~ The CCCFC ~~FCWCD~~ is staffed by the County Flood Control Engineering Division staff, with the purpose of developing and implementing storm drainage systems in Contra Costa County.

L_CCCFC-06 Please refer to **Section 3.4, Master Response 4, Approvals and Permits** (Chapter 3, Section 3.4.3).

L_CCCFC-07 Please refer to **Section 3.6, Master Response 6, Local Hydrology and Drainage** (Chapter 3, Section 3.6.2).

L_CCCFC-08 Please refer to **Section 3.6, Master Response 6, Local Hydrology and Drainage** (Chapter 3, Section 3.6.2).

L_CCCFC-09 Please refer to **Section 3.6, Master Response 6, Local Hydrology and Drainage** (Chapter 3, Section 3.6.2).

L_CCCFC-10 Please refer to **Section 3.6, Master Response 6, Local Hydrology and Drainage** (Chapter 3, Section 3.6.3).

L_CCCFC-11 Please refer to **Section 3.6, Master Response 6, Local Hydrology and Drainage** (Chapter 3, Section 3.6.3).

L_CCCFC-12 Please refer to **Section 3.6, Master Response 6, Local Hydrology and Drainage** (Chapter 3, Section 3.6.5).

L_CCCFC-13 Please refer to **Section 3.6, Master Response 6, Local Hydrology and Drainage** (Chapter 3, Section 3.6.4).

Contra Costa County, Public Works Department, Julia R. Bueren, Public Works Director, April 21, 2009.

L_CCCPW-01 Please refer to **Section 3.6, Master Response 6, Local Hydrology and Drainage** (Chapter 3, Section 3.6.2).

L_CCCPW-02 Please refer to **Section 3.6, Master Response 6, Local Hydrology and Drainage** (Chapter 3, Section 3.6.4).

L_CCCPW-03 Please refer to **Section 3.6, Master Response 6, Local Hydrology and Drainage** (Chapter 3, Section 3.6.2).

L_CCCPW-04 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Sections 3.8.3, 3.8.5 and 3.8.8).

L_CCCPW-05 Please refer to **Section 3.1, Master Response 1, Project Purpose and Description** (Chapter 3, Section 3.1.4).

L_CCCPW-06 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.4).

L_CCCPW-07 Please refer to **Section 3.6, Master Response 6, Local Hydrology and Drainage** (Chapter 3, Section 3.6.2).

L_CCCPW-08 Please refer to **Section 3.6, Master Response 6, Local Hydrology and Drainage** (Chapter 3, Section 3.6.2).

L_CCCPW-09 Please refer to **Section 3.6, Master Response 6, Local Hydrology and Drainage** (Chapter 3, Sections 3.6.2 and 3.6.3).

L_CCCPW-10 Please refer to **Section 3.4, Master Response 4, Approvals and Permits** (Chapter 3, Section 3.4.2).

L_CCCPW-11 Please refer to **Section 3.6, Master Response 6, Local Hydrology and Drainage** (Chapter 3, Section 3.6.2).

L_CCCPW-12 Please refer to **Section 3.6, Master Response 6, Local Hydrology and Drainage** (Chapter 3, Section 3.6.2).

L_CCCPW-13 Please refer to **Section 3.6, Master Response 6, Local Hydrology and Drainage** (Chapter 3, Section 3.6.2).

L_CCCPW-14 Please refer to **Section 3.6, Master Response 6, Local Hydrology and Drainage** (Chapter 3, Section 3.6.3).

L_CCCPW-15 Please refer to **Section 3.6, Master Response 6, Local Hydrology and Drainage** (Chapter 3, Section 3.6.3).

L_CCCPW-16 Please refer to **Section 3.6, Master Response 6, Local Hydrology and Drainage** (Chapter 3, Section 3.6.5).

Central Contra Costa Sanitary District, Ann E. Farrell, Director of Engineering, March 31, 2009.

L_CCCSD1-01 Please refer to **Section 3.3, Master Response 3, Alternatives** (Chapter 3, Section 3.3.2).

L_CCCSD1-02 Please refer to **Section 3.3, Master Response 3, Alternatives** (Chapter 3, Section 3.3.2).

Central Contra Costa Sanitary District, Ann E. Farrell, Director of Engineering, April 21, 2009.

L_CCCSD2-01 Please refer to **Section 3.3, Master Response 3, Alternatives** (Chapter 3, Section 3.3.2).

L_CCCSD2-02 Please refer to **Section 3.3, Master Response 3, Alternatives** (Chapter 3, Section 3.3.2).

L_CCCSD2-03 Please refer to **Section 3.3, Master Response 3, Alternatives** (Chapter 3, Section 3.3.2).

Delta Diablo Sanitation District, Gary W. Darling, General Manager, April 21, 2009.

L_DDSD-01 Please refer to **Section 3.3, Master Response 3, Project Alternatives** (Chapter 3, Section 3.3.2).

L_DDSD-02 Please refer to **Section 3.3, Master Response 3, Project Alternatives** (Chapter 3, Section 3.3.2).

L_DDSD-03 Please refer to **Section 3.3, Master Response 3, Project Alternatives** (Chapter 3, Section 3.3.2).

L_DDSD-04 Please refer to **Section 3.3, Master Response 3, Project Alternatives** (Chapter 3, Section 3.3.2).

Dublin San Ramon Services District, David A. Requa, Assistant General Manager/District Engineer, May 5, 2009.

L_DSRSD-01 Comment noted. The commenter expresses support for an alternative with the potential for a connection to the South Bay Aqueduct (SBA). This support is based on the commenter's understanding that such an alternative implemented by the Los Vaqueros Reservoir Expansion Project would provide a more reliable potable water supply for domestic users in the area of Contra Costa and Alameda counties by allowing Delta pumping by Zone 7 at times that would not be allowed from the current intake.

As described in the Draft EIS/EIR, Alternatives 1 and 2 include a connection to the SBA (Draft EIS/EIR, Chapter 3, pg. 3-25 and 3-30, respectively).

L_DSRSD-02 Please refer to **Section 3.3, Master Response 3, Project Alternatives** (Chapter 3, Section 3.3.2).

Although recycled water projects are not a feasible alternative to the proposed project, CCWD recognizes the value of recycled water projects such as those described in the comment.

East Bay Municipal Utility District, Alexander R. Coate, Director of Water and Natural Resources, April 21, 2009.

L_EBMUD-01 The comment states that East Bay Municipal Utility District (EBMUD) is not currently able to quantify any emergency supply benefit from the proposed project.

RESPONSE

Emergency water supply benefits from an expanded reservoir would be realized if an emergency such as a major earthquake, chemical spill, levee failure, or other disaster occurred that temporarily restricted normal regional water supply for one or more agencies interconnected with Los Vaqueros Reservoir. Necessary operational and administrative steps would be taken to make such an emergency operation safe and legal. CCWD and EBMUD entered into an agreement dated May 22, 2007, regarding ownership and operation of the existing facilities that interconnect the two agencies (CCWD and EBMUD, 2007). The agreement includes provisions for water service to either agency during an emergency or planned critical work on facilities. This agreement would be the basis of any delivery of emergency water supply from the Los Vaqueros Reservoir to EBMUD, and any further approvals would be pursued as needed if an emergency occurs that makes such a transfer desirable to both agencies. It is acknowledged that operational coordination of the CCWD and EBMUD water supply systems would be required to make such a delivery. The amount of water available during such an event would depend on the amount of water stored in Los Vaqueros Reservoir and the nature of the emergency.

L_EBMUD-02 Please refer to **Section 3.1, Master Response 1, Project Purpose and Description** (Chapter 3, Section 3.1.4).

L_EBMUD-03 Please refer to **Section 3.3, Master Response 3, Project Alternatives** (Chapter 3, Section 3.3.2).

L_EBMUD-04 Please refer to **Section 3.1, Master Response 1, Project Purpose and Description** (Chapter 3, Section 3.1.4).

East Bay Regional Park District, Brad Olson, Environmental Programs Manager, April 21, 2009.

L_EBRPD1-01 The commenter expresses the opinion that the Draft EIS/EIR is inadequate for a number of reasons described in a forthcoming comment letter from the East Bay Regional Park District (EBRPD).

RESPONSE

Comment L_EBRPD1-01 includes a list of topics identified to be of particular interest to the commenter. As indicated in comment L_EBRPD1-02, the commenter submitted detailed comments in comment letter L_EBRPD2. All topics listed in comment L_EBRPD1-01 were included in the commenter's second, and more detailed, comment letter (L_EBRPD2). Please see responses to comment letter L_EBRPD2.

L_EBRPD1-02 Comment noted. The commenter indicated that they had previously requested an extension of the public comment period, acknowledged that the comment period was not extended beyond that published in the Notice of Completion and the Notice of Availability, and indicated that they would be submitting detailed comments by April 21, 2009 – the close of the public comment period. As noted above, EBRPD did submit detailed comments in comment letter L_EBRPD2.

L_EBRPD1-03 Comment noted. The commenter requested that CCWD staff contact him to schedule a meeting to discuss EBRPD's comment letter and mitigation measures related to impacts to about which the letter expresses concern. CCWD staff meets regularly with EBRPD staff, including the comment author, and has discussed the concerns raised by EBRPD. Early meetings resulted in alignment of the proposed Transfer-Bethany Pipeline (Alternatives 1 and 2) to avoid disturbance at the planned Byron Vernal Pools Regional Preserve. CCWD staff will continue to meet with EBRPD staff to address impacts and to cooperatively identify potential mitigation lands.

East Bay Regional Park District, Kristin B. Burford and Matthew D. Zinn, Shute, Mihaly & Weinberger LLP, April 21, 2009.

L_EBRPD2-01 The commenter expresses the opinion that the Draft EIS/EIR "does not fully comply with the requirements of the California Environmental Quality Act ("CEQA"), Public Resources Code § 21000 et seq., and the National Environmental Policy Act ("NEPA"), 42 U.S.C. § 4321 et seq." The commenter states the DEIS/EIR violates these statutes by: "(1) failing to adequately describe the Project, (2) failing to analyze the significant environmental impacts of the Project, and (3) failing to propose feasible mitigation measures to address significant impacts."

RESPONSE

This comment expresses broad introductory statements about the Draft EIS/EIR.

In regard to item 1 (failing to adequately describe the project), please refer to **Section 3.1, Master Response 1, Project Purpose and Description**, which addresses comments received on the purpose, need and objectives of the project, as well as requests for additional background information on the existing Los Vaqueros Reservoir, clarification of the project benefits and further explanation of certain project elements, and **Chapter 2, Project Description Update**, which provides additional information about project refinements made in response to comments received on the Draft EIS/EIR.

In regard to item 2 (failing to analyze the significant environmental impacts of the project) and item 3 (failing to propose feasible mitigation measures), the Draft EIS/EIR and this document (Vol. 4), which comprise the Final EIS/EIR, include analyses and discussion of those impacts which were found to be significant or potentially significant before mitigation. Without exception, for those impacts found to be significant or potentially significant before mitigation, feasible mitigation measures have been identified.

L_EBRPD2-02 The commenter expresses the opinion that the Draft EIS/EIR fails to fully inform decision makers and the public of the environmental impacts associated with the Proposed Project; mitigation measures to minimize impacts; and alternatives, prior to decision-making and taking action, as required by NEPA and CEQA.

RESPONSE

This comment expresses introductory generalizations about the sufficiency of the Draft EIS/EIR.

The Draft EIS/EIR and this document comprise the Final EIS/EIR. The Final EIS/EIR includes detailed information about the potential impacts of the project alternatives (Alternatives 1-4); feasible mitigation measures to avoid, reduce and/or minimize those impacts found to be significant or potentially significant before mitigation; and a description and environmental analysis of a No Project/No Action Alternative.

Further, Chapter 3, Project Description in the Draft EIS/EIR, includes a detailed discussion of the alternatives development and screening process conducted by CCWD and Reclamation, in conjunction with other interested agencies, to identify and evaluate actions that could meet the established project objectives (Vol. 1, Section 3.3.2, pp. 3-7 through 3-11; and Appendix B). Further, Chapter 3, Project Description in the Draft EIS/EIR includes discussion of Alternatives Not Carried Forward (Section 3.3.3,

pp. 3-11 through 3-12; and Appendix B) and the Facilities Siting – Alternatives Screening process (Section 3.3.4, pp. 3-12 through 3-14; and Appendix B).

The proposed project is still in the environmental review stage. No decisions regarding approval of the proposed project have been made and no actions that are under review in the Final EIS/EIR have been initiated.

L_EBRPD2-03 Please refer to **Section 3.15, Master Response 15, Procedural Issues** (Chapter 3, Section 3.15.2).

L_EBRPD2-04 The commenter expresses the opinion that the Draft EIS/EIR "does not properly analyze the Project's significant environmental impacts on recreation, cultural resources, consistency with applicable regional plans, and biological resources, nor does it consider all feasible mitigation for such significant impacts. This incomplete analysis renders the DEIS/EIR legally insufficient". The commenter references CEQA Guidelines § 15002(a)(1) and 40 C.F.R. § 1500.1(b).

RESPONSE

This comment expresses broad introductory concerns about the impact analyses for recreation, cultural resources, consistency with applicable regional plans, and biological resources and the feasibility of the mitigation measures proposed for those impacts found to be significant or potentially significant before mitigation.

The Draft EIS/EIR and this document, which comprise the Final EIS/EIR, include analyses and discussion of those impacts to each of the identified resources which were found to be significant or potentially significant before mitigation. Without exception, for those impacts found to be significant or potentially significant before mitigation, feasible mitigation measures have been identified.

L_EBRPD2-05 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.3), and **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.6).

L_EBRPD2-06 Please refer to **Section 3.12, Master Response 12, Cultural Resources** (Chapter 3, Section 3.12.2).

L_EBRPD2-07 Please refer to **Section 3.12, Master Response 12, Cultural Resources** (Chapter 3, Section 3.12.2).

Additionally, while the Draft EIS/EIR indicates that, with proper siting and management, the proposed Eastside Trail could be developed and used without significant impact to biological or cultural resources on the east side of the reservoir, in response to comments expressing concern about this

project element, the majority of the Eastside Trail has been eliminated from all of the alternatives. Only a short segment of new trail is proposed under this refinement. Please see **Chapter 2, Project Description Update (**Vol. 4, Section 2.3.1**)**, of this Final EIS/EIR, for a description of this project refinement. Potential impacts to cultural and other resources associated this refinement are assessed in Chapter 2, Section 2.3.1 and Appendix A, Table 2, in this Final EIS/EIR (Vol. 4).

L_EBRPD2-08 The commenter expresses the opinion that the Draft EIS/EIR's analysis of recreation impacts during construction "lacks evidentiary support" and that the Draft EIS/EIR does not mitigate the acknowledged significant temporary impacts on recreation due to the closure of the watershed for Reservoir construction.

Please see **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.2), which addresses comments received about potential effects upon recreational facilities within the Los Vaqueros Watershed resulting from closure of the Los Vaqueros Watershed during project construction, and **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.3), which addresses comments received about potential effects on other recreational facilities/areas.

All temporary impacts on recreation due to the closure of the watershed during construction were either determined to be less than significant or less than significant with mitigation (Draft EIS/EIR, Vol. 2, Section 4.15, pp. 4.15-8 through 4.15-20).

Without sufficient detail in the comment, a more detailed response in regard to the issues raised in comment L_EBRPD2-08 cannot be provided.

L_EBRPD2-09 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.2).

L_EBRPD2-10 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.3).

L_EBRPD2-11 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.3).

L_EBRPD2-12 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.3).

L_EBRPD2-13 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.12.3).

L_EBRPD2-14 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.6).

L_EBRPD2-15 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Sections 3.8.3 and 3.8.4) and **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.4).

The commenter is also directed to **Chapter 2, Project Description Update** in this Final EIS/EIR (Vol. 4), which provides descriptions and impact analyses for project refinements were made in response to comments received on the Draft EIS/EIR, including a reduction in the Eastside Trail (Alternatives 1-4) and realignment of the Westside Trail (Alternative 4). Potential impacts associated these refinements are assessed in Chapter 2, Section 2.1.2 and Appendix A, Tables 1 and 2 (Vol. 4).

L_EBRPD2-16 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

L_EBRPD2-17 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.6).

L_EBRPD2-18 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.3).

L_EBRPD2-19 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.6) and **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.3).

L_EBRPD2-20 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Sections 3.8.3 and 3.8.4) and **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.6).

L_EBRPD2-21 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.8).

L_EBRPD2-22 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.8) and **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.9).

L_EBRPD2-23 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Sections 3.8.3 and 3.8.8).

L_EBRPD2-24 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Sections 3.8.4 and 3.8.8).

L_EBRPD2-25 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.8).

L_EBRPD2-26 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.4) and **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.7).

L_EBRPD2-27 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.4).

L_EBRPD2-28 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.3).

L_EBRPD2-29 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.4).

L_EBRPD2-30 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.3).

L_EBRPD2-31 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.5).

L_EBRPD2-32 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.3).

L_EBRPD2-33 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.4).

L_EBRPD2-34 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.4)

L_EBRPD2-35 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.3).

L_EBRPD2-36 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.3) and **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.4).

L_EBRPD2-37 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.7).

L_EBRPD2-38 Please refer to **Section 3.7, Master Response 7, Agriculture** (Chapter 3, Section 3.7.4).

L_EBRPD2-39 Please refer to **Section 3.7, Master Response 7, Agriculture** (Chapter 3, Section 3.7.3).

L_EBRPD2-40 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.9).

L_EBRPD2-41 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.9).

L_EBRPD2-42 Please refer to **Section 3.15, Master Response 15, Procedural Issues** (Chapter 3, Section 3.15.4).

L_EBRPD2-43 Please refer to **Section 3.3, Master Response 3, Project Alternatives** (Chapter 3, Section 3.3.4).

L_EBRPD2-44 Please refer to **Section 3.15, Master Response 15, Procedural Issues** (Chapter 3, Section 3.15.2).

East Contra Costa County Habitat Conservancy, John Kopchik, Executive Director, April 21, 2009.

L_ECCCHC-01 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.8).

L_ECCCHC-02 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 4, Section 3.8.3).

L_ECCCHC-03 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 4, Section 3.8.3).

Richmond Community Redevelopment Agency, Craig K. Murray, Development Project Manager II, April 20, 2009.

L_RCRA-01 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

L_RCRA-02 Please refer to **Section 3.1, Master Response 1, Project Purpose and Description** (Chapter 3, Section 3.1.4).

Reclamation District 800, Jeffrey D. Conway, District Manager, May 5, 2009.

L_RD800-01 Please refer to **Section 3.4, Master Response 4, Approvals and Permits** (Chapter 3, Section 3.4.2).

L_RD800-02 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.4).

L_RD800-03 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.5).

L_RD800-04 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.5).

L_RD800-05 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.4).

L_RD800-06 Please refer to **Section 3.6, Master Response 6, Local Hydrology and Drainage** (Chapter 3, Section 3.6.3).

L_RD800-07 Comment noted. Please refer to **Section 3.4, Master Response 4, Approvals and Permits** (Chapter 3, Section 3.4.2).

L_RD800-08 Comment noted. Please refer to **Section 3.4, Master Response 4, Approvals and Permits** (Chapter 3, Section 3.4.2).

Santa Clara Valley Water District, Sandy Oblonsky, Assistant Officer, Office of Water Utility Enterprise Planning, April 21, 2009.

L_SCVWD-01 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Sections 3.5.4 and 3.5.6).

L_SCVWD-02 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Sections 3.5.2) and **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Sections 3.5.4)

L_SCVWD-03 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Sections 3.5.2).

L_SCVWD-04 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.4).

L_SCVWD-05 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.4).

L_SCVWD-06 Please refer to **Section 3.2, Master Response 2, Relationships to Other Initiatives and Projects** (Chapter 3, Section 3.2.2) and **Section 3.3, Master Response 3, Project Alternatives** (Chapter 3, Section 3.3.3).

L_SCVWD-07 Please refer to **Section 3.1, Master Response 1, Project Purpose and Description** (Chapter 3, Section 3.1.4).

L_SCVWD-08 Please refer to **Section 3.1, Master Response 1, Project Purpose and Description** (Chapter 3, Section 3.1.2).

L_SCVWD-09 Please refer to **Section 3.2, Master Response 2, Relationships to Other Initiatives and Projects** (Chapter 3, Section 3.2.2).

L_SCVWD-10 Please refer to **Section 3.2, Master Response 2, Relationships to Other Initiatives and Projects** (Chapter 3, Section 3.2.3).

Sacramento Regional County Sanitation District, Stan R. Dean, District Manager, April 21, 2009.

L_SRCSD-01 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.2).

L_SRCSD-02 Please refer to **Section 3.2, Master Response 2, Relationships to Other Initiatives and Projects** (Chapter 3, Section 3.2.2) and **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.2).

L_SRCSD-03 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.5).

State Water Contractors, Terry L. Erlewine, General Manager, April 21, 2009.

L_SWC-01 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Sections 3.5.2), **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Sections 3.5.4), and **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Sections 3.5.6).

L_SWC-02 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Sections 3.5.6).

L_SWC-03 Please refer to **Section 3.2, Master Response 2, Relationships to Other Initiatives and Projects** (Chapter 3, Section 3.2.2).

Zone 7 Water Agency, G.F. Duerig, General Manager, April 21, 2009.

L_Zone7-01 Please refer to **Section 3.2, Master Response 2, Relationships to Other Initiatives and Projects** (Chapter 3, Section 3.2.2).

L_Zone7-02 Please refer to **Section 3.2, Master Response 2, Relationships to Other Initiatives and Projects** (Chapter 3, Section 3.2.2).

L_Zone7-03 Please refer to **Section 3.2, Master Response 2, Relationships to Other Initiatives and Projects** (Chapter 3, Section 3.2.2) and **Section 3.3, Master Response 3, Project Alternatives** (Chapter 3, Section 3.3.3).

4.4 Organizations

TABLE 4-4
ORGANIZATIONS THAT SUBMITTED COMMENTS ON THE DRAFT EIS/EIR

Comment Format	Comment ID	Name of Commenter	Title	Organization/ Affiliation	Page
Public Hearing	O_CCCFB	John Veitch		Contra Costa County Farm Bureau	4-33
Email	O_CEMC	M. Scott Mansholt	Senior Environmental Project Management Specialist	Chevron Environmental Management	4-33
Email	O_CFBF	Christian C. Scheuring	Managing Counsel	California Farm Bureau Federation	4-33
Mail	O_DPBC1	Richard M. Anderson		Delta Pedalers Bicycle Club	4-34
Mail	O_DPBC2	John Diaz Coker		Delta Pedalers Bicycle Club	4-34
Mail	O_DPBC3	Connie Davis		Delta Pedalers Bicycle Club	4-34
Mail	O_DPBC4	Steve Diputado		Delta Pedalers Bicycle Club	4-34
Mail	O_DPBC5	Phil Paulson		Delta Pedalers Bicycle Club	4-34
Mail	O_DPBC6	Dave Stoeffler		Delta Pedalers Bicycle Club	4-34
Mail	O_DPBC7	Kathryn Thomas		Delta Pedalers Bicycle Club	4-34
Email	O_DWP	Anson B. Moran	General Manager	Delta Wetlands Project	4-35
Public Hearing	O_EBATC1	Steven Eng		East Bay Area Trails Council	4-36
Email	O_EBATC2	Morris Older		East Bay Area Trails Council	4-36
Public Hearing	O_EBBC	Bruce D. Ohlson		East Bay Bicycle Coalition	4-36
Email	O_EBCNPS	Lech Naumovich	East Bay Conservation Analyst	East Bay California Native Plant Society	4-36
Email	O_NASNF	John Eustacio Negrete	Treasurer	Native Alliance of the Sierra Nevada Foothills	4-37
Email	O_PCL	Evon Parvaneh Chambers	Water Policy Assistant	Planning and Conservation League	4-37
Email	O_SMD	Troy Bristol	Land Conservation Associate	Save Mount Diablo	4-38

Contra Costa County Farm Bureau, John Veitch, April 2, 2009.

O_CCCFB-01 Please refer to **Section 3.3, Master Response 3.2, Relationship to Other Initiatives and Projects** (Chapter 3, Section 3.2.2).

Chevron Environmental Management Company, M. Scott Mansholt, Senior Environmental Project Management Specialist, April 21, 2009.

O_CEMC-01 Please refer to **Section 3.10, Master Response 10, Hazardous Materials/Public Health and Utilities** (Chapter 3, Section 3.10.3).

O_CEMC-02 Please refer to **Section 3.10, Master Response 10, Hazardous Materials/Public Health and Utilities** (Chapter 3, Section 3.10.3).

California Farm Bureau Federation, Christian C. Scheuring, Managing Counsel, April 21, 2009.

O_CFBF-01 Please refer to **Section 3.3, Master Response 3, Project Alternatives** (Chapter 3, Section 3.3.3) which addresses comments about how additional alternatives should be considered to achieve broader statewide benefits, and **Section 3.1, Master Response 1, Project Purpose and Description** (Chapter 3, Section 3.1.4) which responds to comments about the project description, including a discussion of relevant CCWD Board Principles.

O_CFBF-02 Please refer to **Section 3.3, Master Response 3, Project Alternatives** (Chapter 3, Section 3.3.3) and **Section 3.1, Master Response 1, Project Purpose and Description** (Chapter 3, Section 3.1.4) which includes a discussion of the distribution of benefits to project participants.

O_CFBF-03 Please refer to **Section 3.1, Master Response 1, Project Purpose and Description** (Chapter 3, Section 3.1.4), **Section 3.3, Master Response 3, Project Alternatives** (Chapter 3, Section 3.3.3) and **Section 3.2, Master Response 2, Relationship to Other Initiatives and Projects** (Chapter 3, Section 3.2.2) which responds to comments about coordination with and relationship to other programs.

O_CFBF-04 Please refer to **Section 3.1, Master Response 1, Project Purpose and Description** (Chapter 3, Section 3.1.4), **Section 3.3, Master Response 3, Project Alternatives** (Chapter 3, Section 3.3.3) and **Section 3.3, Master Response 2, Relationship to Other Initiatives and Projects** (Chapter 3, Section 3.2.2) which responds to comments about coordination with and relationship to other programs and discusses how future, cost-effective opportunities with State and/or federal participation continue to be evaluated.

Delta Pedalers Bicycle Club, Richard M. Anderson, April 13, 2009.

O_DPBC1-01 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

Delta Pedalers Bicycle Club, John Diaz Coker, April 13, 2009.

O_DPBC2-01 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

O_DPBC2-02 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

Delta Pedalers Bicycle Club, Connie Davis, April 16, 2009.

O_DPBC3-01 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

O_DPBC3-02 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

O_DPBC3-03 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

Delta Pedalers Bicycle Club, Steve Diputado, April 13, 2009.

O_DPBC4-01 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

O_DPBC4-02 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

O_DPBC4-03 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

Delta Pedalers Bicycle Club, Phil Paulson, April 16, 2009.

O_DPBC5-01 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

Delta Pedalers Bicycle Club, Dave Stoeffler, April 16, 2009.

O_DPBC6-01 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

Delta Pedalers Bicycle Club, Kathryn Thomas, April 16, 2009.

O_DPBC7-01 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

O_DPBC7-02 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

Delta Wetlands Project, Anson B. Moran, General Manager, April 21, 2009.

O_DWP-01 Please refer to **Section 3.2, Master Response 2, Relationships to Other Initiatives and Projects** (Chapter 3, Section 3.2.2).

O_DWP-02 Please refer to **Section 3.2, Master Response 2, Relationships to Other Initiatives and Projects** (Chapter 3, Section 3.2.2)

O_DWP-03 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.2)

Please refer to **Section 3.2, Master Response 2, Relationships to Other Initiatives and Projects** (Chapter 3, Section 3.2.2).

O_DWP-04 [*Excerpt from O_DWP*] The DEIS/R states that "[n]one of the alternatives would involve diverting more water from the Delta than allowed under existing water rights or changing the ownership or priority of those water rights" (p. 3-4), however, the changes to the "timing and location of diversions . . . may necessitate modification of existing water right permits held by CCWD; U.S. Department of the Interior, Bureau of Reclamation, Mid-Pacific Region (Reclamation); and/or California Department of Water Resources (DWR)" (pp. 3-4 to 3-5). The DEIS/R does not provide specific enough information to assess the potential impacts of the water right changes that may be required for the LVE project. Please clarify what water right approvals have already been obtained but have not yet been exercised and those that have not yet been obtained but are required to operate the proposed LVE project.

RESPONSE

No water rights change petitions or applications have yet been filed in connection with the proposed project. Change petitions to existing water rights permits held by CCWD, DWR, and/or Reclamation may be filed, if necessary, for the alternative that is selected for implementation. The EIS/EIR contains descriptions of project operations for all alternatives and analysis of the potential impacts of these operations to support any water rights petitions that might be needed (see generally Vol. 4, Section 5.3). Responses to comments S_SWRCB-01, S_SWRCB-05, S_SWRCB-06, and

S_SWRCB-08 from the SWRCB provide additional detail on existing water rights permits and potential modifications to them.

O_DWP-05 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.2).

O_DWP-06 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.2).

East Bay Area Trails Council, Steven Eng, March 26, 2009.

O_EBATC1-01 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

East Bay Area Trails Council, Morris Older, April 21, 2009.

O_EBATC2-01 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

O_EBATC2-02 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

O_EBATC2-03 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.6).

O_EBATC2-04 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.3).

East Bay Bicycle Coalition, Bruce D. Ohlson, March 31, 2009.

O_EBBC-01 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

O_EBBC-02 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

O_EBBC-03 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

East Bay California Native Plant Society, Lech Naumovich, East Bay Conservation Analyst, April 21, 2009.

O_EBCNPS-01 Please refer to **Section 3.15, Master Response 15, Procedural Issues** (Chapter 3, Section 3.15.3).

O_EBCNPS-02 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.4).

O_EBCNPS-03 Please refer to **Section 3.1, Master Response on Project Purpose and Description** (Chapter 3, Sections 3.1.2 and 3.1.4).

O_EBCNPS-04 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.3) and **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.5).

O_EBCNPS-05 Please refer to **Section 3.14, Master Response 14, Climate Change** (Chapter 3, Section 3.14.2).

O_EBCNPS-06 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.9) and **Section 3.13, Master Response 13, Growth-Inducing Effects** (Chapter 3, Section 3.13.2).

O_EBCNPS-07 Please refer to **Section 3.13, Master Response 13, Growth-Inducing Effects** (Chapter 3, Section 3.13.2).

O_EBCNPS-08 The commenter expresses the opinion that "the EIR/EIS is not sufficient in analyzing the impacts of this project. The lead agency did not fulfill the basic guidelines of CEQA [Pub. Res. Code § 21061]; If an environmental document fails to fully inform decision makers, and the public, of the environmental consequences of the proposed actions, it does not satisfy the basic goals of either statute".

RESPONSE

This comment appears to express a broad summary conclusion of the commenter's other comments about expresses broad generalizations about the Draft EIS/EIR, and does not provide any specifics or detail about the commenter's expressed opinions.

The Draft EIS/EIR and this document (Vol. 4), which comprise the Final EIS/EIR, include analyses and discussion of the environmental impacts of the project alternatives. These analyses identify those impacts which were found to be significant or potentially significant before mitigation. Without exception, for those impacts found to be significant or potentially significant before mitigation, feasible mitigation measures have been identified.

Native Alliance of the Sierra Nevada Foothills, John Eustacio Negrete, Treasurer, April 22, 2009.

O_NASNF-01 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.4).

O_NASNF-02 Please refer to **Section 3.12, Master Response 12, Cultural Resources** (Chapter 3, Section 3.12.2).

O_NASNF-03 Please refer to **Section 3.12, Master Response 12, Cultural Resources** (Chapter 3, Section 3.12.2).

O_NASNF-04 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.9).

Planning and Conservation League, Evon Parvaneh Chambers, Water Policy Assistant, April 20, 2009.

O_PCL-01 Please refer to **Section 3.3, Master Response 3, Project Alternatives** (Chapter 3, Section 3.3.2).

O_PCL-02 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.2) and **Section 3.1, Master Response 1, Project Purpose and Description** (Chapter 3, Section 3.1.2).

O_PCL-03 Please refer to **Section 3.1, Master Response 1, Project Purpose and Description** (Chapter 3, Section 3.1.2) and **Section 3.3, Master Response 3, Project Alternatives** (Chapter 3, Section 3.3.2).

O_PCL-04 Please refer to **Section 3.3, Master Response 3, Project Alternatives** (Chapter 3, Section 3.3.2).

O_PCL-05 Please refer to **Section 3.2, Master Response 2, Relationships to Other Initiatives and Projects** (Chapter 3, Section 3.2.2).

O_PCL-06 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.6).

Save Mount Diablo, Troy Bristol, Land Conservation Associate, April 21, 2009.

O_SMD-01 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.2) and **Section 3.8, Master Response on Biological Resources** (Chapter 3, Section 3.8.7).

O_SMD-02 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.2) and **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.4).

O_SMD-03 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.2).

O_SMD-04 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.2), **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.4) and **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.9).

O_SMD-05 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.2).

O_SMD-06 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.2).

O_SMD-07 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.4).

O_SMD-08 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.2).

O_SMD-09 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.4).

O_SMD-10 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.4).

O_SMD-11 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.4).

O_SMD-12 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.8).

O_SMD-13 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.3).

O_SMD-14 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.9).

O_SMD-15 Please refer to **Section 3.13, Master Response 13, Growth-Inducing Effects** (Chapter 3, Section 3.13.2).

O_SMD-16 Please refer to **Section 3.13, Master Response 13, Growth-Inducing Effects** (Chapter 3, Section 3.13.2).

O_SMD-17 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.6)

4.5 Individuals

TABLE 4-5
INDIVIDUALS WHO SUBMITTED COMMENTS ON THE DRAFT EIS/EIR

Comment Letter Format	Comment Letter ID	Name of Commenter	Page
Email	I_Birnbaum	Mark Birnbaum	4-40
Mail	I_Chapman	David and Brenda Chapman	4-40
Mail	I_Collier	Gary Collier	4-41
Email	I_Desmond	Michael Desmond	4-42
Email	I_Fontaine	Dave Fontaine	4-42
Email	I_Graham	Betty Lu Graham	4-42
Email	I_Gunn	Joyce Gunn	4-43
Email	I_Harris	Adrienne Harris	4-43
Email	I_Horejsi	Dr. Brian L. Horejsi	4-43
Email	I_Mankin	Bob Mankin	4-43
Email	I_Navarro	Steven Navarro	4-43
Email	I_Netzer	Ralph Netzer	4-44
Email	I_Osterling	Ralph Osterling	4-44
Email	I_Pilkington	Corin Pilkington	4-44
Email	I_Quigley1	Dick Quigley	4-45
Email	I_Quigley2	Dick Quigley	4-45
Email	I_Saephan	Mey Saephan	4-45
Email	I_Sagehorn	Michael Sagehorn	4-46
Email	I_Vandeman	Mike Vanderman	4-46
Email	I_Vincent	Tammy Vincent	4-46

Mark Birnbaum, April 09, 2009.

I_Birnbaum-01 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

David and Brenda Chapman, April 21, 2009.

I_Chapman-01 The commenters own property across which the existing Old River Pipeline is routed. Under Alternatives 1, 2, and 3, the proposed new Delta-Transfer Pipeline would be installed generally parallel to the existing Old River Pipeline within the existing Old River Pipeline permanent right-of-way for most of the route. The commenters express their concerns about any effects that expansion of the permanent easement, as well as any temporary construction easements, may have on their plans for future improvement of their property, as well as concerns about economic impacts associated with loss of grazing land and exercise area for their horses.

RESPONSE

As discussed in **Section 3.7, Master Response 7, Agriculture**, in this document, construction activities associated with pipeline installation

would result in temporary disruption of agricultural uses, including grazing, during the installation of pipelines. However, after installation is complete, the disturbed areas would be restored to conditions consistent with the easement agreement and permitted agricultural uses could resume. Additionally, the Delta-Transfer Pipeline would be installed within the existing utility corridor used for CCWD's existing Old River Pipeline; therefore, no new utility corridor would be needed (Section 3.7.3). It is not anticipated that the existing permanent easement would need to be expanded; however, in the event that final design requires the expansion of the permanent easement, CCWD will work with affected landowners to make the appropriate arrangements. Alternative 4 would not involve construction of the new Delta-Transfer Pipeline.

The commenters' letter requests that CCWD and Reclamation involve them in project planning to help minimize impacts associated with construction of facilities/pipelines on their property. Subsequent to receipt of the commenter's letter, the CCWD Project Manager, Marguerite Naillon, contacted the commenters to discuss their concerns. Any landowners, including the commenters, with property located within the footprint of any project components related to an alternative that is selected for implementation will be contacted by CCWD to discuss more specific planning information.

Ms. Naillon is available to discuss landowner questions or concerns at (925) 688-8018.

Gary Collier, April 24, 2009.

I_Collier-01 Please refer to **Section 3.10, Master Response 10, Hazardous Materials/Public Health and Utilities** (Chapter 3, Section 3.10.2).

I_Collier-02 The commenter expressed concern that the Delta is being treated as a natural ecosystem, asked why delta smelt and salmon populations need to be addressed and suggested that high flows allow predatory fish to prey upon salmon and delta smelt.

RESPONSE

It is well recognized that the Delta is no longer a natural system and that it has been subjected to extensive anthropogenic changes in land forms (for example, draining of freshwater tidal marsh that is now farmed behind levees), and is subject to constant flow management. It is not being treated as a natural system but rather as valued ecosystem in decline. The very focus of the CALFED Program and the BDCP is the restoration of the Delta ecosystem, recognizing that it cannot and will not be restored to a natural state but rather a healthy, functioning state.

Delta smelt and salmon are listed species under the Federal Endangered Species Act and the California Endangered Species Act. As such, they are protected by law. The focus of the CALFED Program, the BDCP and the Los Vaqueros Reservoir Expansion Project is to further protect those species while improving water supply reliability for users of Delta waters.

It is not clear what is meant by "high flows" but the evidence suggests that a multitude of factors have affected the decline in species, among them invasive species (including asian clams and predators of native species), pollution and loss of fish at pump plants. No single factor has been determined to have caused the decline.

I_Collier-03 The commenter recommends building a peripheral canal. None of the proposed alternatives includes construction of a 'peripheral canal' (Draft EIS/EIR, Chapter 3). Please refer to **Section 3.2, Master Response 2, Relationships to Other Initiatives and Projects** (Chapter 3, Section 3.2.2).

Michael Desmond, April 07, 2009.

I_Desmond-01 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

Dave Fontaine, April 18, 2009.

I_Fontaine-01 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.4).

I_Fontaine-02 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.2).

Betty Lu Graham, April 20, 2009.

I_Graham-01 Please refer to **Section 3.3, Master Response 3, Project Alternatives** (Chapter 3, Section 3.3.4).

I_Graham-02 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.3).

I_Graham-03 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.3 and Section 3.8.9).

I_Graham-04 Please refer to **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.9).

I_Graham-05 Please refer to **Section 3.1, Master Response 1, Project Purpose and Description** (Chapter 3, Section 3.1.3).

I_Graham-06 Please refer to **Section 3.1, Master Response 1, Project Purpose and Description** (Chapter 3, Section 3.1.2).

I_Graham-07 Please refer to **Section 3.1, Master Response 1, Project Purpose and Description** (Chapter 3, Section 3.1.2).

I_Graham-08 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.6).

I_Graham-09 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.5).

I_Graham-10 Please refer to **Section 3.1, Master Response 1, Project Purpose and Description** (Chapter 3, Section 3.1.4).

Joyce Gunn, April 14, 2009.

I_Gunn-01 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

Adrienne Harris, April 19, 2009.

I_Harris-01 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

Dr. Brian L. Horejsi, April 08, 2009.

I_Horejsi-01 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

Bob Mankin, April 21, 2009.

I_Mankin-01 Comment noted. Please refer to **Section 3.1, Master Response 1, Project Purpose and Description** (Chapter 3, Sections 3.1.4 and 3.2.2).

I_Mankin-02 Please refer to **Section 3.11, Master Response 11, Recreation (Chapter 3, Section 3.11.2)**.

Steven Navarro, April 10, 2009.

I_Navarro-01 Please refer to **Section 3.9, Master Response 9, Transportation and Circulation** (Chapter 3, Section 3.9.2).

I_Navarro-02 Please refer to **Section 3.1, Master Response 1, Project Purpose and Description** (Chapter 3, Section 3.1.3).

I_Navarro-03 Please refer to **Section 3.6, Master Response 6, Local Hydrology and Drainage** (Chapter 3, Section 3.6.3).

I_Navarro-04 Please refer to **Section 3.9, Master Response 9, Transportation and Circulation** (Chapter 3, Section 3.9.2).

I_Navarro-05 Please refer to **Section 3.9, Master Response 9, Transportation and Circulation** (Chapter 3, Section 3.9.2).

Ralph Netzer, April 13, 2009.

I_Netzer-01 Comment noted. The commenter expresses support for enlarging Los Vaqueros Reservoir "probably to the larger storage plan", and expresses the opinion that the State is suffering and will continue to suffer from severe water shortages until something is done to increase storage capacity.

This comment does not raise significant environmental issues that would result from the proposed project, but the comment will be submitted to the decision-makers and included in the record along with all other comments.

Ralph Osterling, February 25, 2009.

I_Osterling-01 Comment noted. Also, see **Section 3.8, Master Response 8, Biological Resources** (Chapter 3, Section 3.8.3).

Corin Pilkington, April 21, 2009.

I_Pilkington-01 Please refer to **Section 3.2, Master Response 2, Relationships to Other Initiatives and Projects** (Chapter 3, Section 3.2.2).

I_Pilkington-02 Please refer to **Section 3.3, Master Response 3, Project Alternatives** (Chapter 3, Section 3.3.4).

I_Pilkington-03 Please refer to **Section 3.1, Master Response 1, Project Purpose and Description** (Chapter 3, Section 3.1.4).

I_Pilkington-04 The commenter expressed the opinion that a definition of "substantial" be provided for the significance criterion in Section 4.5.2 of the Draft EIS/EIR regarding alteration of the existing drainage pattern to provide a context of the threshold used for the analysis.

RESPONSE

The significance criterion in the Draft EIS/EIR to which the commenter is referring is:

> *Substantially alter the existing drainage pattern of the site or project area in a manner that would cause substantial erosion and sedimentation and/or flooding onsite or offsite* (Section 4.5, pg. 4.5-12).

Changes in drainage patterns are typically evaluated based on effects associated with those changes that could be considered deleterious to beneficial uses (as discussed in the Regulatory Setting section in the Draft EIS/EIR (Section4.5, pp. 4.5-1 through 4.5-6). For the analysis in the Draft EIS/EIR, the term "substantial" was interpreted to mean any increase or change in erosion, sedimentation, drainage, or flooding patterns that could be considered deleterious to beneficial uses, including environmental uses, any reduction in conveyance capacity (e.g., due to sedimentation) or any increase in flooding. This criterion is based on Appendix G of the State CEQA guidelines. This interpretation of the significance criteria ensures compliance with CEQA and NEPA, and that deleterious environmental change will be minimized.

I_Pilkington-05 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.2).

Dick Quigley, March 25, 2009.

I_Quigley1-01 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5 and Section 3.11.6).

I_Quigley1-02 Please refer to **Section 3.5, Master Response 5, Delta Hydrology and Aquatic Resources** (Chapter 3, Section 3.5.2).

I_Quigley1-03 The commenter asks if the fingerprint of water that goes to the Los Vaqueros Reservoir is similar to that at the Banks Pump Plant and specifically asks about the salinity levels.

RESPONSE

The comment is correct that the "fingerprint" of water that goes to the Los Vaqueros Reservoir is similar to that at the Banks Pump Plant. There are some distinctions, however. First, the Banks Pump Plant is subject to water from the San Joaquin River. That water has high salinity at many times of the year, and can have pollutants such as selenium that are not present at CCWD's intakes. CCWD is much less affected by San Joaquin River flows. Second, the salinity levels for the Los Vaqueros Reservoir are generally less than at the Banks Pump Plant, since CCWD is able to take water from either Old River or Victoria Canal. Victoria Canal generally has superior water quality than the Banks Pump Plant in the summer and fall. At other times of the year, Old River generally has better water quality than the Banks Pump Plant, or it is quite similar.

Dick Quigley, April 1, 2009.

I_Quigley2-01 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.6).

Mey Saephan, March 24, 2009.

I_Saephan-01 The commenter writes: Are there considerations such as family size on how much CCWD customers are required reduce their water usage? My family has already reduced water usages probably by 20% or more and I think it would be unfair to ask customers who have already reduced their water usages to reduce their water usages 20% more in addition to earlier reductions.

RESPONSE

The commenter appears to be requesting information about CCWD's 2009 drought-related water conservation efforts and/or the Statewide 20x2020 Plan for reduced water use, and how these programs would affect individual customer rates. The Los Vaqueros Reservoir Expansion Project is not related to existing voluntary conservation efforts or the Statewide 20x2020 water reduction plan.

Within the CCWD service area, 2009 water use reduction targets of 15 percent are tailored to each property's use history, and related conservation efforts by water users are currently voluntary. The CCWD program is distinct from Governor Schwarzenegger's goal of reducing per capita urban water use statewide by 20 percent by the year 2020. As of January 2010, the Statewide 20x2020 Plan has not been finalized.

CCWD Water Conservation staff track water use and costs by property and can discuss property-specific issues with the commenter. The commenter is invited to contact CCWD Water Conservation staff at (925) 483-2452 for additional water conservation information, to schedule a water audit, and responses to any further questions about water use for her property.

Michael Sagehorn, April 07, 2009.

I_Sagehorn-01 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

Mike Vandeman, April 07, 2009.

I_Vandeman-01 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

I_Vandeman-02 Please refer to **Section 3.11, Master Response 11, Recreation** (Chapter 3, Section 3.11.5).

Tammy Vincent, April 10, 2009.

I_Vincent-01 Comment noted. Commenter expresses support for expanding the Los Vaqueros Reservoir.

This comment does not raise significant environmental issues that would result from the proposed project, but the comment will be submitted to the decision-makers and included in the record along with all other comments.

CHAPTER 5
Revisions to the Draft EIS/EIR

5.1 Introduction

This chapter presents changes to the text of the Draft EIS/EIR made in response to comments (as presented in Chapters 3 and 4) or to clarify and provide applicable updates of the text in the Draft EIS/EIR. The text revisions in this chapter represent four main categories of changes: (1) clarifications/refinements made in response to comments; (2) updated information due to project revisions; (3) clarification/refinement due to updated information; and (4) clarifications/corrections made due to editorial errors. Text changes are prefaced by a brief explanation, including where appropriate, reference to the master response in Chapter 3 or comment number in Chapter 4. In each change, new language is underlined, while deleted text is shown in ~~strikethrough~~, except where the text is indicated as entirely new, in which case no underlining is used for easier reading.

Text changes presented here are shown in select text sections of the Draft EIS/EIR only; particularly in the sections that present impact conclusions and/or mitigation measures. Text revisions are not shown for all related text sections throughout the Draft EIS/EIR. For example, neither the Draft EIS/EIR Executive Summary text nor Chapter 3, Project Description, text has been fully revised to reflect the three project facility refinements presented in detail in Section 2.3.1 of this response to comments documents (Vol. 4, of the Final EIS/EIR). However, revisions are shown to select sections of the impact summary table from the Draft EIS/EIR Executive Summary since a revised version of this table forms the basis for the CEQA Mitigation Monitoring and Reporting Program as well as the template for developing the CEQA Findings. The Final EIS/EIR is comprised of all four volumes and it is necessary to review the revisions made to the text presented in this section to understand what aspects of the Draft EIS/EIR have been updated and superceded.

5.2 Selected Text Revisions to the Draft EIS/EIR

Text changes to the Draft EIS/EIR text are shown below following the order of sections in the Draft EIS/EIR. Text revisions have only been made in select sections; there are no revisions in most sections.

Executive Summary

The following paragraph is inserted immediately following the fifth full paragraph on page ES-36 of the Draft EIS/EIR (Vol. 1, Executive Summary) to clarify that Western Area Power Administration (Western) would issue a Record of Decision (ROD) should an action to provide power and associated facilities be approved as part of the project.

> **Western.** As a Cooperating Agency under NEPA, Western is responsible for coordinating with Reclamation in completing the EIS/EIR to comply with the Department of Energy's NEPA implementing regulations. Western would rely on the EIS/EIR when taking action to provide power and associated facilities, and would document that action in a Record of Decision.

Table ES-7, CEQA Environmental Impacts and Mitigation Measures

The numbering of Mitigation Measure 4.5.2 on page ES-44 of the Draft EIS/EIR (Vol. 1, Executive Summary) is corrected as follows to correlate with the numbering of Impact 4.5.4 (Draft EIS/EIR, Vol. 1, Section 4.5, pp. 4.5-26 through 4.5.28).

4.5.4: Project alternatives would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff during operation.	No Action: Alternative 1: Alternative 2: Alternative 3: Alternative 4:	NI LSM LSM LSM LSM	**Measure 4.5.2~~4~~4:** CCWD shall design facilities with introduced impervious surfaces with stormwater control measures that are consistent with the Regional Water Quality Control Board's NPDES municipal stormwater runoff requirements. The stormwater control measures shall be designed and implemented to reduce the discharge of stormwater pollutants to the maximum extent practical. Stormwater controls such as bioretention facilities, flow-through planters, detention basins, vegetative swales, covering pollutant sources, oil/water separators, retention ponds, shall be designed to control stormwater quality to the maximum extent practical. In addition, CCWD shall prepare and implement a Stormwater Facility Operation and Management Plan that assigns responsibility for maintenance of stormwater facilities for the life of the project.	No Impact Less Than Significant

Mitigation Measures 4.6.2a on pages ES-47 and ES-48 of the Draft EIS/EIR (Vol. 1, Executive Summary) is revised to further protect wetland resources along pipeline corridors.

4.6.2: Project construction could affect potentially jurisdictional wetlands or waters, and streambeds and banks regulated by CDFG.	No Action: Alternative 1: Alternative 2: Alternative 3: Alternative 4:	NI LSM LSM LSM LSM	**Measure 4.6.2a:** Final project design shall avoid and minimize the fill of wetlands and other waters to the greatest practicable extent. No access vaults would be installed within the jurisdictional drainages that occur along any pipeline corridors. Areas that are avoided shall be subject to best management practices under the General National Pollutant Discharge Elimination System Permit, as described in Measure 4.5.1. The fill of wetlands at the proposed Western substation site shall be avoided by siting facilities within the study area so as to avoid impacts to such areas.	No Impact Less Than Significant

Mitigation Measure 4.6.5 on page ES-54 of the Draft EIS/EIR (Vol. 1, Executive Summary) is revised to further mitigate and reduce aquatic habitat impacts to western pond turtle.

4.6.5: Project construction would result in direct and indirect impacts on existing populations of and habitat for the western pond turtle.	No Action: Alternative 1: Alternative 2: Alternative 3: Alternative 4:	NI LSM LSM LSM LSM	The implementation of Mitigation Measure 4.6.5, which includes biological monitoring and turtle relocation, would reduce project impacts on western pond turtle populations and habitat to a less-than-significant level: **Measure 4.6.5:** Before construction activities begin, a qualified biologist shall conduct western pond turtle surveys within creeks and in other ponded areas affected by the project. Upland areas shall also be examined for evidence of nests as well as individual turtles. The project biologist shall be responsible for the survey and for the relocation of turtles. Construction shall not proceed until a reasonable effort has been made to capture and relocate as many western pond turtles as possible to minimize take. However, some individuals may be undetected or enter sites after surveys, and would be subject to mortality. If a nest is observed, a biologist with the appropriate permits and prior approval from CDFG shall move eggs to a suitable location or facility for incubation, and release hatchlings into the creek system the following autumn. In addition, concurrent with mitigation commitments to create and enhance aquatic sites for California red-legged frog (Measure 4.6.4b), CCWD shall include habitat elements in the aquatic habitat and tiger salamander plan that benefit western pond turtle. Such elements may include logs or rafts for emergent basking sites where needed and the maintenance of upland areas adjacent to ponds in a relatively open condition. ~~w~~Western pond turtles shall be included in the fish rescue operation described in Mitigation Measure 4.3.3 (Alternatives 1 and 2 only).	No Impact Less Than Significant

Mitigation Measure 4.6.10b on page ES-66 of the Draft EIS/EIR (Vol. 1, Executive Summary) is revised to include additional protection for Alameda whipsnake habitat.

4.6.10: Project construction and increased reservoir water levels would result in temporary and permanent loss of potential and occupied habitat for Alameda whipsnakes.	No Action: Alternative 1: Alternative 2: Alternative 3: Alternative 4:	NI LSM LSM LSM LSM	**Measure 4.6.10b:** Consistent with MSCS guidelines, CCWD shall provide compensation for permanent and temporary loss of upland scrub habitat that may support Alameda whipsnakes by either (1) compensating for permanent habitat losses by acquiring, protecting, and managing 2 to 5 acres of existing occupied habitat for every acre within the same area of occupied habitat that would be affected, and/or (2) enhancing or restoring 2 to 5 acres of suitable habitat near the affected areas for every acre of occupied habitat affected (CALFED, 2000). Concurrent with other project requirements to mitigate for impacts to grasslands and oak woodland habitat, as summarized in Table 4.6-17, a portion of the total grassland and oak woodland mitigation requirement shall be chosen and preserved in perpetuity to provide linkages between other chaparral and scrub habitat, or to serve as foraging and movement habitat for Alameda whipsnake near existing scrub habitat patches. Mitigation shall be provided at a 1.1:1 mitigation ratio for all areas within 2,500 feet of core scrub habitat. Therefore, under Alternatives 1, 2 and 3, about 503.1 acres of the total grassland and oak woodland mitigation commitment would be located within 2,500 feet of areas that are considered to provide core Alameda whipsnake habitat. Under Alternative 4, about 173.9 acres of grassland mitigation lands would be provided for this purpose.	No Impact Less Than Significant

Mitigation Measure 4.6.15b on page ES-71 of the Draft EIS/EIR (Vol. 1, Executive Summary) is revised to explain the benefit to special status bats of implementing Mitigation Measure 4.6.1b.

4.6.15: Project construction activities could affect nonlisted special-status mammal species (American badger, special-status bats, and San Joaquin pocket mouse).	No Action: Alternative 1: Alternative 2: Alternative 3: Alternative 4:	NI LSM LSM LSM LSM	**Measure 4.6.15b:** CCWD shall minimize impacts on special-status bats by performing preconstruction surveys and creating no-disturbance buffers around active bat roosting sites. Before construction activities (i.e., ground clearing and grading, including trees or shrub removal) within 200 feet of trees that could support special-status bats, a qualified bat biologist shall survey for special-status bats. If no evidence of bats (i.e., direct observation, guano, staining, or strong odors) is observed, no further mitigation shall be required. If evidence of bats is observed, CCWD and its contractors shall implement the	No Impact Less Than Significant

			following measures to avoid potential impacts on breeding populations: • A no-disturbance buffer of 250-feet shall be created around active bat roosts during the breeding season (April 15 through August 15). Bat roosts initiated during construction are presumed to be unaffected by the indirect effects of noise and construction disturbances. However, the direct take of individuals will be prohibited. • Removal of trees showing evidence of active bat activity shall occur during the period least likely to affect bats, as determined by a qualified bat biologist (generally between February 15 and October 15 for winter hibernacula, and between August 15 and April 15 for maternity roosts). If the exclusion of bats from potential roost sites is necessary to prevent indirect impacts due to construction noise and human activity adjacent, bat exclusion activities (e.g., installation of netting to block roost entrances) shall also be conducted during these periods. If special status bats are identified in the dam or special allowances must be made to relocate bats, CCWD will coordinate the effort in advance with CDFG. <u>Implementation of Mitigation Measure 4.6.1b requires the creation, enhancement and preservation of a variety of habitat types, including valley oak, blue oak woodlands and Fremont cottonwood series. These habitats and this mitigation would additionally benefit special status bats and provide potential roosting habitat.</u>	

Mitigation Measure 4.8.2b on page ES-75 of the Draft EIS/EIR (Vol. 1, Executive Summary) is revised to increase the ratio of the agricultural conservation easement required and to clarify how the easements are to be negotiated.

4.8.2: The project would permanently convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to nonagricultural use.	No Action: Alternative 1: Alternative 2: Alternative 3: Alternative 4:	NI SU SU LSM LS	**Measure 4.8.2b:** CCWD will provide the following mitigation for the permanent conversion of Important Farmland. For each acre of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance that is permanently converted to nonagricultural use, 1<u>.5</u> acre<u>s</u> of agricultural conservation easement will be obtained. An agricultural conservation easement is a voluntary, recorded agreement between a landowner and a holder of the easement that preserves the land for agriculture. The easement places legally enforceable restrictions on the land. The exact terms of the easement are <u>to be</u> negotiated <u>in coordination with a local agriculture land trust</u>, but restricted	No Impact. Significant and unavoidable for Alternatives 1 and 2. These mitigation measures would reduce the impact of the proposed conversion of Farmland of Statewide Importance to nonagricultural uses, but not to a less-than-significant level. Less than Significant for Alternatives 3 and 4.

			activities will include subdivision of the property, non-farm development, and other uses that are inconsistent with agricultural production. The mitigation lands must be of equal or better quality (according to the latest available FMMP data) and have an adequate water supply. In addition, the mitigation lands must be within the same county. Information presented in Table 4.8-6 indicates that this compensatory mitigation would require acquisition of easements on about ~~22~~33 acres (22 acres of impact x 1.5 acres mitigation) acres of Farmland of Statewide Importance or better quality farmland, preferably within Contra Costa County.	

The following text under Impact 4.8.4 on page ES-75 of the Draft EIS/EIR (Vol. 1, Executive Summary) is revised to clarify that with implementation of Mitigation Measures 4.8.1, 4.8.2a and revised Mitigation Measure 4.8.2b, the contribution to cumulative impacts from conversion of Important Farmland to nonagricultural uses under Alternatives 1 and 2 would be reduced to Less-than-Significant With Mitigation.

4.8.4: The project would involve changes in the environment that, due to their location or nature, could contribute to cumulative impacts from conversion of Important Farmland to nonagricultural uses.	No Action: Alternative 1: Alternative 2: Alternative 3: Alternative 4:	NI ~~SU~~ LSM ~~SU~~ LSM LSM LS	Implementation of Agricultural Resources Mitigation Measures 4.8.1 and 4.8.2 (a and b) would ~~minimize potential impacts under Alternatives 1 and 2; however, those measures would not~~ reduce cumulative impacts to less-than-significant levels for Alternatives 1 and 2. ~~The level of significance after mitigation would be a significant and unavoidable cumulative impact for Alternatives 1 and 2.~~ With Mitigation Measure 4.8.2a, Alternative 3 would not result in a cumulatively considerable contribution to a significant impact on agriculture.	No Impact Less Than Significant ~~Significant and Unavoidable for Alternatives 1 and 2; Less than Significant for Alternatives 3 and 4~~

Mitigation Measure 4.15.1b on page ES-85 of the Draft EIS/EIR (Vol. 1, Executive Summary) is revised to include mitigation to protect the Byron Vernal Pools Regional Preserve, and Mitigation Measure 4.15.1 is revised to include an additional measure (Mitigation Measure 4.15.1c) to ensure timely completion of recreational facilities.

4.15.1: Construction of the project alternatives would result in a short-term reduction of recreational opportunities in the project area due to construction activities outside the watershed and closure of the watershed to the public during the construction period, but would enhance recreational opportunities in the long-term.	No Action: Alternative 1: Alternative 2: Alternative 3: Alternative 4:	NI LSM LSM LSM LSM	**Measure 4.15.1a:** Before any recreational facilities are closed in the watershed, CCWD shall prepare and implement a public outreach program and promote the program via the web, billing inserts, and other methods to inform current and potential recreational users of the temporary closure of the Los Vaqueros Reservoir day-use facilities and inform customers of other recreational opportunities in the area. **Measure 4.15.1b:** If EBRPD's proposed Delta Trail Extension or Byron Vernal Pools Regional Preserve is developed and open to the public before or during construction of the new Delta Intake and Pump Station and Transfer-Bethany	No Impact Less Than Significant

			Pipeline, respective; CCWD shall provide EBRPD with an anticipated closure schedule; prepare and implement a public outreach program and promote the program via the web, billing inserts, and other methods to inform current and potential recreational trail users of the temporary closure of the Delta Trail Extension or Byron Vernal Pools Regional Preserve and inform customers of other recreational ~~trail~~ opportunities in the area; and place signage to the north and south of the new Delta Intake and Pump Station site or Byron Vernal Pools Regional Preserve along the trail or Armstrong Road to inform recreational users of the trail/preserve closure, alternative ~~trail~~ recreational options, and anticipated timing for the reopening. **Measure 4.15.1c:** Proposed recreational facilities displaced by reservoir expansion would be replaced within one year of completion of construction activities associated with all major facility components.	

Mitigation Measure 4.16.1 is revised to include an additional measure (Mitigation Measure 4.16.1i) in response to comment S_Caltrans-02.

4.16.1: Construction and management of project components would cause a substantial adverse change in the significance of a historical and/or unique archaeological resource as defined in Section 15064.5 or historic property or historic district, as defined in Section 106 of the NHPA (36 CFR 800), or in a previously undiscovered cultural resource.	No Action: Alternative 1: Alternative 2: Alternative 3: Alternative 4:	NI LSM LSM LSM LSM	Under both federal and state law, the first mitigation measure to be considered for a significant impact to a cultural resource is relocation of project elements so that the impact is avoided. For all project alternatives, some project elements could not be relocated to avoid impacts on cultural resources. **Measure 4.16.1i**: Los Vaqueros Reservoir Expansion; Dam Modification; and Other Sites Where Cultural Resources Cannot Be Avoided. In the event there is an inadvertent archaeological or burial discovery within State ROW, the Caltrans Office of Cultural Resources Studies, District 4, Oakland, shall be immediately contacted at (510)286-5618. A staff archaeologist will evaluate the finds within one business day of being contacted by CCWD representatives. A data recovery plan and all subsequent reports for investigations within State ROW will need to be approved by the Office of Cultural Resources Studies, District 4.	No Impact Less Than Significant

The following text for Impact 4.17.5 on page ES-91 is corrected to refer to permanent loss rather than temporary loss of agricultural land uses and revised to clarify that with implementation of Mitigation Measures 4.8.1, 4.8.2a and revised Mitigation Measure 4.8.2b, the contribution to cumulative impacts from conversion of Important Farmland to nonagricultural uses under

Alternatives 1 and 2 would be reduced to Less-than-Significant With Mitigation. Related revisions to agricultural impacts and mitigation are also provided in this chapter.

4.17.5: Construction of the project alternatives, when combined with construction of other future projects, could have a potential cumulative effect on Contra Costa County's economy as a result of permanent~~temporary~~ loss of agricultural land uses.	No Action: Alternative 1: Alternative 2: Alternative 3: Alternative 4:	NI ~~SU~~LSM ~~SU~~LSM LS LS	**Implementation of Agricultural Resources Mitigation Measures 4.8.1 and 4.8.2 (a and b):** Implementation of Agricultural Resources Mitigation Measures 4.8.1 and 4.8.2 (a and b) would minimize potential impacts under Alternatives 1 and 2; ~~however, those measures~~ and would ~~not~~ reduce cumulative impacts to less than significant levels. The level of significance after mitigation would be less than significant with mitigation ~~a significant and avoidable cumulative impact~~.	No Impact Less Than Significant ~~Significant and Unavoidable~~ for Alternatives 1 or 2; Less than Significant for Alternatives 3 and 4.

Chapter 2, Project Background

The last sentence of the first full paragraph on page 2-6 of the Draft EIS/EIR (Vol. 1, Chapter 2) is revised to reflect the change in status of the Rock Slough Fish Screen.

> ~~Reclamation has received an extension on fish screen construction until December 2008, and is preparing a request for further extension until 2018 because the requirements for screen design will change when CCWD completes the ongoing project to encase the earth-lined portion of the canal.~~ Construction of the Rock Slough Fish Screen commenced in September 2009; the screen is expected to be operational by the end of 2011.

The fourth sentence in the first full paragraph on page 2-7 of the Draft EIS/EIR (Vol. 1, Chapter 2) is removed to clarify that Western makes purchases to deliver power and is not exclusively hydroelectric.

> Power is transmitted to the Old River Intake and Pump Station over lines owned and operated by Western Area Power Administration (Western). A 230-kV line being operated at 69 kV runs from the Tracy substation near the CVP Jones Pumping Plant to the Old River Intake and Pump Station, and is being extended to the AIP. The delivered power is from one of two sources: CVP power and Modesto Irrigation District (MID) power. ~~CVP power used by CCWD is exclusively hydroelectric power.~~ MID power is generated from a variety of sources including renewables and large hydropower (48 percent), coal (28 percent), and natural gas (24 percent) (Smith, 2007). Power needs at the Transfer Facility and within the watershed are met by Pacific Gas & Electric (PG&E) through their Brentwood substation. PG&E's portfolio includes natural gas (40 percent), renewables and large hydropower (34 percent), and nuclear (24 percent) (PG&E, 2008).

Chapter 3, Description of Project Alternatives

The second paragraph on page 3-46 of the Draft EIS/EIR (Vol. 1, Chapter 3) is revised to clarify the anticipated period when recreational activities in the Los Vaqueros Watershed would be restricted under Alternatives 1, 2 and 3.

> The existing reservoir would need to be drained prior to construction, which is projected to take 6 months to one year to accomplish. During the reservoir draining period, recreation activities at the reservoir would be increasingly restricted as water levels drop. The reservoir~~It~~ would remain drained and out of service throughout the estimated 3-year construction period. ~~and refilled f~~ Following construction completion, the reservoir would be refilled, which would take approximately one year. During this refilling period, recreation activities would be reopened in phases in response to the increasing water levels. The process of draining the reservoir is described below (see "Construction").

The second full paragraph on page 3-66 of the Draft EIS/EIR (Vol. 1, Chapter 3) is revised to more accurately reflect the location of the Transfer-Bethany Pipeline alignment.

> As shown on Figure 3-21, the Transfer-Bethany Pipeline would start on the eastern side of Vasco Road near the Expanded Transfer Facility with a connection to the Delta-Transfer Pipeline and extend approximately 8.5 to 8.9 miles southeast to Bethany Reservoir. The alignment would extend southeast generally parallel to Vasco Road for about ~~3.8~~ 3.0 miles, then move away from Vasco Road to the southeast and then south for approximately 1.0 mile to connect with Armstrong Road ~~to the corner of~~ where Armstrong Road turns south. The pipeline would continue south along Armstrong Road for about 1.3 miles and then traverse southeast overland approximately 1.5 miles to a point close to the California Aqueduct. At this point, there are two options for the final southern segment of the pipeline to the Bethany Reservoir Tie-in: a Westside Option and an Eastside Option. As described below, both of these options include tunnel segments (see Figure 3-23).

The first paragraph on page 3-74 of the Draft EIS/EIR (Vol. 1, Chapter 3) is revised to clarify that, under Power Option 1, Western would provide all additional electric system infrastructure required under Alternatives 1, 2, and 3, and that Western would deliver power to project facilities, not "supply" power, which implies that Western would also generate that power.

> Under this option, Western would provide all the additional ~~electrical~~ electric system infrastructure to deliver power supply required for the expanded Los Vaqueros Reservoir system. For Alternatives 1 and 2, Western would supply additional power to both the new Delta Intake and Pump Station and the Expanded Transfer Facility. For Alternative 3, Western would ~~supply~~ deliver additional power to both the Expanded Old River Intake and Pump Station and the Expanded Transfer Facility.

The first sentence of the second paragraph on page 3-74 of the Draft EIS/EIR (Vol. 1, Chapter 3) is revised to clarify that Western would deliver power to project facilities, not "supply" power which implies that Western would also generate that power.

> Western would use its existing 230-kV transmission line from the Tracy substation to ~~supply~~ deliver power supply to a new substation.

The fifth paragraph on page 3-74 of the Draft EIS/EIR (Vol. 1, Chapter 3) is revised to clarify that, under Power Option 2, Western would provide additional electric system infrastructure required under Alternatives 1, 2 and 3.

> Under this power option, Western would provide the additional electric system infrastructure to deliver ~~electrical~~ power supply for either the new Delta Intake and Pump Station (Alternatives 1 and 2) or the Expanded Old River Pump Station (Alternative 3), but PG&E would provide the additional electrical power supply to the Expanded Transfer Facility (Alternatives 1, 2, and 3) (see **Figure 3-27**).

The first sentence in the last paragraph on page 3-74 of the Draft EIS/EIR (Vol. 1, Chapter 3) is revised to clarify that Western would deliver power to project facilities, not "supply" power, which implies that Western would also generate that power.

> Western would use its existing 230-kV transmission line corridor from the Tracy substation to ~~supply~~ deliver power supply to the Delta intakes by constructing a single-circuit, 69-kV powerline to the terminus of the existing single-circuit, 69-kV line that currently supplies power to the Old River Intake and Pump Station.

The second paragraph on page 3-91 of the Draft EIS/EIR (Vol. 1, Chapter 3) is revised to clarify that Western would issue a ROD should an action to provide power and associated facilities be approved as part of the project.

> **Western.** As a Cooperating Agency under NEPA, Western is responsible for coordinating with Reclamation in completing the EIS/EIR to comply with the Department of Energy's NEPA implementing regulations. Western would rely on the EIS/EIR when taking action to provide power and associated facilities, and would document that action in a Record of Decision. Consistent with those implementing regulations, a Purpose and Need statement specific to Western's limited role as a cooperating agency is provided.

Table 3-8, Permits and Approvals Potentially Needed For Implementation Of Los Vaqueros Reservoir Expansion Alternatives on page 3-93 of the Draft EIS/EIR (Vol. 1, Chapter 3) is revised to change Permitting Authority "State of California Reclamation Board" to "Central Valley Flood Protection Board" in response to comment S_CVFPB-01.

Encroachment Permit	~~State of California Reclamation Board~~Central Valley Flood Protection Board	Facilities within designated floodway or floodplain Facilities affecting levees under state authority

Section 4.5 Local Hydrology, Drainage, and Groundwater

The first full paragraph on page 4.5-6 of the Draft EIS/EIR (Vol. 1, Section 4.5) is revised to accurately reflect the jurisdiction of the Contra Costa County Flood Control and Water Conservation District (CCCFC), in response to comment L_CCCFC-05.

> **Contra Costa County, Flood Control and Water Conservation District**
>
> The Contra Costa County, Flood Control and Water Conservation District (CCCFC) works with local communities to provide flood protection and stormwater management for areas within its jurisdiction. ~~is empowered to control flooding and stormwater within its service area.~~ The CCCFC ~~FCWCD~~ is staffed by the County Flood Control Engineering Division staff, with the purpose of developing and implementing storm-drainage systems in Contra Costa County.

The numbering of Mitigation Measure 4.5.2 on page 4.5-29 of the Draft EIS/EIR (Vol. 1, Section 4.5) is corrected as follows to correlate with the numbering of Impact 4.5.4 (Draft EIS/EIR, Vol. 1, Section 4.5, pp. 4.5-26 through 4.5.28).

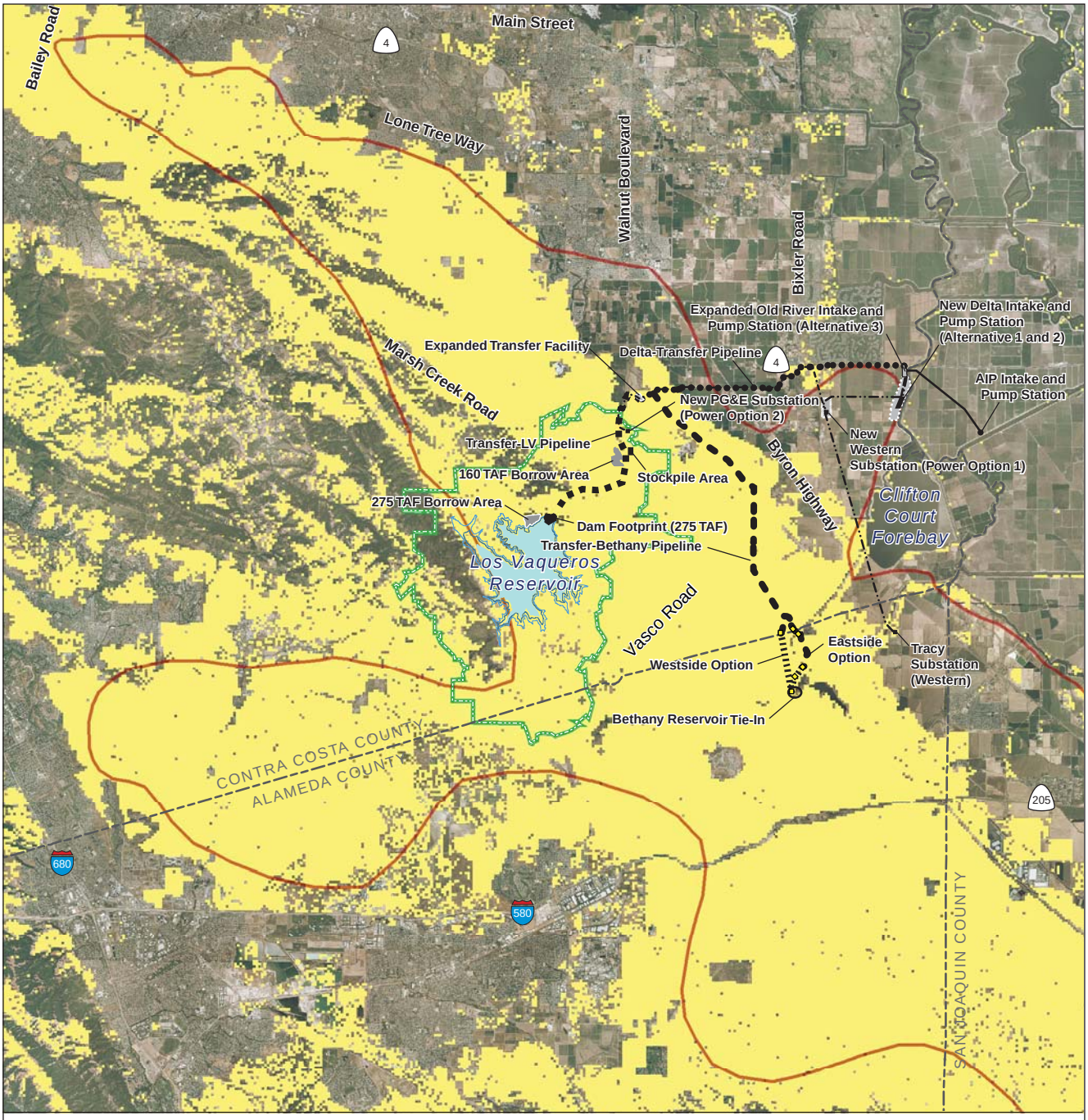
> **Measure 4.5.2~~2~~4:** CCWD shall design facilities with introduced impervious surfaces with stormwater control measures that are consistent with the Regional Water Quality Control Board's NPDES municipal stormwater runoff requirements. The stormwater control measures shall be designed and implemented to reduce the discharge of stormwater pollutants to the maximum extent practical. Stormwater controls such as bioretention facilities, flow-through planters, detention basins, vegetative swales, covering pollutant sources, oil/water separators, retention ponds, shall be designed to control stormwater quality to the maximum extent practical. In addition, CCWD shall prepare and implement a Stormwater Facility Operation and Management Plan that assigns responsibility for maintenance of stormwater facilities for the life of the project.

Section 4.6 Biological Resources

In response to comments that several Draft EIS/EIR maps lack important project components that are needed to determine wildlife impacts, **Figures 4.6-11, 4.6-15** and **4.6-16** in the Draft EIS/EIR have been updated to provide requested information.

- Figure 4.6-11 Regional Distribution of San Joaquin Kit Fox (Draft EIS/EIR, Vol. 2, Section 4.6 Biological Resources, page 4.6-53 is revised to include the location of project components.
- Figure 4.6-15 Location of Wetlands Created for California Red-Legged Frog and Stockponds within the Los Vaqueros Watershed (Draft EIS/EIR, Vol. 2, Section 4.6 Biological Resources, page 4.6-68 is revised to include names of the created wetlands and stock ponds that occur within the 275-TAF inundation zone.
- Figure 4.6-16 Existing Access Restrictions within the Los Vaqueros Watershed (Draft EIS/EIR, Vol. 2, Section 4.6 Biological Resources, page 4.6-69 is revised to include additional GIS data used in the impact assessment.

The revised figures are included on the following pages.

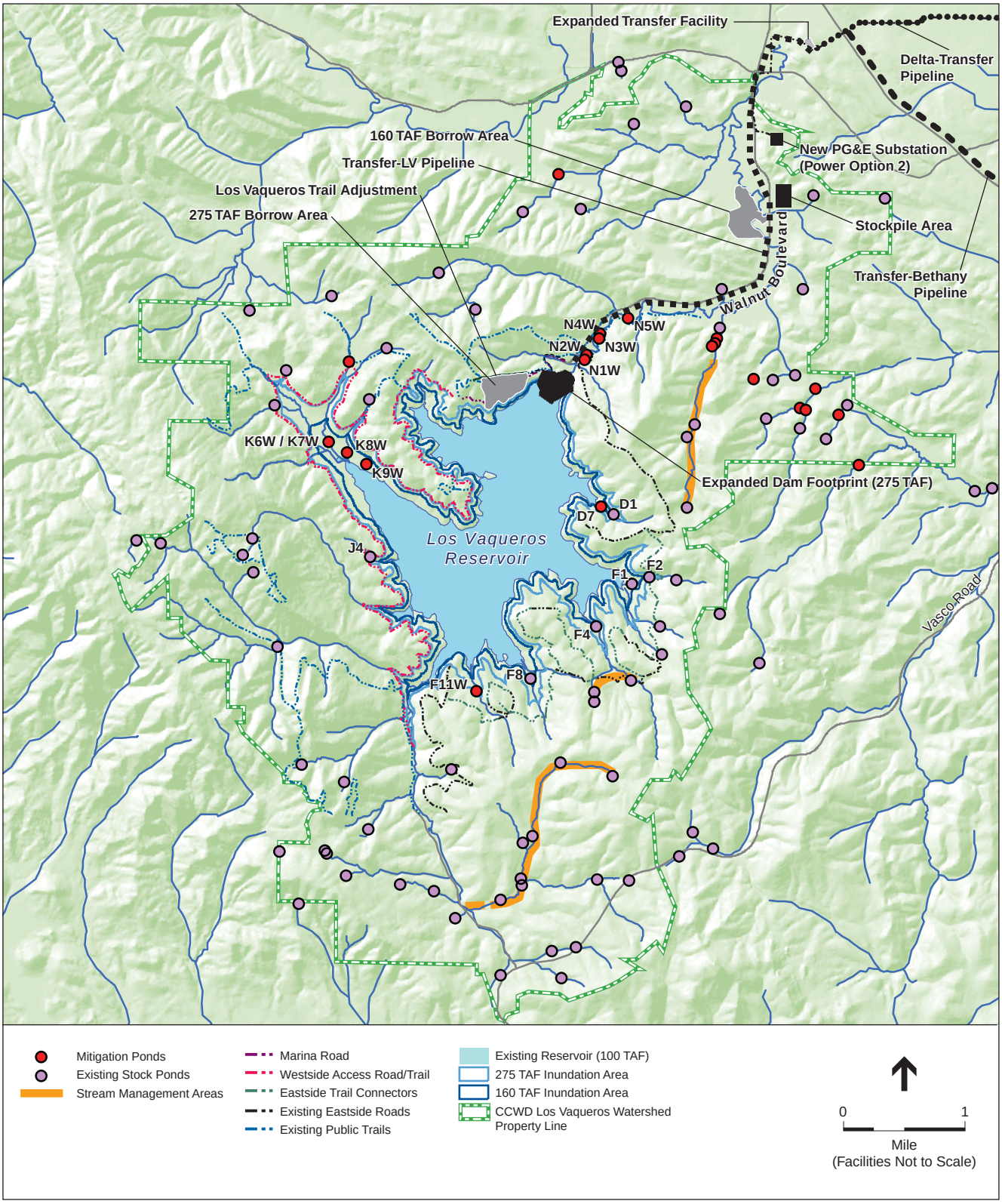


SOURCE: CDF, 2002; USDA, 2006; CNDDB, 2006; ESRI, 2006; ESA, 2008; and ESA, 2010

Los Vaqueros Reservoir Expansion Project EIS/EIR . 201110

Revised Draft EIS/EIR Figure 4.6-11

Regional Distribution of San Joaquin Kit Fox

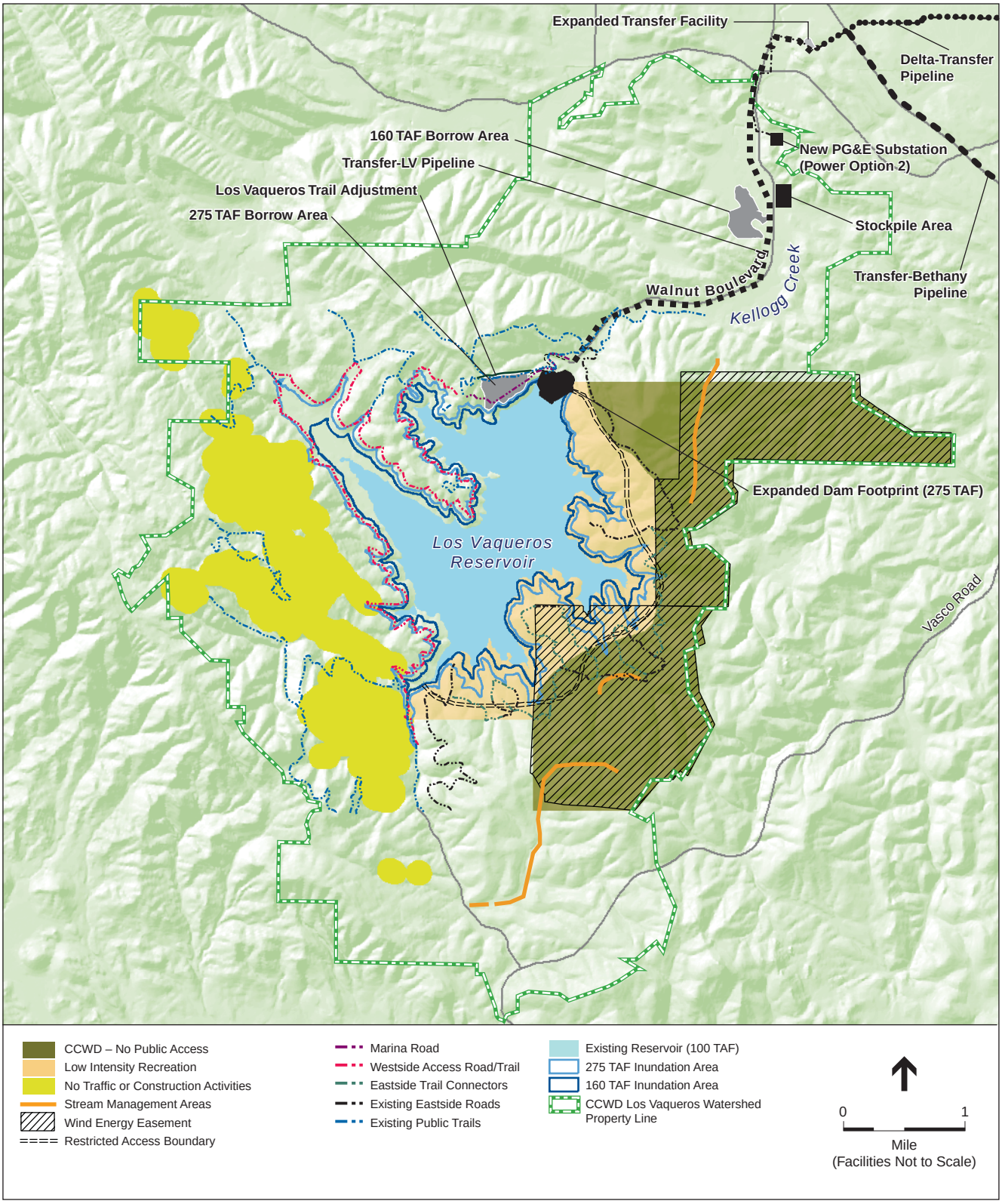


SOURCE: USGS, 1993 (base map); ESA, 2006; and ESA, 2010

Los Vaqueros Reservoir Expansion Project EIS/EIR . 201110

Revised Draft EIS/EIR Figure 4.6-15

Location of Wetlands Created for California Red-Legged Frog and Stockponds within the Los Vaqueros Watershed



SOURCE: USGS, 1993 (base map); CCWD, 2007; ESA, 2007; and ESA, 2010

Los Vaqueros Reservoir Expansion Project EIS/EIR . 201110

Revised Draft EIS/EIR Figure 4.6-16

Existing Access Restrictions within the Los Vaqueros Watershed

The last sentence of the first paragraph on page 4.6-17 of the Draft EIS/EIR (Vol. 2, Section 4.6) is revised as follows to reflect vernal pool conditions:

> Vernal pool conditions occur in a portion of the Transfer-Bethany Pipeline alignment on Armstrong Road near Byron Airport, and in areas farther south along this alignment, and are being created though are not yet functional at the adjacent Byron Vernal Pools Regional Preserve.

Mitigation Measure 4.6.2a on page 4.6-102 of the Draft EIS/EIR (Vol. 2, Section 4.6) is revised as follows to further protect wetland resources along pipeline corridors, in response to comment S_DFG-07.

> **Measure 4.6.2a:** Final project design shall avoid and minimize the fill of wetlands and other waters to the greatest practicable extent. No access vaults would be installed within the jurisdictional drainages that occur along any pipeline corridors. Areas that are avoided shall be subject to best management practices under the General National Pollutant Discharge Elimination System Permit, as described in Measure 4.5.1. The fill of wetlands at the proposed Western substation site shall be avoided by siting facilities within the study area so as to avoid impacts to such areas.

Mitigation Measure 4.6.10b on page 4.6-158 of the Draft EIS/EIR (Vol. 2, Section 4.6) is revised to include additional protection for Alameda whipsnake habitat, in response to comment S_DFG-14.

> **Measure 4.6.10b:** Consistent with MSCS guidelines, CCWD shall provide compensation for permanent and temporary loss of upland scrub habitat that may support Alameda whipsnakes by either (1) compensating for permanent habitat losses by acquiring, protecting, and managing 2 to 5 acres of existing occupied habitat for every acre within the same area of occupied habitat that would be affected, and/or (2) enhancing or restoring 2 to 5 acres of suitable habitat near the affected areas for every acre of occupied habitat affected (CALFED, 2000).
>
> Concurrent with other project requirements to mitigate for impacts to grasslands and oak woodland habitat, as summarized in Table 4.6-17, a portion of the total grassland and oak woodland mitigation requirement shall be chosen and preserved in perpetuity to provide linkages between other chaparral and scrub habitat, or to serve as foraging and movement habitat for Alameda whipsnake near existing scrub habitat patches. Mitigation shall be provided at a 1.1:1 mitigation ratio for all areas within 2,500 feet of core scrub habitat. Therefore, under Alternatives 1, 2 and 3, about 503.1 acres of the total grassland and oak woodland mitigation commitment would be located within 2,500 feet of areas that are considered to provide core Alameda whipsnake habitat. Under Alternative 4, about 173.8 acres of grassland mitigation lands would be provided for this purpose.

In response to comment O_SMD-07, Mitigation Measure 4.6.15b on pages 4.6-171 through 4.6-172 of the Draft EIS/EIR (Vol. 2, Section 4.6) is revised to add the following text after the second bullet on page 4.6-172 to explain the benefit to special status bats of implementing Mitigation Measure 4.6.1b.

Implementation of Mitigation Measure 4.6.1b requires the creation, enhancement and preservation of a variety of habitat types, including valley oak, blue oak woodlands and Fremont cottonwood series. These habitats and this mitigation would additionally benefit special status bats and provide potential roosting habitat.

Table 4.6-9 on page 4.6-84 of the Draft EIS/EIR (Vol. 2, Section 4.6) is revised to correctly show that vernal pool impacts are permanent, not temporary, in response to comment F_EPA-02. The corrections are shown on the second page of revised Table 4.6-9, below.

Section 4.8 Agriculture

Mitigation Measure 4.8.2b on pages 4.8-21 through 4.8-22 of the Draft EIS/EIR (Vol. 2, Section 4.8) is revised to increase the ratio of the agricultural conservation easement required and to clarify how the easements are to be negotiated in response to comments S_DOC-4 and L_EBRPD-38.

Measure 4.8.2b: CCWD will provide the following mitigation for the permanent conversion of Important Farmland:

For each acre of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance that is permanently converted to nonagricultural use, 1.5 acres of agricultural conservation easement will be obtained. An agricultural conservation easement is a voluntary, recorded agreement between a landowner and a holder of the easement that preserves the land for agriculture. The easement places legally enforceable restrictions on the land. The exact terms of the easement are to be negotiated in coordination with a local agriculture land trust, but restricted activities will include subdivision of the property, non-farm development, and other uses that are inconsistent with agricultural production. The mitigation lands must be of equal or better quality (according to the latest available FMMP data) and have an adequate water supply. In addition, the mitigation lands must be within the same county. Information presented in Table 4.8-6 indicates that this compensatory mitigation would require acquisition of easements on about ~~22~~33 acres (22 acres of impact x 1.5 acres mitigation) of Farmland of Statewide Importance or better quality farmland, preferably within Contra Costa County.

Impact Significance after Mitigation: Significant and unavoidable. These mitigation measures would reduce the impact of the proposed conversion of Farmland of Statewide Importance to nonagricultural uses, but not to a less than significant level.

Impact 4.8.4 on page 4.8-24 of the Draft EIS/EIR (Vol. 2, Section 4.8) regarding the project's contribution to cumulative impacts from conversion of Important Farmland to nonagricultural uses is revised to reflect the reduction in the project's contribution to cumulative effects under Alternatives 1 and 2 would be reduced to Less-than-Significant With Mitigation associated with the increased ratio of the agricultural conservation easement required under revised Mitigation Measure 4.8.2b:

Impact 4.8.4: The project would involve changes in the environment that, due to their location or nature, could contribute to cumulative impacts from conversion of Important Farmland to nonagricultural uses. (Less-than-Significant for Alternative 4; Less-than-Significant with Mitigation for Alternatives 1, 2, and 3~~; Significant and Unavoidable for Alternatives 1 or 2~~)

REVISED DRAFT EIS/EIR TABLE 4.6-9
SENSITIVE PLANT COMMUNITY IMPACTS BY PROJECT COMPONENT (ACRES)[a]

Project Component	Alternatives 1 and 2			Alternative 3			Alternative 4		
	Temporary	Permanent	Total	Temporary	Permanent	Total	Temporary	Permanent	Total
In-Watershed Facilities									
Reservoir Inundation Footprint and Dam									
Blue oak series	0.00	68.61	68.61	0.00	68.61	68.61	0.00	17.55	17.55
Bulrush-cattail series	0.00	2.50	2.50	0.08	2.50	2.50	0.00	1.95	1.95
Fremont cottonwood series	0.00	0.94	0.94	0.00	0.94	0.94	0.00	0.00	0.00
Purple needlegrass series	0.00	0.34	0.34	0.00	0.34	0.34	0.00	0.00	0.00
Saltgrass series	0.00	0.08	0.08	0.00	0.08	0.08	0.00	0.08	0.08
Valley oak series	0.00	29.15	29.15	0.00	29.15	29.15	0.00	16.42	16.42
Valley oak mitigation plantings	0.00	128.03	128.03	0.00	128.03	128.03	0.00	128.03	128.03
Blue oak mitigation plantings	0.00	9.02	9.02	0.00	9.02	9.02	0.00	9.02	9.02
Subtotal	**0.00**	**238.67**	**238.67**	**0.08**	**238.67**	**238.67**	**0.00**	**173.04**	**173.04**
Other In-Watershed Facilities [b]									
Bush seepweed series	0.38	0.00	0.38	0.38	0.00	0.38	0.38	0.00	0.38
Blue oak series	5.73	18.79	24.53	5.73	18.79	24.53	3.25	11.84	15.09
Bulrush-cattail series	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.09
Fremont cottonwood series	0.02	0.05	0.07	0.02	0.05	0.07	0.02	0.07	0.09
Purple needlegrass series	0.09	0.23	0.32	0.09	0.23	0.32	0.04	0.08	0.12
Valley oak series	0.31	0.64	0.95	0.31	0.64	0.95	0.43	0.94	1.37
Valley oak mitigation plantings	0.00	4.1	4.1	0.00	4.1	4.1	0.00	0.00	0.00
Subtotal	**6.53**	**19.71**	**26.25**	**6.53**	**19.71**	**26.25**	**4.12**	**13.02**	**17.14**
Delta Intake Facilities									
Bulrush-cattail series	0.08	0.22	0.30	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal	**0.08**	**0.22**	**0.30**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Delta-Transfer Pipeline									
Saltgrass series	0.30	0.00	0.30	0.30	0.00	0.30	0.00	0.00	0.00
Valley oak series	1.63	0.00	1.63	1.63	0.00	1.63	0.00	0.00	0.00
Subtotal	**1.93**	**0.00**	**1.93**	**1.93**	**0.00**	**1.93**	0.00	0.00	0.00
Transfer-LV Pipeline									
Bulrush-cattail series	0.24	0.00	0.24	0.24	0.00	0.24	0.00	0.00	0.00
Fremont cottonwood series	0.11	0.00	0.11	0.11	0.00	0.11	0.00	0.00	0.00
Saltgrass series	0.22	0.00	0.22	0.22	0.00	0.22	0.00	0.00	0.00
Valley oak series	0.10	0.00	0.10	0.10	0.00	0.10	0.00	0.00	0.00
Subtotal	**0.67**	**0.00**	**0.67**	**0.67**	**0.00**	**0.67**	**0.00**	**0.00**	**0.00**

REVISED DRAFT EIS/EIR TABLE 4.6-9
SENSITIVE PLANT COMMUNITY IMPACTS BY PROJECT COMPONENT (ACRES)[a]

		Alternatives 1 and 2			Alternative 3			Alternative 4		
Project Component		**Temporary**	**Permanent**	**Total**	**Temporary**	**Permanent**	**Total**	**Temporary**	**Permanent**	**Total**
Transfer-Bethany Pipeline										
Bulrush-cattail series		0.23	0.00	0.23	0.00	0.00	0.00	0.00	0.00	0.00
Bush seepweed		0.22	0.00	0.22	0.00	0.00	0.00	0.00	0.00	0.00
Saltgrass series		0.95	0.00	0.95	0.00	0.00	0.00	0.00	0.00	0.00
Northern claypan vernal pool		~~0.86~~ 0.00	~~0.00~~ 0.86	0.86	0.00	0.00	0.00	0.00	0.00	0.00
	Subtotal	**~~2.26~~ 1.40**	**~~0.00~~ 0.86**	**2.26**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Power Option 1[c]										
Northern claypan vernal pool		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bulrush-cattail series		<0.1	0.00	<0.1	<0.1	0.00	<0.1	0.00	0.00	0.00
Bush seepweed		0.0	0.00	0.0	0.0	0.00	0.0	0.00	0.00	0.00
	Subtotal	**<0.1**	**0.00**	**<0.1**	**<0.1**	**0.00**	**<0.1**	**0.00**	**0.00**	**0.00**
Power Option 2 [c]										
Northern claypan vernal pool		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bulrush-cattail series		<0.1	0.00	<0.1	<0.1	0.00	<0.1	0.00	0.00	0.00
Bush seepweed		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fremont cottonwood		**<0.1**	0.00	**<0.1**	**<0.1**	0.00	**<0.1**	0.00	0.00	0.00
	Subtotal									
Total Impacts to Sensitive Habitats										
Bush seepweed series		6.73	1.32	8.05	6.50	1.32	7.82	0.38	0.00	0.38
Blue oak series		5.73	87.40	93.14	5.73	87.40	93.14	3.25	29.39	32.64
Bulrush-cattail series		1.40	2.72	4.11	1.40	2.72	4.11	0.00	2.03	2.03
Fremont cottonwood series		0.18	0.99	1.18	0.18	0.99	1.18	0.02	0.07	0.09
Northern claypan vernal pool		~~0.93~~ 0.07	~~0.00~~ 0.86	0.93	0.07	0.0	0.07	0.00	0.00	0.00
Purple needlegrass series		0.09	0.56	0.66	0.09	0.56	0.66	0.04	0.08	0.12
Saltgrass series		1.48	0.08	1.56	0.52	0.08	0.60	0.00	0.08	0.80
Valley oak series		2.03	29.79	31.83	2.04	29.79	31.83	0.43	17.36	17.79
Valley oak mitigation plantings		0.00	132.13	132.13	0.00	132.13	132.13	0.00	132.13	132.13
Blue oak mitigation plantings		0.00	9.02	9.02	0.00	9.02	9.02	0.00	9.02	9.02

[a] "Temporary" impacts, as used in this analysis, include habitats that would be degraded or similarly impaired, with features being restored *in situ* to emulate pre-project conditions. "Permanent" impacts are those that would permanently destroy features, with compensatory mitigation provided in alternate locations.

[b] Other in-watershed facilities under Alternatives 1, 2, and 3 include the marina, marina access road, borrow area, picnic areas, trailhead parking, westside access road, eastside trail, stockpile area, and parking areas. Facilities under Alternative 4 include the above facilities, and 160 TAF borrow area.

[c] Note that plant community impacts for Power Supply Infrastructure do not include the acreage of features that will be avoided by facilities or spanned by powerlines.

SOURCE: ESA unpublished data, 2006-2008

Text under the discussions for Alternatives 1 and 2 under Impact 4.8.4 on pp 4.8-25 through 4.8-26 of the Draft EIS/EIR (Vol. 2, Section 4.8) is revised as follows to reflect the reduction in the project's contribution to cumulative effects associated with the increased ratio of the agricultural conservation easement required under revised Mitigation Measure 4.8.2b:

Alternative 1

Text on Draft EIS/EIR page 4.8-25, final paragraph under the Alternative 1 discussion is revised as follows:

The incremental contribution of farmland conversion associated with the proposed project would be a cumulatively considerable contribution to a significant cumulative impact. This impact would be significant but would be mitigated to Less-than-Significant with implementation of Mitigation Measures 4.8.2a and 4.8.2b, which provide for minimizing construction effects on farmland during and following project construction activities as well as compensation through acquisition of agricultural conservation easements at a ratio of 1.5 to 1.

Alternative 2

Text on Draft EIS/EIR, pp 4.8-25 and 4.8-26, under the Alternative 2 discussion is revised as follows:

Under Alternative 2, which would construct the same facilities as Alternative 1, the proposed project would contribute to a significant cumulative impact with respect to the cumulative conversion of Farmland of Statewide Importance to nonagricultural use~~, even with implementation of Mitigation Measure 4.8.2a and 4.8.2b~~. The incremental contribution of farmland conversion associated with the proposed project would be a cumulatively considerable contribution to a significant cumulative impact. Under Alternative 2, this impact would ~~therefore~~ be significant, but would be mitigated to a less than significant level with implementation of Mitigation Measures 4.8.2a and 4.8.2b, which provide for minimizing construction effects on farmland during and following project construction activities as well as compensation through acquisition of agricultural conservation easements at a ratio of 1.5 to 1.

The last two paragraphs under Impact 4.8.4 on page 4.8-26 of the Draft EIS/EIR (Vol. 2, Section 4.8) are revised to clarify that with implementation of Mitigation Measures 4.8.1, 4.8.2a and revised Mitigation Measure 4.8.2b, the contribution to cumulative impacts from conversion of Important Farmland to nonagricultural uses under Alternatives 1 and 2 would be reduced to Less-than-Significant With Mitigation.

Mitigation Measure

Implementation of Agricultural Resources Mitigation Measures 4.8.1 and 4.8.2 (a and b) would ~~minimize potential impacts under Alternatives 1 and 2; however, those measures would not~~ reduce cumulative impacts to less than significant levels for Alternatives 1 and 2. ~~The level of significance after mitigation would be a significant and unavoidable cumulative impact for Alternatives 1 and 2.~~ With Mitigation Measure 4.8.2a, Alternative 3 would not result in a cumulatively considerable contribution to a significant impact on agriculture.

Impact Significance after Mitigation: ~~Significant and Unavoidable for Alternatives 1 or 2;~~ Less-than-Significant ~~for Alternatives 3 and 4~~.

Section 4.9 Transportation and Circulation

The last bullet on page 4.9-9 of the Draft EIS/EIR (Vol. 2, Section 4.9) is revised to clarify that the bullet item is referring to the pipeline work site and not the project work sites in response to comment L_CCCDCD-03.

> An estimated 25 percent of the excavated soil would be hauled away from the pipeline work sites for disposal or reuse elsewhere.

Section 4.10 Air Quality

Table 4.10-10 on page 4.10-34 of the Draft EIS/EIR (Vol. 2, Section 4.10) is revised to include the incremental increase in project generated electrical use GHG emissions when compared to existing conditions, and to clarify that the last column reflects the incremental increase in the future without the project.

TABLE 4.10-10 (REVISED)
INDIRECT GHG EMISSIONS FROM PROJECT ELECTRICITY USE
(METRIC TONS/YEAR)[1]

Operational Emissions	Total Metric Tons/Year CO_2E	Incremental Increase (vs Existing)[3]	Incremental Increase (vs Future Without Project)[4] ~~Increase in Metric Tons/Year CO_2E~~[3]
Existing	23,300	n/a	n/a
Future Without Project[2]	26,000	2,700	n/a
Alternative 1	33,800	10,500	7,900
Alternative 2	34,900	11,600	9,000
Alternative 3	30,400	7,100	4,400
Alternative 4	26,400	3,100	500

1 Metric tons/year of CO_2E were calculated using the *California Climate Action Registry General Reporting Protocol* emission factors and methodology. See Appendix H for more details.
2 "Future Without Project" includes power required for pumping at Banks and Jones Pumping Plants needed to deliver water to the SBA, SCVWD via San Luis Reservoir, and power required at CCWD's pumping facilities.
3 "Incremental Increase (vs Existing)" shows the increase in the total emissions for each alternative compared existing conditions.
~~43~~ "Incremental Increase (vs Future Without Project)" ~~"Increase in Metric Tons/Year"~~ shows the increase in the total emissions for each alternative compared to the emissions for "Future Without Project" conditions

SOURCE: ESA, 2008; California Climate Action Registry, 2008; CCWD, 2008

The third full paragraph on page 4.10-36 of the Draft EIS/EIR (Vol. 2, Section 4.10) is revised to clarify what information is presented in the revised Table 4.10-10.

> With implementation of the project alternatives GHG emissions during construction for a worse-case year would range from approximately 19,600 metric tons CO_2E (Alternative 4) to 22,550 metric tons CO_2E (Alternatives 1 and 2). These construction emissions represent

approximately 0.02 to 0.03 percent, of Bay Area GHGs emitted in 2002, respectively.[1] As shown in Table 4.10-10, the increase in indirect GHG emissions from project electricity use for each alternative versus the "Existing" scenario would be no more than 11,600 metric tons/year CO_2E. Also~~As~~ shown in Table 4.10-10~~8~~, the increase in indirect GHG emissions from project electricity use for each alternative versus the "Future Without Project" scenario would be no more than 9,000 metric tons/year CO_2E. In comparison to Bay Area GHG emissions, the project alternatives' ~~future~~ increases in annual operational emissions versus "Existing" and versus "Future Without Project", respectively, represent approximately 0.01 and 0.009 percent (Alternative 1), 0.01 and 0.01 percent (Alternative 2), 0.008 and 0.005 percent (Alternative 3), and 0.004 and 0.0006 percent (Alternative 4) of total Bay Area GHGs emitted in 2002. The 2020 GHG emissions limit for California, as adopted by CARB in December of 2007 is approximately 427 million metric tons of CO_2E. In comparison to this emissions limit, ~~T~~the proposed project's annual ~~contribution~~ operational emissions versus "Existing" and versus "Future without Project", respectively, represent ~~would be~~ approximately 0.002 and 0.002 percent (Alternative 1), 0.003 and 0.002 percent (Alternative 2), 0.002 and 0.001 percent (Alternative 3), and 0.0007 and 0.0001 percent (Alternative 4) of this total 2020 emissions limit.

Section 4.12 Utilities and Public Service Systems

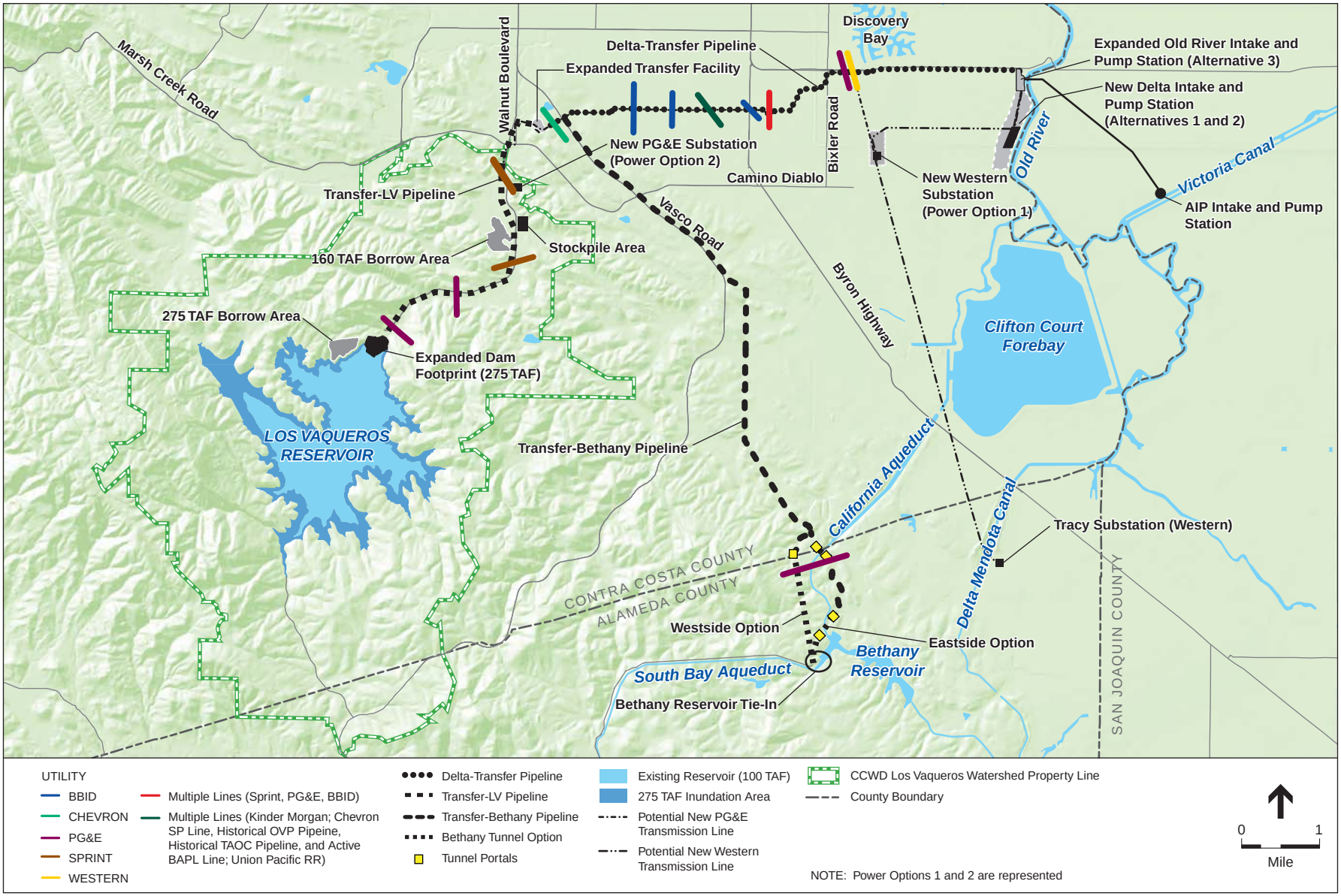
Figure 4.12-1 Potential Utility Crossings, on page 4.12-3 of the Draft EIS/EIR (Vol. 2, Section 4.12) is revised as shown on the following page. The revised figure shows both active and historic utility pipelines in response to comment O_CEMC-01.

The third full paragraph on page 4.12-5 of the Draft EIS/EIR (Vol. 2, Section 4.12) is revised to clarify the location of existing utility infrastructure in the Los Vaqueros Reservoir watershed in response to comment O_CEMC-01**.**

Utility Infrastructure

Major utility infrastructure within the Los Vaqueros Reservoir watershed includes three buried natural gas pipelines; an overhead PG&E electricity transmission line; two buried PG&E gas lines; and a buried fiber-optic communications line operated by Sprint. To the northeast of the Los Vaqueros Reservoir watershed lie several irrigation lines owned by BBID, ~~two~~ multiple buried petroleum pipelines (active and historical) owned and operated by Chevron/Unocal and Kinder Morgan, a few Sprint fiber-optic cable lines, a PG&E natural gas line, and an overhead electricity line operated by Western.

[1] The Bay Area Air Quality Management District reported regional Bay Area GHGs emissions in 2002 at approximately 85 million CO_2E tons. Bay Area 2002 GHG emissions are used as the baseline for determining whether a project's contributions are significant as these are the most recent emissions inventory for the Bay Area.



SOURCE: USGS, 1993 (base map); CEMC, 2009; ESA, 2008; and ESA, 2010

Los Vaqueros Reservoir Expansion Project EIS/EIR . 201110

Revised Draft EIS/EIR Figure 4.12-1

Potential Utility Crossings

The fourth full paragraph on page 4.12-12 of the Draft EIS/EIR (Vol. 2, Section 4.12) is revised to clarify that existing pipelines may potentially be disrupted during construction of Alternative 1 or 2 in response to comment O_CEMC-1.

> As shown in Figure 4.12-1, the Delta-Transfer Pipeline would cross as many as six BBID irrigation lines; three active petroleum pipelines (Chevron's Kettleman-Los Medanos Pipeline, Chevron's Bay Area Products Line, and one Kinder Morgan pipeline) and two historical petroleum pipelines (Chevron's double Tidewater Associated Oil Company Pipeline and Old Valley Pipeline); a Sprint fiber-optic cable line; a Western transmission overhead line; and two PG&E 500 kV overhead transmission lines. The Delta-Transfer pipeline would also cross the Union Pacific Railroad tracks. As described in Section 3.5.2, Pipeline Construction, the bore-and-jack method would be used to pass under the railroad crossing.

4.15 Recreation

The fourth full paragraph on page 4.15-12 of the Draft EIS/EIR (Vol. 2, Section 4.15) is revised to clarify the anticipated period when recreational activities in the Los Vaqueros Watershed would be restricted under Alternative 1.

> Alternative 1 has the potential to impact recreational opportunities and experiences in the short-term due to the 3-year closure of the watershed, additional 1-year reservoir draining period when recreation activities at the reservoir would be increasingly restricted and 1-year refilling period when recreation activities would be reopened in phases, ~~2-year restriction on water-related activities are restricted (i.e., water recreation would be closed a total of 5 years to allow for reservoir drainage, dam modification construction and expanded reservoir refill)~~, and a potential …

The first full paragraph on page 4.15-16 of the Draft EIS/EIR (Vol. 2, Section 4.15) is revised to correct data presented for Los Vaqueros Watershed visitor use in 2007-2008.

> According to CCWD staff, in 2002, about 90 percent of Los Vaqueros visitor use was for fishing (Nuzum, 2002). More recently, during the 2007-2008 fiscal year, 17,913 ~~20,237~~, or 75 ~~85~~ percent of the visitors to the reservoir, purchased daily fishing access pass permits.

The first paragraph under Impact 4.15-3 on page 4.15-19 of the Draft EIS/EIR (Vol. 2, Section 4.15) is revised to clarify the anticipated period when recreational activities in the Los Vaqueros Watershed would be restricted under Alternatives 1, 2 and 3.

> As described under Impact 4.15.1, the project under Alternatives 1, 2, and 3 would result in a short-term reduction of recreational opportunities during ~~the~~ reservoir ~~drawdown~~ construction ~~and subsequent refilling~~ due to the need to close the Los Vaqueros Watershed and all recreational activities to public use, and during the 1-year pre-construction draining period and 1-year post-construction refill period when recreation activities would be restricted.

Mitigation Measure 4.15.1b on page 4.15-15 of the Draft EIS/EIR (Vol. 2, Section 4.15) is revised to include mitigation to protect the Byron Vernal Pools Regional Preserve, in response to several comments about the new preserve.

> **Measure 4.15.1b:** If EBRPD's proposed Delta Trail Extension or Byron Vernal Pools Regional Preserve is developed and open to the public before or during construction of the new Delta Intake and Pump Station and Transfer-Bethany Pipeline, respectively, CCWD shall provide EBRPD with an anticipated closure schedule; prepare and implement a public outreach program and promote the program via the web, billing inserts, and other methods to inform current and potential recreational trail users of the temporary closure of the Delta Trail Extension or Byron Vernal Pools Regional Preserve and inform customers of other recreational ~~trail~~ opportunities in the area; and place signage to the north and south of the new Delta Intake and Pump Station site or Byron Vernal Pools Regional Preserve along the trail or Armstrong Road to inform recreational users of the trail/preserve closure, alternative ~~trail~~ recreational options, and anticipated timing for the reopening.

Mitigation Measure 4.15.1 of the Draft EIS/EIR (Vol. 2, Section 4.15, pg. 4.15-15) is added to ensure timely completion of recreational facilities.

> **Measure 4.15.1c:** Recreational facilities displaced by reservoir expansion would be replaced within one year of completion of construction activities associated with all major facility components.

4.16 Cultural and Paleontological Resources

Mitigation Measure 4.16.1 on pages 4.16-47 through 4.16-49 of the Draft EIS/EIR (Vol. 2, Section 4.16) is revised to include an additional mitigation measure in response to a comment S_Caltrans-02.

> **Measure 4.16.1i**: Los Vaqueros Reservoir Expansion; Dam Modification; and Other Sites Where Cultural Resources Cannot Be Avoided. In the event there is an inadvertent archaeological or burial discovery within State ROW, the Caltrans Office of Cultural Resources Studies, District 4, Oakland, shall be immediately contacted at (510)286-5618. A staff archaeologist will evaluate the finds within one business day of being contacted by CCWD representatives. A data recovery plan and all subsequent reports for investigations within State ROW will need to be approved by the Office of Cultural Resources Studies, District 4.

Section 4.17 Socioeconomics

Impact statement 4.17-5 on page 4.17-20 of the Draft EIS/EIR (Vol. 2, Section 4.17) is revised to correctly refer to permanent loss rather than temporary loss of agricultural land uses and to reflect the reduction in the project's contribution to cumulative effects associated with the increased ratio of the agricultural conservation easement required under revised Mitigation Measure 4.8.2b.

> **Impact 4.17.5: Construction of the project alternatives, when combined with construction of other future projects, could have a potential cumulative effect on Contra Costa County's economy as a result of ~~temporary~~ permanent loss of agricultural**

land uses. (Less-than-Significant for Alternatives 1 – 4. ~~3 or 4; Significant and Unavoidable Less Than Significant for Alternatives 1 or and 2~~)

Text under the discussions for Alternatives 1 and 2 under Impact 4.17-5 on pp 4.17-20 through 4.17-21 of the Draft EIS/EIR (Vol. 2, Section 4.17) is revised as follows to reflect the reduction in the project's contribution to cumulative effects associated with the increased ratio of the agricultural conservation easement required under revised Mitigation Measure 4.8.2b:

Alternative 1

Impact 4.17.2 indicates that the socioeconomic impacts associated with temporary loss of agricultural land use resulting from construction activities would be Less-than-Significant. Due to the small area affected by these impacts and the temporary nature of the construction activities, these impacts were determined to be negligible in relation to the overall regional economy. However, in Section 4.8, the agricultural analysis determined that the project would have significant cumulative impact on the region's agricultural resources because the project would result in the permanent reduction of Important Farmland (Impact 4.8.4).

With or without the project, the trend of land conversion from agricultural uses to urban and other non-agricultural uses (e.g., wildlife habitat enhancement) in the Central Valley would continue. It is likely that other future projects, ~~such as expansion of Discovery Bay into the Cecchini Ranch property~~ particularly large development projects that would require large tracts of land, would convert agricultural lands to non-agricultural uses; these lands may or may not be designated Prime Farmland, Unique Farmland, and Farmland of Statewide Importance and may or may not be under Williamson Act contracts.

As a number of the proposed projects listed in Appendix I, "Local Development Projects Considered in Cumulative Impact Analyses," are not yet in the environmental planning stage, the acreage of Prime Farmland, Unique Farmland, and Farmland of Statewide Importance that could be converted by these projects is not known. However, in general, the acreage of Prime Farmland, Unique Farmland, and Farmland of Statewide Importance in Contra Costa County and, to a lesser degree, in Alameda County, is expected to decline. The proposed project would contribute incrementally to this decline. However, with implementation of Mitigation measure 4.8.2b, which provides for acquisition of agricultural conservation easements at a ratio of 1.5:1 to protect farmland from future development, the incremental contribution of farmland conversion associated with the proposed project would not be a cumulatively considerable contribution to an existing significant cumulative impact. This impact would therefore be Less-than-Significant ~~and unavoidable~~ with Mitigation.

Alternative 2

Under Alternative 2, which would construct the same facilities as Alternative 1, the project would result in a Less-than-Significant ~~and unavoidable~~ cumulative impact with respect to the cumulative conversion of Farmland of Statewide Importance to non-agricultural use., ~~even~~ with implementation of mitigation Measure 4.8.2a and 4.8.2b. The incremental contribution of farmland conversion associated with the proposed project would not be a

cumulatively considerable contribution to an existing significant cumulative impact. Under Alternative 2, this impact would ~~therefore~~ be Less-than-Significant ~~and unavoidable~~ with Mitigation.

The first two paragraphs on page 4.17-22 of the Draft EIS/EIR (Vol. 2, Section 4.17) are revised to clarify that with implementation of Mitigation Measures 4.8.1, 4.8.2a and revised Mitigation Measure 4.8.2b, the contribution to cumulative impacts from conversion of Important Farmland to nonagricultural uses would be reduced to Less-than-Significant.

Mitigation Measure

Implementation of Agricultural Resources Mitigation Measures 4.8.1 and 4.8.2 (a and b) would minimize potential impacts under Alternatives 1 and 2; ~~however, those measures~~ and would ~~not~~ reduce cumulative impacts to less than significant levels. The level of significance after mitigation would be Less-than-Significant with Mitigation ~~a significant and avoidable cumulative impact~~.

Impact Significance after Mitigation: Less-than-Significant ~~and Unavoidable for Alternatives 1 or 2; Less than Significant for Alternatives 3 and 4~~.

5.3 Updated Draft EIS/EIR Sections 4.2 and 4.3

This section contains updated Section 4.2, Delta Hydrology and Water Quality and Section 4.3 Delta Fisheries and Aquatic Resources, in their entirety from the Draft EIS/EIR (Vol. 1, Chapter 4) with text revisions that reflect the results of updated modeling analyses. The following introductory text explains why additional modeling analyses have been completed since publication of the Draft EIS/EIR and what they entailed.

Delta Hydrology and Water Quality

Section 4.2 of the Draft EIS/EIR has been updated to incorporate regulations influencing the affected environment and project assumptions that have occurred since the analysis presented in the Draft EIS/EIR was completed, as well as other modifications made in response to comments on the Draft EIS/EIR. The updated Section 4.2 presents modeling methodology and results of the analysis of potential effects on Delta hydrology and water quality, based on the updated modeling analysis performed for the Final EIS/EIR. The updated Section 4.3 presents modeling methodology and results of impacts analysis for Delta fisheries and aquatic resources. Additional information on modeling methodology and results for these updated analyses are presented in the updated Appendix C (Vol. 4 on CD).

The updates from the Draft EIS/EIR analysis that have been included in the modeling analysis performed for the Final EIS/EIR include:

- **An updated presentation of the 2008 U.S. Fish and Wildlife Services (USFWS) Operations Criteria and Plan (OCAP) Biological Opinion (BO) effects on Delta operations is included in the updated modeling analysis.** On December 15, 2008, USFWS issued an OCAP BO for delta smelt and its critical habitat governing the coordinated operations of CVP and SWP. The terms of the USFWS OCAP BO require changes to the prior operation of the CVP and SWP in the Delta. While this Biological Opinion was released prior to publication of the Draft EIS/EIR, the resulting changes in CVP and SWP operations had not yet been incorporated into the CalSim II model; instead two sets of assumptions were used in the Draft EIS/EIR (moderate restrictions and severe restrictions) to bracket the potential effects of the BO. To ensure that the modeling analysis of the Los Vaqueros Reservoir Expansion Project more precisely captures any effects of the project alternatives resulting from the operation of the CVP and SWP under the OCAP BOs, the analyses performed for this Final EIS/EIR have been updated to reflect the 2008 USFWS BO using CalSim II studies completed in August 2009 that incorporate the requirements of the OCAP BOs.

- **The effects of the 2009 National Marine Fisheries Service (NMFS) OCAP BO on Delta and upstream reservoir operations are included in the updated modeling analysis.** On June 4, 2009, the NMFS issued an OCAP BO for listed anadromous fish and marine mammal species and their critical habitats, including the Delta. The terms of the NMFS OCAP BO require changes to the prior operation of the CVP and SWP in the Delta. These changes to background conditions are now incorporated into the CalSim II model, and have been included in the updated modeling analysis presented in this section.

- **Assumptions about regulation of Old and Middle River (OMR) flow have been updated to reflect the terms of the USFWS and NMFS OCAP BOs.** The modeling analysis for the Draft EIS/EIR included restrictions on CVP and SWP exports from the Delta that were based on terms in the December 2007 court order in *NRDC vs. Kempthorne*, as modified to include further OMR flow requirements anticipated to be required for protection of longfin smelt. Due to uncertainty about future implementation of OMR flow restrictions at the time the Draft EIS/EIR analysis was performed, a bracketed approach was used in that analysis in which the best available information was used to predict the likely high and low bounds for OMR flow restrictions (moderate and severe restrictions). The analysis performed for the Final EIS/EIR incorporates updated modeling of CVP and SWP operations under the USFWS and NMFS OCAP BOs, which both include restrictions on OMR flows. Diversions at the CCWD Old River and AIP Intakes are included in the calculation of OMR net flow within the CalSim II model. The bracketed approach was not used in the CalSim II modeling. Remaining uncertainty regarding the implementation of OMR flow restrictions, which are adaptively managed based on real-time Delta water quality and fishery monitoring, is addressed in the Final EIS/EIR analysis through the use of multi-year model simulations, which capture a range of operations and potential effects.

- **Operations of the Los Vaqueros Reservoir Expansion Project were modified in response to comments received on the Draft EIS/EIR.** Both of the OCAP BOs described above contain new regulations on flow in OMR that are designed to protect the Delta fisheries. The studies include modeling assumptions that capture the export restrictions based on OMR flow. Operational assumptions have been updated for Alternatives 1 and 2 of the Los Vaqueros Reservoir Expansion Project so that increased diversions for Delta Supply Restoration or Dedicated Storage of Environmental Water are not made for those project alternatives when the new OMR flow regulations are controlling CVP and SWP exports from the Delta. Operations for Delta Supply Restoration and additional Dedicated Storage for Environmental Water are not included in Alternative 4; therefore, this updated assumption did not affect the analysis of Alternative 4.

- **Operational requirements from the new CCWD California Department of Fish and Game (CDFG) Incidental Take Permit (ITP) are included in the updated analysis.** In connection with permitting for the CCWD Alternative Intake Project (AIP), on November 5, 2009, the CDFG issued an ITP for the CCWD operations. This permit governs all CCWD operations in the Delta, and includes an extension to the no fill period for Los Vaqueros Reservoir. This modification is included in the updated analysis presented in this section.

- **The Rock Slough Fish Screen is assumed to be implemented under 2005 level of development with-project conditions and under 2030 level of development with- and without-project conditions.** As described in 3.1.3 of the Final EIS/EIR (Vol. 4, Section 3.1, Master Response 1: Project Purpose and Description), the Rock Slough Fish Screen is under construction; operation is scheduled to begin in 2011. Accordingly, the operation of the Rock Slough Fish Screen is included in model simulations of the project alternatives, and is also included in the Future Without Project condition. The Rock Slough Fish Screen is not included in model analysis of the Existing Condition because it was not approved when environmental review commenced.

- **Operational coordination between CCWD, Reclamation and DWR is included in the updated analysis based upon recent agency consultations.** CCWD, Reclamation and DWR have reviewed Delta water supply operations in light of the recently issued OCAP BOs and in light of comments on the Draft EIS/EIR, and have developed a potential set of modified operations for CCWD that improve overall coordination of Delta water operations, while maintaining water supply and water quality for CCWD, CVP and SWP. Operations include:

- The 75 to 90 day no fill period for Los Vaqueros Reservoir would be implemented in half or all of February and all of March and June, and the 30-day CCWD no diversion period would be implemented in March. This reduces the potential influence of filling Los Vaqueros Reservoir when OMR flow restrictions govern Delta operations. This operational modification is subject to consultation with USFWS, NMFS, and CDFG.

- During periods when OMR flow restrictions occur, the screened Rock Slough Intake would be used to the maximum extent possible for direct diversions to CCWD customers while maintaining the chloride delivery goal.

- Releases from Los Vaqueros Reservoir would be minimized from October through December, while still maintaining the chloride delivery goal for CCWD customers. Los Vaqueros Reservoir also would be filled during this period when water quality allows.

- When diversions from the Freeport Intake are available to CCWD pursuant to the agreement with EBMUD for shared use of this intake, these diversions would be used to fill Los Vaqueros Reservoir whenever other Delta water quality and CCWD operational conditions allow. This minimizes the potential effect of filling Los Vaqueros Reservoir on OMR flow.

These modified operations are included in the updated analysis of Alternatives 1, 2 and 4 presented in this section.

- Alternative 3 has not been included in the updated modeling analysis because the operations scenario presented in the Draft EIS/EIR is not environmentally superior to the proposed project or other alternatives. In the modeling analysis performed for the Draft EIS/EIR, Alternative 3 was found to have significant and unavoidable fishery impacts. Alternative 3 was considered as the Final EIS/EIR was prepared, but no improvement in environmental effects was anticipated with inclusion of the modified operations described above. Accordingly, Alternative 3 was not included in the updated modeling analysis performed for the Final EIS/EIR because it would not be environmentally superior to the other alternatives. See additional discussion of Alternative 3 in Chapter 2, Section 2.2, of the Final EIS/EIR (Vol. 4).

The results of the updated analysis, which are presented in the updated Sections 4.2 and 4.3, indicate that the analysis used in the Draft EIS/EIR captured the environmental impacts associated with the project alternatives. The updated modeling does not indicate any new or substantially more severe significant impacts on Delta water quality and aquatic resources. The coordinated operations evaluated in the Final EIS/EIR would further minimize the potential for the expansion project to adversely affect other CVP and SWP operations.

Delta Fisheries and Aquatic Resources

Section 4.3 of the Draft EIS/EIR has also been updated to include analysis based on the updated modeling analysis performed for the Final EIS/EIR. Updates to the analysis of potential impacts to fisheries and aquatic resources made since the Draft EIS/EIR include:

- The updated modeling described above for Delta hydrology and water quality is used as the basis for the analysis of Delta fisheries and aquatic resources presented in this section.

- The modeling analysis of potential impacts to fish in the Delta has been refined by adopting the Potential Entrainment Index methodology developed by DWR. This methodology is described in this section and in Appendix C (Vol. 4 on CD).

The updated Section 4.3 presents the results of analysis of potential effects on Delta fisheries and aquatic resources, based on the updated modeling analysis performed for the Final EIS/EIR. As described in Chapter 2 (Section 2.2) of this Final EIS/EIR (Vol. 4), Alternative 3 is not included in the updated modeling analysis. The Final EIS/EIR continues to analyze the physical features of Alternative 3 because it is possible that a future project could combine these physical features with substantially different operating assumptions. Therefore, in the Final EIS/EIR, all impact analyses that depend on the updated modeling analysis exclude Alternative 3 and all impact analyses that do not rely on modeling continue to address Alternative 3. For Section 4.3, this means that all impact analyses other than those describing Impacts 4.3.6, 4.3.7 and 4.3.9 continue to address Alternative 3.

The results of the updated analysis indicate changes to the estimated levels of project benefits in some cases, but do not indicate any changes in the conclusions of the potential environmental impacts of the project alternatives.

4.2 Delta Hydrology and Water Quality (Updated)

This section describes the existing surface water hydrology, supply, management, and water quality conditions of the Sacramento–San Joaquin Delta (the Delta), as well as the existing conditions within the Sacramento River downstream of Lake Shasta. The section also discusses the regulatory setting, including water rights and water service contracts, and provides an analysis of potential water supply, water quality, and water level impacts resulting from implementation of the project alternatives.

4.2.1 Affected Environment

Regulatory Setting

Federal

Clean Water Act

The Clean Water Act establishes the basic structure for regulating discharges of pollutants into "waters of the United States." The act specifies a variety of regulatory and non-regulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff.

Section 303(d) requires states, territories, and authorized tribes to develop a list of water-quality limited segments of rivers and other water bodies under their jurisdiction. These waters on the list do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. The law requires that these jurisdictions establish priority rankings for waters on the list and develop action plans, called Total Maximum Daily Loads (TMDL), to improve water quality.

Delta waterways are included in the Central Valley Regional Water Quality Control Board's (CVRWQCB) list of 303(d) impaired waterways for the following constituents: chlorpyrifos, DDT (dichlorodiphenyltrichloroethane), diazinon, exotic species, group A pesticides, mercury, unknown toxicity, organic enrichment/low dissolved oxygen (Stockton Ship Canal), and electrical conductivity(water export area). Of these constituents, the U.S. Environmental Protection Agency (EPA) has approved TMDLs for the following: organic enrichment/low dissolved oxygen. TMDLs for other constituents remain under planning or development.

Section 401 requires every applicant for a federal permit or license for any activity that may result in a discharge to a water body to obtain a water quality certification that the proposed activity will comply with applicable water quality standards.

Section 402 regulates point- and nonpoint-source discharges to surface waters through the National Pollutant Discharge Elimination System (NPDES) program. In California, the State Water Resources Control Board (SWRCB) oversees the NPDES program, which is administered by the Regional Water Quality Control Boards (RWQCBs). The NPDES program provides for both general permits (those that cover a number of similar or related activities) and individual permits.

Section 404 of the Clean Water Act establishes a program to regulate the discharge of dredged and fill material into waters of the U.S., including some wetlands. Activities in waters of the U.S. that are regulated under this program include fills for development, water resource projects (e.g., dams and levees), infrastructure development (e.g., highways and airports), and conversion of wetlands to uplands for farming and forestry. Under Section 404(b)(1) of the Act, the Least Environmentally Damaging Practicable Alternative (LEDPA) must be identified from among those alternatives considered in detail in the EIS/EIR. If a federal agency is a partner in the implementation of a project, then the Proposed Action/Project must be recognized as the LEDPA. A 404(b)(1) evaluation will be included with the Final EIS/EIR pursuant to the Act to provide required information on the potential effects of the proposed action/project regarding water quality and rationale in support of identifying the LEDPA. This Draft EIS/EIR will be reviewed by concerned public and stakeholders with the opportunity to provide comments on the alternatives and documentation before making determinations of the Proposed Action/Project, LEDPA, environmentally preferred alternative, and environmentally superior alternative in the Final EIS/EIR.

Construction of the proposed project, including construction of the proposed intake facilities, pipelines, expanded reservoir, appurtenant facilities, and other associated facilities, would be subject to regulation under Sections 401, 402, and/or 404 of the Clean Water Act.

Rivers and Harbors Act

The U.S. Army Corps of Engineers (USACE) regulates the construction of any structure or work within navigable waters under Sections 9 and 10 of the Rivers and Harbors Act. The USACE regulates the construction of wharves, breakwaters, and jetties; bank protection and stabilization projects; permanent mooring structures, vessels, and marinas; intake and outfall pipes; canals; boat ramps; aids to navigation; and other modifications affecting the course, location, condition, and capacity of navigable waters. The USACE jurisdiction under the Rivers and Harbors Act is limited to "navigable waters," or waters subject to the ebb and flow of the tide shoreward to the mean high water mark that may be used for interstate or foreign commerce.

The USACE must consider the following criteria when evaluating projects within navigable waters: (1) the public and private need for the project; (2) reasonable alternative locations and methods; and (3) the beneficial and detrimental effects on the public and private uses to which the area is suited. The Rivers and Harbors Act would be applicable to the new Delta Intake and Pump Station.

Central Valley Project Improvement Act

The Central Valley Project Improvement Act (1992) amended the previous authorizations of the Central Valley Project (CVP) to include fish and wildlife protection, restoration, and mitigation as project purposes having equal priority with irrigation and domestic uses, and fish and wildlife enhancement as a project purpose equal in priority to power generation. It is described in Section 2.3.1.

The CVP Improvement Act is relevant to all aspects of the project alternatives that would result in diversion of CVP water from the Delta, or use of CVP water to enhance fish and wildlife.

Safe Drinking Water Act

The Safe Drinking Water Act was established to protect the quality of waters actually or potentially designated for drinking use, whether from aboveground or underground sources. Contaminants of concern in a domestic water supply are those that either pose a health threat or in some way alter the aesthetic acceptability of the water. Primary and secondary maximum contaminant levels (MCLs) are established for numerous constituents of concern including turbidity, total dissolved solids (TDS), chloride (Cl), fluoride, nitrate, priority pollutant metals and organic compounds, selenium, bromate, trihalomethane and haloacetic acid precursors, radioactive compounds, and gross radioactivity. All domestic water suppliers must follow the requirements established by this Act and its associated amendments.

Surface Water Treatment Rule

The Federal Surface Water Treatment Rule is implemented by the California Surface Water Treatment Rule, which satisfies three specific requirements of the Safe Drinking Water Act by: (1) establishing criteria for determining when filtration is required for surface waters; (2) defining minimum levels of disinfection for surface waters; and (3) addressing *Cryptosporidium spp., Giardia lamblia, Legionella spp., E. Coli,* viruses, turbidity, and heterotrophic plate count by setting a treatment technique. A treatment technique is set in lieu of an MCL for a contaminant when it is not technologically or economically feasible to measure that contaminant. The Surface Water Treatment Rule applies to all drinking water supply activities in California; its implementation is overseen by the California Department of Health Services (DHS).

Stage 1 and Stage 2 Disinfectants and Disinfection Byproducts Rule and Long-Term 1 and Long-Term 2 Enhanced Surface Water Treatment Rule

The Stage 1 Disinfectants and Disinfection Byproducts Rule established maximum residual disinfectant level goals and maximum residual disinfectant levels for chlorine, chloramines, and chlorine dioxide. It also establishes MCL goals and MCLs for trihalomethanes, five haloacetic acids, chlorite, and bromate. The primary purpose of the Long-Term 1 Enhanced Surface Water Treatment Rule is to improve microbial control, especially for *Cryptosporidium*.

Water systems that use surface water and conventional filtration treatment are required to remove specified percentages of organic materials, measured as total organic carbon (TOC), which may react with disinfectants to form disinfection byproducts (DBPs). Removal is to be achieved through a treatment technique (e.g., enhanced coagulation or enhanced softening), unless the system meets alternative criteria.

The U.S. EPA adopted the Stage 2 Microbial and Disinfection Byproducts Rules in January 2006. The Rules include both the Stage 2 Disinfectants and Disinfection Byproducts Rule and Long-Term 2 Enhanced Surface Water Treatment Rule. These rules include revised and new requirements, such as water systems having to meet DBP MCLs at each monitoring site in the distribution system, rather than averaging multiple sites. The rules also contain a risk-targeting approach to better identify monitoring sites where customers are exposed to high levels of DBPs. The rules include new requirements for treatment efficacy and *Cryptosporidium* inactivation/removal, as well as new standards for DBPs, disinfectants, and potential contaminants.

The overall goal of this group of regulations is to balance the risks from microbial pathogens with those from carcinogenic DBPs. All domestic water suppliers must follow the requirements of these rules, which are overseen by DHS.

Coordinated Operations Agreement

The Coordinated Operations Agreement (COA), signed in 1986, is an agreement between the State of California (represented by the Department of Water Resources [DWR]) and the federal government (represented by the U.S. Department of the Interior, Bureau of Reclamation, Mid-Pacific Region [Reclamation]). The purpose of the COA is to coordinate the operations of the CVP and the State Water Project (SWP). The COA defines each project's responsibility to protect other beneficial uses of water, and defines the sharing of excess water between the projects.

The procedure for sharing responsibility for demands and for sharing excesses of water is defined under two conditions: balanced water conditions and excess water conditions. Balanced water conditions occur when upstream releases plus unregulated flows equal the water supply needed to meet in-basin uses plus CVP and SWP Delta diversions, which include withdrawals under CVP and SWP water right permits at the Jones (formerly Tracy) Pumping Plant, the Banks Pumping Plant, the Contra Costa Canal Pumping Plant #1, and the North Bay Aqueduct. Excess water conditions occur when upstream releases plus unregulated flows exceed the water supply needed to meet in-basin uses plus SWP and CVP Delta diversion.

The COA stipulates that the CVP and SWP will coordinate responsibility for meeting Sacramento Valley in-basin use and for sharing any unstored water for export. When stored water is needed for in-basin use then the CVP agrees to provide 75 percent of the water necessary to meet the standard while the SWP provides the remaining 25 percent. If unstored water is available for export, then the CVP is entitled to use 55 percent of the excess available water and the SWP is entitled to the remaining 45 percent. Any water that is not used by one project is available for use by the other project, or it flows out of the Delta as surplus. These rules were established to account for meeting SWRCB Decision 1485. Subsequent changes to the Water Quality Control Plan have resulted in modifications to these rules by mutual agreement between Reclamation and DWR.

Operations Criteria and Plan Biological Opinions

The CVP and SWP Operations Criteria and Plan (OCAP) describes the long-term coordinated water operations of the state and federal water projects. On December 15, 2008, USFWS issued a Biological Opinion (USFWS OCAP BO) for delta smelt and its critical habitat governing the coordinated operations of the CVP and SWP. On June 4, 2009, NMFS issued a Biological Opinion (NMFS OCAP BO) for listed anadromous fishes and marine mammal species and their critical habitats governing the long-term operations of the CVP and SWP. The Old and Middle River (OMR) flow restrictions on exports and other operational conditions established by the new OCAP BOs modify SWP and CVP operations compared to the prior operations of the CVP and SWP.

State

Porter-Cologne Water Quality Control Act

Under the Porter-Cologne Water Quality Control Act, water quality objectives are limits or levels of water quality constituents or characteristics established for the purpose of protecting beneficial uses. The Act requires the RWQCBs to establish water quality objectives while acknowledging that water quality may be changed to some degree without unreasonably affecting beneficial uses. Designated beneficial uses, together with the corresponding water quality objectives, also constitute water quality standards under the federal Clean Water Act. Therefore, the water quality objectives form the regulatory references for meeting state and federal requirements for water quality control.

A change in water quality is only allowed if the change is consistent with the maximum beneficial use of the waters of the state, would not unreasonably affect the present or anticipated beneficial uses, and would not result in water quality lower than that specified in applicable water quality control plans (CVRWQCB, 1998). All aspects of the project alternatives would be subject to the Porter-Cologne Water Quality Control Act.

State Water Rights

California's system of water rights is referred to as a "dual system" in which both the riparian doctrine and the prior appropriation doctrine apply. Riparian rights result from the ownership of land bordering a surface water source (a stream, lake, or pond). These rights normally are senior in priority to most appropriative rights, and riparian landowners may use natural flows directly for beneficial purposes on riparian lands without a permit from the SWRCB.

Appropriative rights are acquired by diverting surface water and applying it to a beneficial use. Before 1914, appropriative rights could be obtained by simply diverting and using the water, posting a notice of appropriation at the point of diversion, and recording a copy of the notice with the county recorder. Since 1914, the acquisition of an appropriative right also requires a permit from the SWRCB.

The SWRCB is responsible for overseeing the water rights and water quality functions of the state. The SWRCB has jurisdiction to issue permits and licenses for appropriation from surface and underground streams. The California courts have jurisdiction over the use of percolating ground water, riparian use of surface waters, and the appropriative use of surface waters from diversions begun before 1914.

SWRCB Water Rights Decisions, Water Quality Control Plans and Water Quality Objectives

The Porter-Cologne Water Quality Control Act provides for the development and periodic review of water quality control plans (WQCP) that designate beneficial uses of California's major rivers and groundwater basins and establish narrative and numerical water quality objectives for those waters. Many of the permit terms and conditions contained in the WQCP for the Sacramento-San Joaquin Delta and Suisun Marsh and in water rights decisions implementing the WQCP have substantial influence on Delta operations, flows, water quality and ecosystem functions. The SWRCB adopts the Delta WQCP to establish standards to protect beneficial uses in the Delta.

Beneficial uses represent the services and qualities of a water body (i.e., the reasons why the water body is considered valuable), while water quality objectives represent the standards necessary to protect and support those beneficial uses. Beneficial uses are defined in Water Code section 13050(f) as including, but not limited to, domestic, municipal, agricultural, and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and the preservation and enhancement of fish, wildlife, and other aquatic resources or preserves.

The SWRCB Water Rights Division has primary regulatory authority over water supplies and issues permits for water rights specifying amounts, conditions, and construction timetables for diversion and storage facilities. Water rights decisions implement the objectives adopted in the Delta WQCP and reflect water availability, recognizing prior rights and flows needed to preserve instream uses, such as water quality and fish habitat, and whether the diversion is in the public interest.

1995 Water Quality Control Plan and D-1641. The current WQCP in effect in the Delta is the 1995 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (1995 WQCP) (SWRCB, 1995). The 1995 WQCP identifies beneficial uses in the Delta to be protected, water quality objectives for the reasonable protection of beneficial uses, and a program of implementation for achieving the water quality objectives.

The 1995 WQCP was developed as a result of the December 15, 1994 Bay-Delta Accord, which committed the CVP and SWP to new Delta habitat objectives. The new objectives were adopted by amendment through a water rights decision (D1641) for CVP and SWP operations. One key feature of the 1995 WQCP was the estuarine habitat objectives ("X2") for Suisun Bay and the western Delta. The X2 standard refers to the position at which 2 parts per thousand salinity occurs in the Delta estuary, and is designed to improve shallow water fish habitat in the spring of each year. The X2 standard requires specific daily or 14-day salinity, or 3-day averaged outflow requirements to be met for a certain number of days each month from February through June. Other elements of the 1995 WQCP include export-to-inflow ratios intended to reduce entrainment of fish at the export pumps, Delta Cross Channel gate closures, minimum Delta outflow requirements, and San Joaquin River salinity and flow standards.

Basin plans adopted by RWQCBs are primarily implemented through the NPDES permitting system and issuance of waste discharge requirements to regulate waste discharges so that water quality objectives are met. Basin plans provide the technical basis for determining waste discharge requirements and taking regulatory enforcement actions if deemed necessary. A basin plan has been adopted for the Sacramento and San Joaquin River Basin (Region 5; CVRWQCB, 1998).

The Region 5 RWQCB has set water quality objectives for the surface waters in the Delta for the following substances and parameters: ammonia, bacteria, biostimulatory substances, chemical constituents, color, dissolved oxygen, floating material, oil and grease, pH, radioactivity, salinity, sediment, settleable material, suspended material, taste and odor, temperature, toxicity, and turbidity. In addition, Region 5 has adopted standards for pesticides. Specific objectives for concentrations of chemical constituents are also applied to bodies of water based on their designated beneficial uses (CVRWQCB, 1998; SWRCB, 1995).

Water quality objectives applicable to all groundwater have been set for bacteria, chemical constituents, radioactivity, taste, and odors, and in Region 5, have been set for toxicity (CVRWQCB, 1998; SWRCB, 1995).

Central Valley Regional Water Quality Control Board Drinking Water Policy

The CVRWQCB is in the process of a multi-year effort to develop a drinking water policy for surface waters in the Central Valley. Existing policies and plans lack water quality objectives for several known drinking water constituents of concern, including DBP precursors and pathogens, and also lack implementation strategies to provide effective source water protection. The CVRWQCB adopted Resolution No. R5-2004-0091 in July 2004, which supports the development of this policy. The new policy will culminate in the incorporation of new requirements into a Basin Plan amendment in 2009. The CVRWQCB Drinking Water Policy will apply to Delta waters and any activities, such as discharges, that affect Delta water quality.

Streambed Alteration Agreement Program

Under Sections 1600–1616 of the California Fish and Game Code, any person, business, state or local government agency, or public utility that proposes an activity that would (1) substantially divert or obstruct the natural flow, (2) substantially change use of any material from the bed, channel, or bank of any river, stream, or lake, or (3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake, is required to notify the California Department of Fish and Game (CDFG).

After such notification, the Streambed Alteration Agreement requires that the notifying entity and CDFG identify potential impacts of construction and mitigation measures required to minimize and avoid impacts. All portions of the project alternatives that would alter a waterway, including the new Delta intake, pipelines in areas of stream crossings, and the reservoir expansion, would be subject to the Streambed Alteration Agreement Program.

State Reclamation Board Approval

Any project encroaching into rivers, waterways, and floodways within and adjacent to federal- and state-authorized flood control projects or within designated floodways must receive approval from the state Reclamation Board. Under California Water Code sections 8534, 8608, and 8710–8723, the Reclamation Board is required to enforce, within its jurisdiction, on behalf of the State of California, appropriate standards for the construction, maintenance, and protection of adopted flood control plans that will best protect the public from floods.

The Reclamation Board's jurisdiction encompasses the entire Central Valley, including all tributaries and distributaries of the Sacramento and San Joaquin Rivers and Tulare and Buena Vista Basins. The Reclamation Board exercises jurisdiction over the levee section, the waterside area between project levees, a 10-foot-wide strip adjacent to the landward levee toe, the area within 30 feet of the top to the banks with no levees, and within designated floodways adopted by the Board. Construction of the new Delta intake and pump station would be subject to state Reclamation Board approval.

Los Vaqueros Project Water Right (Permit No. 20749)

SWRCB Decision 1629 (D1629) gives the terms and conditions governing Contra Costa Water District's (CCWD's) diversions to storage in Los Vaqueros Reservoir under Permit No. 20749. D1629 provides that CCWD may divert water under Permit No. 20749 from Old River to Los Vaqueros Reservoir from November through June during excess conditions in the Delta, as defined in the SWP/CVP COA, when those diversions will not adversely impact the operations of the SWP and CVP; CCWD may also divert water under its CVP water supply contract to storage in Los Vaqueros Reservoir. D1629 specifies the maximum diversion rates and annual diversion to storage by CCWD to Los Vaqueros Reservoir.

CCWD's operations are governed in part by the following three biological documents:

- 1993 National Marine Fisheries Service Biological Opinion for winter-run chinook salmon,
- 1993 U.S. Fish and Wildlife Service (USFWS) Biological Opinion for Delta smelt, and
- ~~1994 Memorandum of Understanding between CDFG and CCWD regarding the Los Vaqueros Project, and~~
- 2009 CDFG California Endangered Species Act Incidental Take Permit for CCWD Maintenance and Operation of the Los Vaqueros Project and Alternative Intake Project.

The biological documents specify the following:

- **No-Fill Period** – CCWD will avoid filling Los Vaqueros Reservoir for 75 days each spring. The default no-fill period is March 15th through May 31st. This condition is also included in D1629. An additional zero to fifteen days of no-fill requirement may apply at the end of February, depending on Los Vaqueros Reservoir storage on February 1: 15 days of no fill are applied if storage in Los Vaqueros Reservoir is at or above 90 thousand acre-feet (TAF) on February 1, 10 days are applied if storage is at or above 80 TAF, and 5 days are applied if storage is at or above 70 TAF. If storage in Los Vaqueros Reservoir is below 70 TAF on February 1, the no fill requirement is not applied in February. The timing of the default periods can be modified at the request of the fisheries agencies.

- **No-Diversion Period** – CCWD will avoid Delta diversions for 30 days each spring, concurrent with part of the no-fill period. The default no-diversion period is the month of April. This condition is also included in D1629. The timing of the default periods can be modified at the request of the fisheries agencies.

- **Emergency Storage** – The no-fill and no-diversion restrictions are in effect only when Los Vaqueros Reservoir is above emergency storage levels. Emergency storage is defined as 70 TAF in below-normal, above-normal, and wet years, and 44 TAF in dry and critical years. This condition is also included in D1629.

- **X2 Restrictions** – Los Vaqueros Reservoir may be filled when X2 is west of Chipps Island in February through May, and Collinsville in January, June through August, and December. X2 restrictions on filling in December only exist when adult delta smelt are present at the Old River intake. In 2005, CDFG and USFWS granted a temporary ~~waiver on the July and August~~ modification to CCWD's X2 restrictions, adding two additional compliance methods and waiving the July and August X2 restrictions~~, allowing 5 years to evaluate~~to bring~~ing~~ CCWD's operating restrictions in line with D1641.

In reviewing Delta operations as modified by the OCAP BOs described above, CCWD, Reclamation and DWR staff have developed proposed modifications to the default no fill and no diversion timing that improve coordination of water operations in the Delta while maintaining water supply and water quality for CCWD and for the CVP and SWP. These proposed modifications are described in Section 4.2.2 below.

Mallard Slough Water Right

CCWD has a license and a permit for diversions at Mallard Slough for up to 26,780 AF per year. However, Mallard Slough diversions are unreliable during most of the year as a result of high salinity from seawater intrusion in the San Joaquin River at the point of diversion. Over the last 10 years, diversions by CCWD from Mallard Slough have averaged less than 3 TAF per year. Diversions from Mallard Slough substitute for other diversions, principally CVP supplies from Rock Slough.

CVP Contract

On May 10, 2005, CCWD entered into a 40-year renewal of its contract with Reclamation for the delivery of up to 195,000 AF per year (Reclamation, 2005, Contract No. I75r3401A-LTR1, executed May 10, 2005). This water would be for municipal and industrial (M&I) uses and may be diverted at the Rock Slough, Old River, and Alternative Intake Project (AIP) intakes during any time of year, though diversions under this CVP contract are also limited by the no-fill and no-diversion periods described above.

Water Rights and Water Service Contracts

Each alternative may require changes to existing water right permits and licenses, which would be accomplished through change petitions to the SWRCB. Changes in water service contracts may also be required.

In addition to its long-term contract with Reclamation, CCWD has separate water rights for the Los Vaqueros Reservoir. CCWD's separate Los Vaqueros water rights are subject to permit terms and conditions to ensure they do not adversely affect the CVP and SWP operations under the water rights held by Reclamation and DWR, respectively. Under all these water system operations, the use of the collective water rights of the project participants would be coordinated to operate the existing and new facilities in a manner designed to accomplish the project objectives without adversely affecting SVP or SWP operations. This would be achieved through agreements among the parties and permit changes as necessary.

California Department of Health Services Drinking Water Regulations

DHS serves as the primary responsible agency for drinking water regulations. DHS must adopt drinking water quality standards at least as stringent as federal standards, and may also regulate contaminants to more stringent standards than U.S. EPA, or develop additional standards. DHS regulations cover over 150 contaminants, including microorganisms, particulates, inorganics, natural organics, synthetic organics, radionuclides, and DBPs. The specific regulations promulgated by DHS, in coordination with the U.S. EPA, are summarized in **Table 4.2-1**.

TABLE 4.2-1
FEDERAL AND STATE DRINKING WATER REGULATIONS

Regulation	Promulgation Year	Contaminants Regulated
National Interim Primary Drinking Water Regulations	1975–1981	Inorganics, Organics, Physical, Radioactivity, Bacteriological
National Secondary Drinking Water Regulations	1979	Inorganics, Color, Corrosivity, Odor, Foaming Agents
Phase I Standards	1987	VOCs
Phase II Standards	1991	VOCs, SOCs, IOCs
Phase V Standards	1992	VOCs, SOCs, IOCs
Surface Water Treatment Rule	1989	Microbiological and Turbidity
Total Coliform Rule	1989	Microbiological
Lead and Copper Rule	1991 / 2003	Lead, Copper
Drinking Water Source Assessment and Protection Program	1996	Source Water Protection
Information Collection Rule	1996	Microbiological and Disinfectants / DBPs
Stage 1 Disinfectants/Disinfection Byproducts Rule	1998	Disinfectants / DBPs, Precursors
Interim Enhanced Surface Water Treatment Rule	1998	Microbiological, Turbidity
Unregulated Contaminant Monitoring Rule	1999	Organics, Microbiological
Radionuclides Rule	2000	Radionuclides
Arsenic Rule	2001	Arsenic
Filter Backwash Rule	2002	Microbiological, Turbidity
Drinking Water Candidate Contaminant List	2003	Chemical, Microbiological
Stage 2 Microbiological and Disinfection Byproducts Rules	2006	Microbiological and Disinfectants / DBPs
Secondary Maximum Contaminant Levels	2006	Metals, Color, Foaming Agents, MTBE, Odor, Thiobencarb, Turbidity, TDS, and Anions
Primary MCL for Perchlorate	2007	Perchlorate
Interim Enhanced Surface Water Treatment Rule	2008	Microbiological and Turbidity

DBP = Disinfection by-product
IOC = Inorganic Compound
MCL = Maximum Contaminant Level
MTBE = methyl tertiary-butyl ether
SOC = Synthetic Organic Compound
TDS = Total Dissolved Solid(s)
VOC = Volatile Organic Compound

Local

Contra Costa County General Plan

The Contra Costa County General Plan provides several goals and policies related to water service and water resources. Specifically, the general plan includes the following provisions: assurance of potable water availability to residents (7-F); development of locally controlled water supplies to meet growth (7-G); conservation of water resources (7-H); flood control and flooding prevention (7-O-7-R); assurance of adequate long-term supply of water for domestic purposes as well as fishing, agricultural, and industrial uses (8-T); maintenance of ecology and hydrology of streams, creeks, and other natural waterways (8-U); and enhancement of opportunities for public accessibility and recreational use (9-43, 9-47). These goals and policies are shown in Appendix E-2.

Alameda County East County Area Plan

The Alameda County East County Area Plan also includes water-related goals and policies. These goals and policies include ensuring the mitigation of impacts on water quality caused by development near agricultural lands (76); protection of watershed land from the effects of development (110); the expansion of public facilities (218); the provision of an adequate, reliable, and safe water supply (253-254). Specific goals and policies are listed in Appendix E-1.

Sacramento River Basinwide and Regional Water Management Plans

In the mid-1990s, the Sacramento River Settlement Contractors, who held water rights higher in priority than the CVP water rights, initiated discussions with Reclamation for CVP contract renewals and prepared the *Sacramento River Basinwide Water Management Plan*. Finalized in 2004, this Plan identifies potential water management improvements, including subbasin-level management actions and system improvement/water use efficiency projects.

This planning process involved regional cooperation among the Sacramento River Settlement Contractors, other CVP contractors, government agencies, and stakeholders. The Sacramento Valley Water Management Agreement (described below) was prepared as a result of these coordination efforts. The Sacramento River Settlement Contractors and Reclamation are currently cooperating to finalize a regional water management plan that will encourage further regional and subbasin coordination, including meeting the CALFED-targeted benefits and establishing quantifiable objectives associated with numerous projects.

Sacramento Valley Water Management Agreement and Integrated Regional Water Management Plan

In addition to the planning efforts undertaken by CVP contractors and Reclamation as described above, a broader multi-agency process is underway.

In July 1998, the SWRCB conducted a water-rights hearing to consider how to implement the 1995 WQCP (described above). As a result of the hearing, responsibility for implementing the 1995 WQCP objectives was allocated to water-right holders, since they were affecting Delta inflows, diversions, and exports.

More than 40 water suppliers in the Sacramento Valley negotiated and entered into the Sacramento Valley Water Management Agreement with Reclamation, DWR, USFWS, CDFG, and the State Water Contractors. Signed in 2002, the agreement describes the need for a cooperative regional approach to improve local, regional, and statewide water supply reliability and quality, while providing supplies to help implement water quality standards in the Delta. Its proposed implementation will offer relief to water-short areas of the Sacramento Valley, provide additional water supplies for the Delta, and support water transfers to CVP and SWP users. CCWD was a signatory to the initial agreement, as a separate party.

The *Sacramento Valley Integrated Regional Water Management Plan* (IRWMP) was released in December 2006. The IRWMP objectives are to improve the economic health of the region; improve regional water supply reliability for local water users, the region, and California; improve flood

protection and floodplain management; improve and enhance water quality; and protect and enhance the ecosystem. The Sacramento Valley Water Management Agreement and the IRWMP are relevant to the Los Vaqueros project because they have implications for Delta hydrology and water quality.

Environmental Setting

Surface Water Hydrology

Surface water hydrology within the Sacramento–San Joaquin Delta, the Sacramento River, and the San Joaquin River is discussed below. For this discussion, a diversion is defined as a withdrawal of water from the water body in question; an export is defined as water that is diverted and removed from the Delta area by the CVP or SWP for south-of-Delta use; and Delta outflow is water that flows out of the Delta to the San Francisco Bay and Pacific Ocean.

Sacramento River

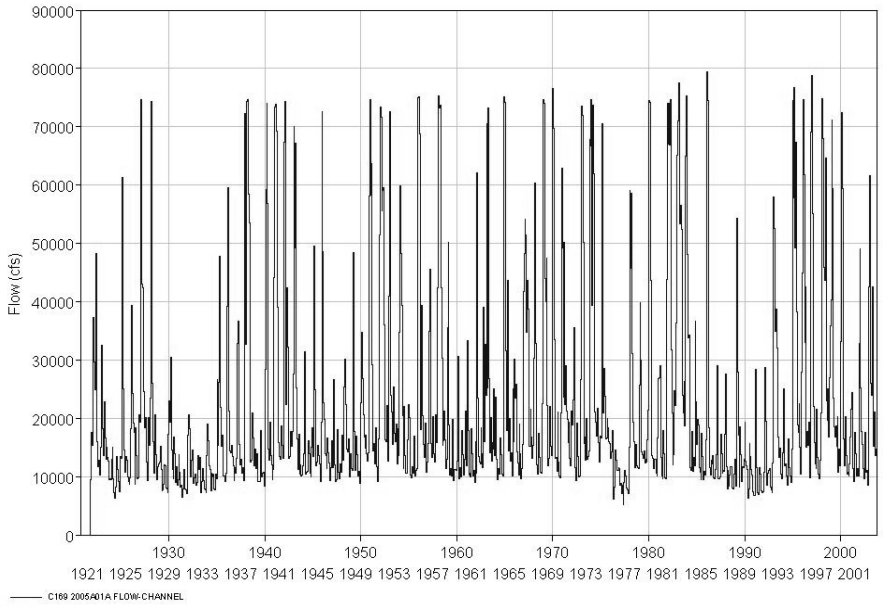
Flows within the Sacramento River are highly regulated and are influenced by the following factors: runoff from precipitation and snowmelt; natural variation; upstream water storage facilities; water diversions for agricultural, municipal, and industrial purposes; agricultural and municipal discharges; and a flood damage reduction system that includes levees, floodplains (the Yolo, Sutter, and Colusa bypasses), and weirs. These features contribute to observed flows within the Sacramento River.

Sacramento River flows vary substantially on a seasonal and year-to-year basis. Seasonally, flows in the river may vary as a result of runoff from local tributaries and releases from the major water storage reservoirs, as well as diversions by agricultural, municipal, and other users. Interannually, river flows vary according to precipitation, the volume of carryover storage in reservoirs, and releases to downstream water users.

The Sacramento River enters the Delta (as defined by California Water Code Section 12220) at Freeport, where the average annual flow is about 16 million acre-feet (MAF). **Figure 4.2-1** presents the average monthly flows of the Sacramento River at Freeport for the period of record. Additional Sacramento River flow enters the Yolo Bypass upstream of Freeport, then rejoins the river and flows into the Delta downstream of Freeport.

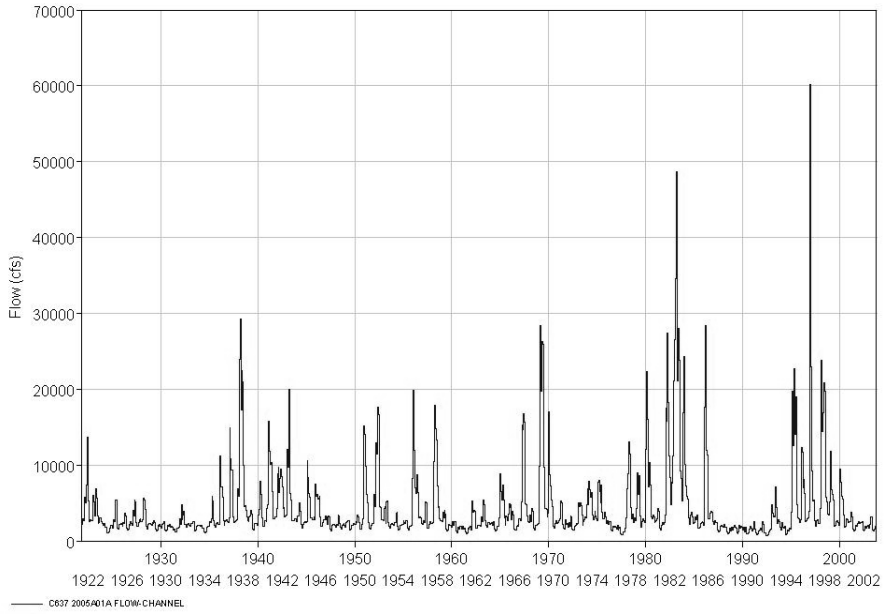
San Joaquin River

Flows within the San Joaquin River are highly regulated and influenced by the following factors: runoff from precipitation and snowmelt; natural variation; upstream water storage facilities; water diversions for agricultural, municipal, and industrial purposes; agricultural and municipal discharges; and a flood damage reduction system. These features contribute to observed flows within the San Joaquin River. The average annual flow of the San Joaquin River as it enters the Delta at Vernalis is about 2.6 MAF, or 3,600 cubic feet per second (cfs). **Figure 4.2-2** presents the average monthly flows of the San Joaquin River at Vernalis for the period of record.



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Figure 4.2-1
Existing Average Monthly
Sacramento River Flow at Freeport



Los Vaqueros Reservoir Expansion Project. 201110

Figure 4.2-2
Existing Average Monthly
San Joaquin Flow at Vernalis

Typically, during summer months, flows within the lower San Joaquin River are composed primarily of agricultural and wildlife refuge return flows and municipal discharges. Portions of the middle/lower San Joaquin River below Friant Dam typically run dry during the dry season, resulting in a temporary hydrologic disconnect between the lower and upper watersheds.

Sacramento–San Joaquin Delta

The Sacramento-San Joaquin Delta, to the east of San Francisco Bay, represents the point of discharge for the Sacramento-San Joaquin River system. Water flows out of the Delta, into San Francisco Bay, and through the Golden Gate to the Pacific Ocean, creating an extensive estuary where salty ocean water and fresh river water commingle. In sum, water from over 40 percent of the state's land area is discharged into the Delta.

The Delta supports several beneficial uses, including water supply to local and south of Delta municipalities and agricultural uses, ecological support for fisheries including wetlands and important habitat, in-Delta agriculture, flood management, water quality management, and a major conveyance for transporting fresh water from northern to southern portions of the state (Delta Vision, 2007; DWR, 2008). However, many water projects, including export pumps for the SWP and CVP, diversions for Delta-area and Bay-area municipalities, and regional agricultural users, also divert Delta waters, and thereby influence Delta hydrology and water quality.

Figure 4.2-3 shows a map of the Delta, including features relevant to the following discussion of Delta hydrology and water quality.

Delta Hydrology and Hydrodynamics

The primary factors that affect Delta hydrology are: (1) twice-daily tidal cycles, which result in inflow and outflow through the Delta and San Francisco Bay, (2) freshwater inflow from the Sacramento and San Joaquin Rivers, and (3) water management activities, including SWP and CVP reservoir storage and releases, as well as water exports from the south Delta. Additionally, winds and salinity/freshwater mixing generate a number of secondary currents. While these currents are generally of low velocity, they are significant in terms of transporting contaminants and mixing different sources of water.

Tidal Cycles. Twice-daily tides push water back and forth between San Francisco Bay and the Delta. Over each tidal cycle, ebb flows draw water downstream from the Delta towards San Francisco Bay, while flood tides push bay water upstream and into the lower portions of the Delta. The average peak tidal flow is about 350,000 cfs at Chipps Island (the interface between the Delta and Suisun Bay). Because daily tidal inflows are about equal to daily tidal outflows, the tidal cycle can be described as having a sloshing or mixing effect within the Delta. Tidal flows are far larger than any other flows in the Delta. For example, the current combined export capacity from the south Delta is about 15,000 cfs, and estimated average monthly net Delta outflow is about 32,000 cfs in winter and about 6,000 cfs in summer (CALFED, 2000).

Delta Inflow. Inflows of freshwater to the Delta are derived primarily from the Sacramento and San Joaquin Rivers, although some additional inflow is provided by the Mokelumne, Calaveras, and Cosumnes Rivers along the eastern Delta. Sacramento River flows, including those routed



SOURCE: ESRI, 2006; and ESA, 2008

Los Vaqueros Reservoir Expansion Project EIS/EIR . 201110

Figure 4.2-3

Sacramento-San Joaquin Delta Overview

through the Yolo Bypass, account for an annual average of about 80 percent of total Delta inflow. The San Joaquin River provides about an additional 15 percent, while flows from eastside tributaries account for the remainder; about 5 percent (DPC, 2000; DWR 2008).

An average of about 21 MAF of fresh water reaches the Delta every year from a combination of these freshwater inflow sources. However, interannual variation in flow can be substantial: in 1977, a year of extraordinary drought, Delta inflow totaled only 5.9 MAF, while in 1983, an exceptionally wet year, Delta flow reached about 70 MAF. Delta inflow in dry and critically dry years averages about 12 MAF annually.

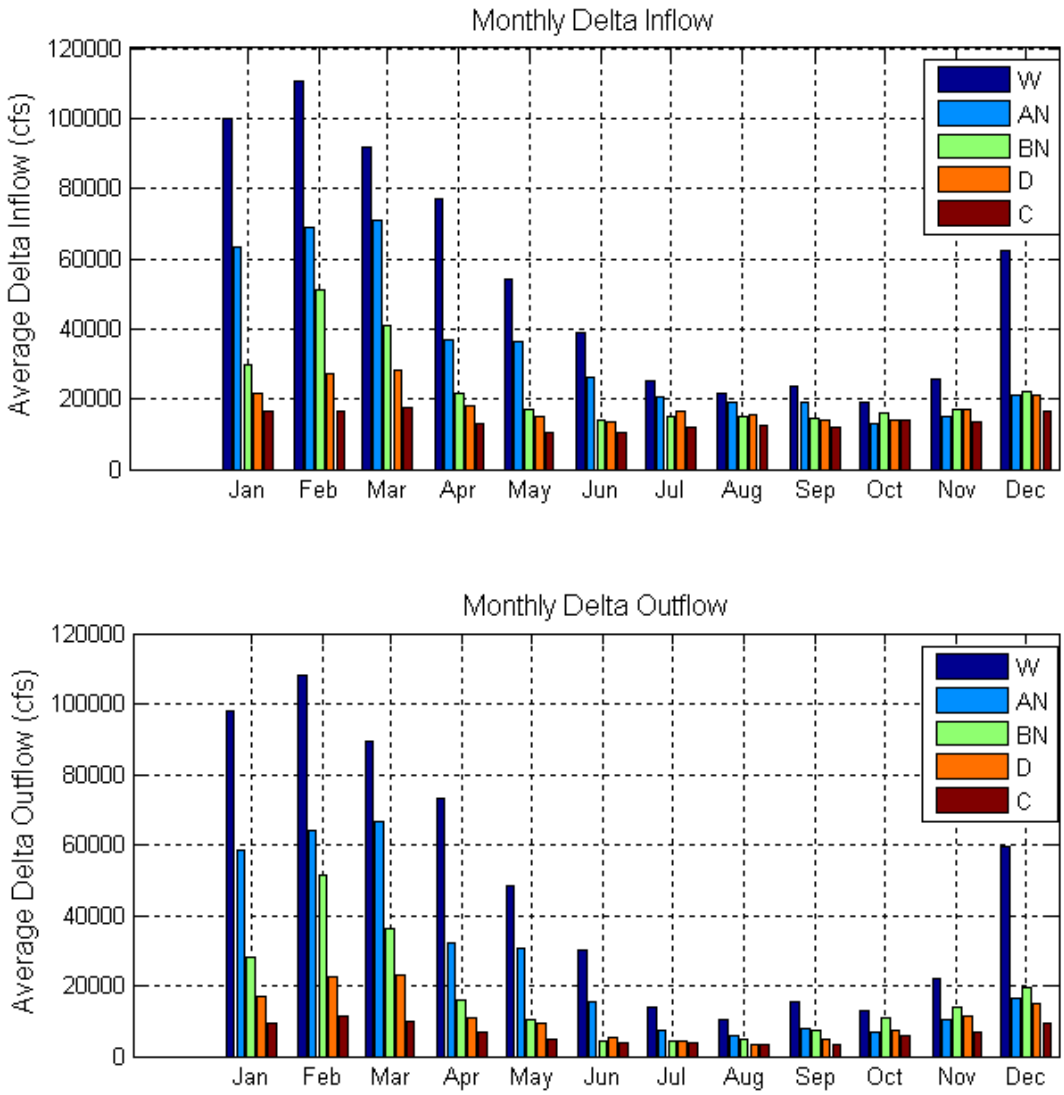
In combination with an extended period of drought, historic upstream diversions reduced inflow to a point in the 1920's that salinity intrusion in the Delta became a problem (Means, 1928), necessitating construction of reservoirs to help manage water supplies and salinity.

Delta Outflow. The water that flows into the Delta may be diverted by water users within the Delta area, exported by CVP and SWP pumps, or left to flow out through San Francisco Bay and into the Pacific Ocean. Flows into the Delta may also be augmented by local precipitation and runoff, local drainage and seepage, and flows from local wastewater treatment plants. Delta outflow is the net flow of water from the Delta into San Francisco Bay.

Figure 4.2-4 provides a comparison of average monthly Delta inflow and outflow for wet, above normal, below normal, dry, and critical water years, according to Sacramento Valley hydrology. Delta inflow and outflow exceedance curves are shown in **Figure 4.2-5**. As indicated, Delta outflow is influenced by diversions, and is therefore noticeably less than inflow during most periods. However, during peak flow conditions exceeding 100,000 cfs, diversions from the Delta represent a much smaller percentage of total Delta inflow, and Delta inflow is much closer in rate to Delta outflow.

Together, local diversions and water exports in the Delta account for an average of about 35 to 40 percent of total Delta inflow (CALFED, 2000), with the remaining 60 to 65 percent flowing out of the Delta to the Pacific Ocean. The total diversions and exports from the Delta include use by in-Delta agricultural users (about 10 percent of average inflow), the CVP and SWP pumping facilities (about 25 to 30 percent of average inflow), and CCWD diversions (less than 1 percent of average inflow). An additional 20 percent of average Delta inflow provides minimum outflow for salinity control and to meet outflow requirements for protecting fishery resources, and the remaining approximately 40 to 45 percent of average Delta inflow provides Delta outflow to the Pacific Ocean beyond that needed to meet salinity standards.

Water Management Activities. The CVP and SWP are the largest users and exporters of Delta water. Water is exported via pumping and aqueduct facilities at Clifton Court Forebay, the Jones Pumping Plant, and the North Bay Aqueduct. Local agencies, including CCWD, municipalities, private entities, and agricultural users also operate their own diversion programs and infrastructure, independent of the CVP and SWP. Examples include the approximately 1,800 agricultural diversions within the Delta, and diversion projects such as the Freeport Regional Water Authority Project (under construction) and the proposed Stockton Delta Water Supply Project (Stockton

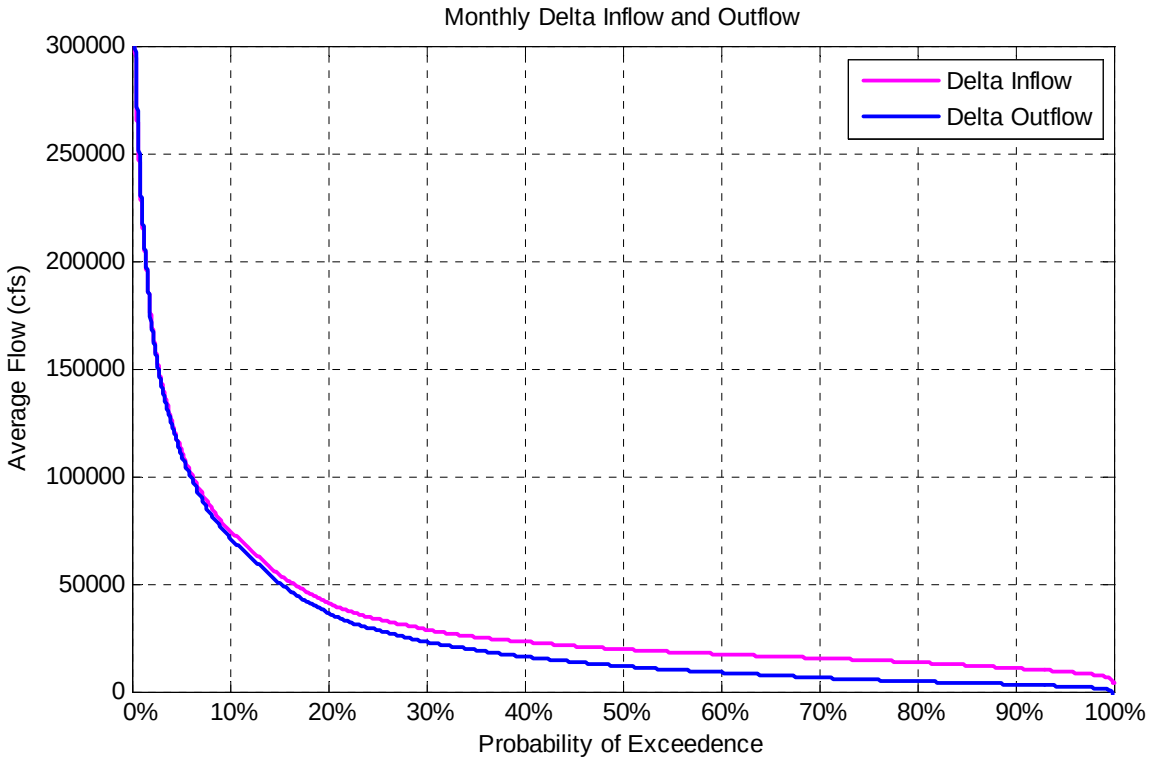


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Figure 4.2-4
Delta Inflow and Outflow by Water Year Type

DWSP). Surface water infrastructure associated with the CVP, SWP, and local diversions is discussed in greater detail below.

Water management activities, especially export pumping, can affect the direction of flow in Delta channels. Under natural conditions, net flow of Delta waters is westward from the San Joaquin and Sacramento Rivers, across the Delta and towards San Francisco Bay. However, under certain tidal, river inflow, and south Delta export pumping conditions, net reverse flows may occur over a tidal cycle in specific western Delta so that the net flow direction in those channels is eastward. QWEST is a parameter that represents the estimated net westward flow of the San Joaquin River at Jersey Point that is used as a measure of net reverse flow conditions (exclusive of tides) within certain Delta channels.



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Figure 4.2-5
Delta Inflow and Outflow Exceedance Curves

As QWEST decreases, reverse flows in some Delta channels increase. CVP and SWP export pumping can also cause reverse flows in the southward direction down Old and Middle Rivers and other central and south Delta channels. Figure 4.2-3 shows the locations of the San Joaquin River, Jersey Point, and other features of the Delta.

Surface Water Infrastructure

The surface water infrastructure along the Sacramento and San Joaquin Rivers, in the Delta, and south of the Delta, supports storage, conveyance, and export of water throughout much of California. Operation of this infrastructure, which includes reservoirs, diversions, and conveyances, substantially affects Delta hydrology.

Central Valley Project Facilities

The CVP, which is administered by Reclamation, stores and transports water from the Delta for irrigation use in the San Joaquin Valley, and for municipal use in CCWD's service area and elsewhere. In total, the CVP is composed of some 20 reservoirs with a combined storage capacity of over 11 MAF, 11 power plants, and over 500 miles of canals and aqueducts. The CVP serves multiple purposes, including flood control; navigation; water supply for irrigation and domestic uses; fish and wildlife protection, restoration, and enhancement; and power generation. The

following text provides a description of the major components of the CVP, as relevant to the project alternatives.

Trinity River Diversion (North of Delta). The Trinity River Diversion includes Trinity Dam and facilities to transfer water from the Trinity River basin to the Sacramento River basin. Water is conveyed from Trinity Dam, which has a capacity of about 2.4 MAF, via the Clear Creek Tunnel, to Keswick Dam on the Sacramento River below Shasta Dam. Trinity Reservoir is operated for water storage and flood control, consistent with the DWR Division of Safety of Dams guidance. The outflow from Trinity Reservoir also provides water to meet temperature objectives for special-status species in the Trinity and upper Sacramento Rivers.

Shasta Reservoir (North of Delta). Shasta Reservoir, which provides up to about 4.5 MAF of water storage capacity, is on the upper Sacramento River, about 5 miles north of the city of Redding. The watershed that is drained into Shasta Reservoir encompasses about 6,600 square miles of land. Inflows to the reservoir vary both annually and seasonally, with inflows typically peaking in March during the springtime snowmelt. After the spring snowmelt has ended, typical June through October flow into the reservoir is less than 5,000 cfs. About 1.3 MAF of storage space is reserved for flood control, which is managed by the USACE.

Releases from Shasta Reservoir and Keswick Reservoir (which is just downstream of Shasta Reservoir) are managed to meet minimum fish flows and temperature requirements, flood control requirements, salinity control, and water supply demands of CVP contractors (Reclamation and DWR, 2003).

Folsom Reservoir (North of Delta). Folsom Reservoir has a maximum capacity of about 1 MAF, and is on the American River about 15 miles northeast of Sacramento, near the city of Folsom. The dam is managed to provide flood control, recreation, power, water supply, Delta water quality protection, and minimum fish protection flows in the American River and Delta.

New Melones Reservoir (East of Delta). The New Melones Reservoir is on the Stanislaus River and is the fifth largest reservoir in California, with a capacity of 2.4 MAF. The reservoir provides flood control for the lower Stanislaus River and San Joaquin Delta, irrigation and municipal water supplies, peak use period hydrologic production, recreation, and fish and wildlife enhancement. New Melones Reservoir is also used to provide salinity control at Vernalis and interior Delta water quality compliance locations. The New Melones Reservoir is overseen and operated by Reclamation.

Jones Pumping Plant (Delta Area). The Jones Pumping Plant is the CVP's primary diversion facility in the south Delta, and has a capacity of 4,600 cfs. The Jones Pumping Plant provides water to the Delta-Mendota Canal, which supplies water for storage in the San Luis Reservoir and for use within the San Joaquin Valley. On average, the Jones Pumping Plant exports about 3,350 thousand acre-feet (TAF) of water per year.

Delta Cross Channel Gates (Delta Area). The Delta Cross Channel (DCC) gates are a gated diversion channel in the Sacramento River near Walnut Grove. Flows into the channel from the Sacramento River are controlled by two 60-foot by 30-foot radial gates. When the gates are open,

water flows from the Sacramento River into the cross channel and then into the Mokelumne River to the lower San Joaquin River. The gates are operated to move Sacramento River water into the Delta interior to improve water quality and improve circulation of water towards the export pumps.

Contra Costa Canal (Delta Area). The Contra Costa Canal has its origin on Rock Slough, and consists of a 4-mile earth-lined intake canal (currently being converted to a pipeline to improve water quality and reduce flood risks), four pump stations with a capacity of 350 cfs, and a 44-mile concrete-lined canal. The canal was constructed and is owned by Reclamation, and is operated and maintained by CCWD. The canal is used to serve water to CCWD's customers.

San Luis Reservoir (South of Delta). San Luis Reservoir is a shared facility between the CVP and the SWP. It is near Los Banos, and has a storage capacity of about 2 MAF. This pumped-storage reservoir provides seasonal storage of water exported from the Delta, including 966 TAF of CVP storage. Water is conveyed from San Luis Reservoir into federal and state aqueducts serving the San Joaquin Valley and other agricultural and municipal areas south of the Delta. Deliveries from San Luis Reservoir also flow west through Pacheco Pumping Plant and Conduit to the San Felipe Division of the CVP, which includes the SCVWD and San Benito Water District. Water in San Luis Reservoir is managed to meet water supply demands of SWP and CVP contractors.

State Water Project Facilities

The SWP, which is operated and maintained by DWR, stores and transports water for agricultural and M&I use within the Feather River area, the San Francisco Bay Area, the San Joaquin Valley, southern California, and the central California coast. In total, the SWP is composed of 32 reservoirs and storage facilities, 17 pumping plants, eight hydroelectric power plants, and over 660 miles of aqueducts and pipelines. The SWP serves over two-thirds of California's population, including about 600,000 acres of farmland. The SWP serves multiple purposes including providing water supply to contracting agencies, flood control, recreation, fish and wildlife enhancements, power generation, and salinity control within the Delta. The following text provides a description of the major SWP components, as relevant to the project alternatives.

Oroville Reservoir (North of Delta). The Oroville Reservoir, which has a maximum water storage capacity of about 3.5 MAF, is the primary SWP storage reservoir. It is on the Feather River near the city of Oroville and the Thermalito Forebay and Afterbay. Inflow to the reservoir is strongly influenced by snowmelt and rainfall runoff during the winter and spring, and results primarily from base flows (i.e., flows in a river or stream that occur in the absence of any recent rainfall) during the summer and autumn. Monthly flows from January through June are typically greater than 2,000 cfs, while summer flows are typically at least 1,000 cfs. A minimum release of at least 600 cfs is maintained during all months to provide adequate flows and water quality to meet fish requirements (Reclamation and DWR, 2003).

Releases from Oroville Reservoir and Thermalito Afterbay are managed to meet minimum fish flows and temperature requirements, flood control requirements, navigation control point requirements, Delta water quality requirements, and water supply demands of SWP contractors.

Banks Pumping Plant (Delta Area). The SWP Banks Pumping Plant supplies water for the South Bay Aqueduct and the California Aqueduct, and has an installed capacity of 10,300 cfs. However, under current operational constraints, inflow to Clifton Court, which is the forebay to the Banks plant, is often limited to a maximum of 6,680 cfs. The 6,680 cfs limitation is removed from December 15th through March 15th, when exports may be increased by 33 percent of San Joaquin River inflow to the Delta, as long as San Joaquin River inflow is at least 1000 cfs. In addition, a temporary permit was issued to pump an additional 500 cfs at Banks Pumping Plant from July 1 through September 30 of each year to provide water for Environmental Water Account purposes.

Barker Slough Intake for the North Bay Aqueduct (Delta Area). In addition to the pumps at Clifton Court, the SWP also pumps water from Barker Slough into the North Bay Aqueduct for use within the Bay region. The Barker Slough Pumping Plant, just upstream of the confluence of Barker Slough and Lindsey Slough, pumps water into a 27-mile underground pipeline that connects to the North Bay Aqueduct. The pumping plant and North Bay Aqueduct supply SWP water to parts of Solano and Napa Counties north of San Francisco Bay (CALFED, 2000).

San Luis Reservoir (South of Delta). San Luis Reservoir is a shared facility between the CVP and the SWP. It is near Los Banos, and has a storage capacity of about 2 MAF. This pumped-storage reservoir provides seasonal storage of water exported from the Delta, including 1,062 TAF of SWP storage. Water is conveyed from San Luis Reservoir into federal and state aqueducts serving the San Joaquin Valley and other agricultural and municipal areas south of the Delta. Water in San Luis Reservoir is managed to meet water supply demands of SWP and CVP contractors.

Other Facilities

CCWD Diversion Intakes. CCWD owns and operates three screened intakes; these are the Mallard Slough Intake (39 cfs), Old River Intake and Pump Station (250 cfs), and the AIP on Victoria Canal (250 cfs), which is currently under construction. Reclamation owns and CCWD operates the Contra Costa Canal with its intake on Rock Slough (350 cfs), described above. Together, the current average annual diversion from all of CCWD's intakes combined is about 125 TAF.

Delta Agricultural Diversions. The Delta includes about 540,000 acres of agricultural land which, during the summer irrigation season, is supplied by surface water from the Delta. To satisfy these surface water demands, agricultural users operate their own diversions at over 1,800 locations and divert at a combined net rate (diversions less drainage returned to the Delta) estimated at over 4,000 cfs, for a total of about 1.5 MAF of water consumed annually. This diversion rate is relatively close in magnitude to summer Delta exports of either the Banks Pumping Plant or the Jones Pumping Plant. Water diverted by Delta agricultural users may be used for irrigation, or to leach accumulated salts from fields. Agricultural tailwater, including tailwater resulting from leaching of accumulated salts, is collected by systems of canals within the Delta islands, and pumped back into Delta waterways. A portion of the water diverted from Delta waterways for agricultural use is thereby returned to Delta waterways; consequently, actual diversions exceed the net water consumed by as much as 50 percent or more. However, agricultural island discharge water typically has elevated concentrations of salts and organic carbon.

Joint Water Project Operations for Hydrology, Water Quality, and Ecosystems

Operation of the CVP and SWP is coordinated according to their respective water right permits, and a series of other governing laws, regulations, and agreements that have been developed to ensure compliance with specific hydrology, water quality, and ecosystem requirements while meeting the water supply contract obligations. CVP and SWP operations are adjusted to meet Delta flow and water quality standards by increasing releases of stored water in project reservoirs, or altering export pumping, DCC gate positions, and other Delta facility operations.

Water Rights Decision-1641 and Order WR 2001-05 contain the current water right requirements for Reclamation and DWR to implement the WQCP flow and water quality objectives. The COA (described above) defines how Reclamation and DWR share their joint responsibility to meet Delta water quality standards and meet the water demands of senior water right holders.

Depending on specific conditions of the fisheries populations and presence in the Delta each year, CVP/SWP exports can be restricted on a seasonal basis pursuant to biological opinions issued by the National Marine Fisheries Service and USFWS. The assumptions used in the analysis for governing CCWD, CVP, and SWP operations are discussed in more detail in Section 4.2.2~~3.1.2~~. Related operational considerations that have been incorporated into the analysis for the Los Vaqueros Reservoir Expansion Project are discussed below.

Surface Water Quality

The following text provides a description of relevant and applicable surface water quality constituents, and then describes the existing surface water quality conditions within the Delta and the Sacramento and San Joaquin Rivers.

Water Quality Constituents

The following water quality constituents are found within the Delta and San Joaquin and Sacramento Rivers, and contribute to existing water quality conditions within the Sacramento-San Joaquin River-Delta system. The constituents listed below represent only a few of all the constituents of concern for drinking water that are present in the Sacramento-San Joaquin River-Delta system, and were selected because of their relevance to the project alternatives and availability of comprehensive data. Salinity in particular is the constituent most likely to be affected by shifts in the timing and location of pumping in the Delta, and is also the constituent for which the most monitoring data and calibrated Delta modeling tools are available.

Salinity

Salinity refers to the concentration of salts or ions present in water, including sodium, magnesium, calcium, phosphates, nitrates, potassium, Cl, bromide, and sulphate. Salinity measures commonly used for Delta waters include TDS and Cl concentrations, both measured in milligrams per liter (mg/L).

Salinity is both an aesthetic (taste) and a health issue for drinking water quality. High salinity adversely affects drinking water taste, landscape irrigation, and industrial and manufacturing processes. Salinity is particularly problematic because it cannot be removed via conventional drinking water treatment

processes, and the EPA has implemented a secondary (i.e., recommends but does not require compliance) maximum contaminant level for TDS of 500 mg/L. Additionally, CCWD has established a water quality delivery objective for Cl, a constituent of salinity, of 65 mg/L. Health impacts of bromide, another constituent of salinity, are discussed below.

Organic Carbon

Organic carbon is composed of naturally occurring organic matter from plants and animals. Two forms of organic carbon occur in surface waters: (1) dissolved organic carbon (DOC), which is organic carbon that cannot be removed from water by a 0.45-micron filter; and (2) total organic carbon (TOC), which is a measure of all the organic carbon in the water, including DOC and organic carbon from particulate matter such as plant residues.

Organic carbon is a DBP precursor that causes problems during the drinking water treatment process. Organic carbon reacts with chlorine during the disinfection process to form trihalomethanes, haloacetic acids, and other toxic compounds. As a result, CCWD and many other agencies that rely on the Delta for water supply have changed to ozone disinfection. High levels of organic carbon in Delta water require increased ozone dosages during the disinfection process at CCWD's two water treatment plants. This can, in turn, potentially result in increased formation of bromate in treated water. Drinking water regulations specify a required level of reduction for organic carbon based on source water concentrations.

Sacramento–San Joaquin Delta

The Delta, which is an estuarine environment, contains a mix of fresh water and saltwater. In general, downstream areas of the Delta contain saltier water, while upstream areas contain fresher water. The location at which Delta waters become saline is largely dependent on the rate of net outflows from the Delta, which is determined primarily by inflows, local diversions, and exports. High flows push saltwater towards the San Francisco Bay, while lower outflow rates allow saltwater to intrude upstream farther into the Delta.

The release of water from storage in Lakes Shasta, Folsom, and Oroville has controlled saltwater intrusion into the Delta during summer and fall months. Flows from the eastside streams and the San Joaquin River system also contribute to controlling saltwater intrusion. In general, peak winter and spring flows have been reduced by upstream storage and diversions, and summer and fall flows have been augmented. During very wet years, reservoirs are unable to control runoff, and salinity in the northern portions of San Francisco Bay is reduced to freshwater concentrations (CALFED, 2000).

Delta flows and water quality are specifically controlled or influenced by the following factors:

- Inflow of fresh water from tributary rivers, as influenced by upstream reservoirs, diversions, and other infrastructure and management activities
- In-Delta diversions for export and local use, including CCWD, CVP and SWP pumping
- Upstream agricultural return flows

- Upstream and in-Delta wastewater treatment plant discharges
- In-Delta agricultural discharges resulting in elevated concentrations of total organic carbon and salts, which result from contact with peat-rich Delta soils and evaporative concentration, respectively
- Discharges from Delta agricultural islands may also have elevated concentrations of nutrients, suspended solids, organic carbon, boron, and pesticides
- Tidal action that forces high-salinity seawater, including bromide associated with seawater, from Suisun and San Francisco Bays into the lower Delta
- Heavy metals, including cadmium, copper, mercury, and zinc, which continue to enter the Delta. Sources of these metals include runoff from abandoned mine sites, tailing deposits, downstream sediments where metals have been deposited over the past 150 years, urban runoff, and industrial and municipal wastewater.

The factors that most influence Delta water quality can differ by location. The north Delta tends to have better water quality in terms of salinity, in large part a result of low salinity water inflow from the Sacramento River. The quality of water in the west Delta is strongly influenced by tidal exchange with San Francisco Bay. During low-flow periods, seawater intrusion results in increased salinity. In the south Delta, water quality tends to be poorer because of the combination of low inflows of lower quality water from the San Joaquin River, agricultural return flows that are pumped from Delta islands into Delta channels, and the effects of seawater intrusion from San Francisco Bay.

Table 4.2-2 identifies current mean concentrations of selected constituents at various locations in the Delta. These and other water quality parameters relevant to Delta water quality are described in the following paragraphs. For reference, a map of the Delta is presented as Figure4.2-3. Review of these water quality data indicates that higher levels of the constituents related to salinity tend to occur toward the southern and western portions of the Delta.

TABLE 4.2-2
WATER QUALITY FOR SELECTED STATIONS IN THE DELTA

Location	Mean TDS (mg/L)	Mean EC (µS/cm)	Mean Chloride (mg/L)	Mean Bromide (mg/L)	Mean DOC (mg/L)
Sacramento River at Greene's Landing	100	160	6.8	0.018	2.5
North Bay Aqueduct at Barker Slough	192	332	26	0.015	5.3
Clifton Court Forebay	286	476	77	0.269	4.0
Jones Pumping Plant	258	482	81	0.269	3.7
CCWD Intake at Rock Slough	305	553	109	0.455	3.4
San Joaquin River at Vernalis	459	749	102	0.313	3.9

The sampling period varies, depending on the location and constituent, but generally is between 1990 and 1998.

TDS = total dissolved solids
EC = electrical conductivity
DOC = dissolved organic carbon
mg/L = milligrams per liter
µS/cm = micro Siemens per centimeter

SOURCE: CALFED, 2000.

Delta Salinity

Salinity (defined above) varies across the Delta, and results from a combination of mineral loads from river inflows, saline water intrusion from the San Francisco Bay, and agricultural tailwater and wastewater treatment plant outfalls within the Delta. Table 4.2-2 shows that mean TDS concentrations are highest in the west Delta and in south Delta channels that receive water from the San Joaquin River (CALFED, 2000).

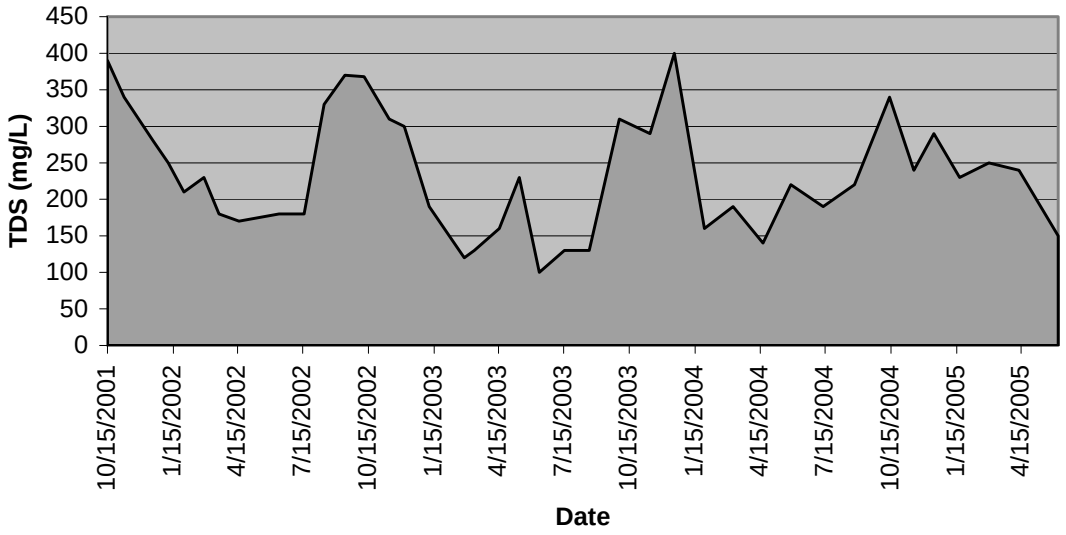
Saline water intrusion from the San Francisco Bay primarily affects the western Delta. Daily tidal cycles force saline water into and out of the Delta, with the extent of intrusion determined by tidal height, freshwater inflow from the Sacramento, San Joaquin, and east-side rivers, the rate of pumping at Delta water intakes, and the operation of various flow control structures (e.g., Delta Cross-Channel Gates and Suisun Marsh Salinity Control System; DWR, 2001).

In addition to varying geographically within the Delta, salinity varies seasonally depending on the quantity and quality of freshwater inflows and water operations. During winter and early spring, flows through the Delta are usually above the minimum levels required to control salinity. During the summer and autumn, salinity in the Delta may increase because of decreased inflows or discharges from agricultural runoff. Additionally, decreased inflow during the late summer can lower Delta outflow and, combined with high exports, result in increased net reverse flow and increased saltwater intrusion into the Delta.

The Sacramento and San Joaquin Rivers contribute about 61 percent and 33 percent, respectively, to tributary inflow salinity loads within the Delta. Sacramento River salt concentration is relatively low, but because of its large volumetric contribution, the river contributes the majority of the salt load supplied by tributary inflow to the Delta (DWR, 2001). Flow from the San Joaquin River is lower than flow from the Sacramento River, but the salt concentrations in San Joaquin River water average about seven times those of the Sacramento River. Return flows to the Delta from agricultural islands also contribute salt to Delta waterways.

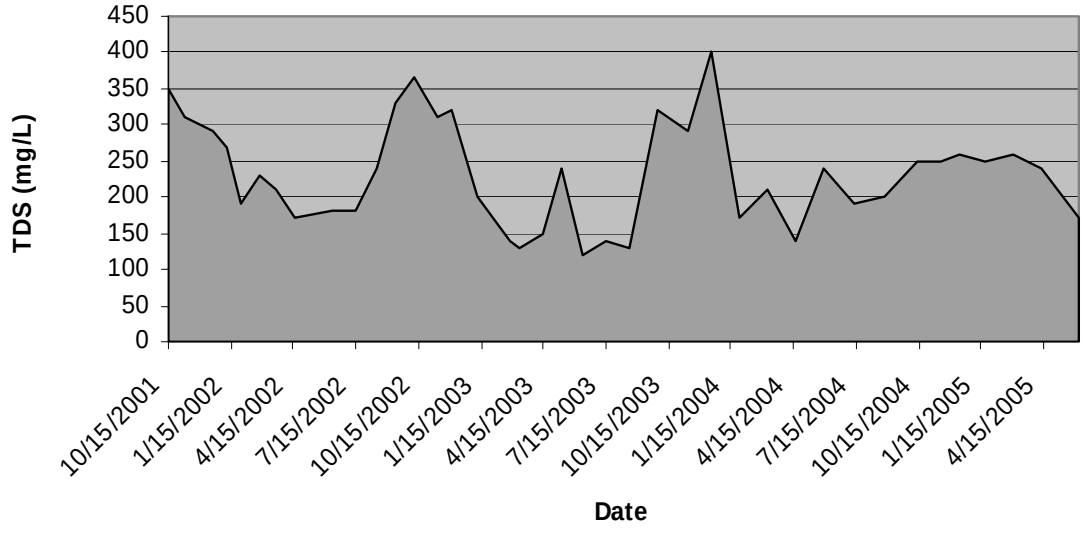
CVP and SWP exports and pumping can influence the direction of flow at various locations throughout the Delta, and thereby have the potential to affect Delta salinity. Operation of the Banks and Jones Pumping Plants draws high-quality Sacramento River water across the Delta and restricts the low-quality area to the southeast corner (CALFED, 2000; SWRCB, 1997). Each portion of the Delta is dominated by different hydraulic variables, and salinity therefore varies within different sections of the Delta.

Figure 4.2-6, **Figure 4.2-7**, and **Figure 4.2-8** illustrate the seasonal variation in salinity. Salinity generally shows a consistent increase in concentration from about August through December; salinity during these months is much higher than during the other parts of the year. The increase in concentration is still evident at the Middle River sample location near Highway 4, but the overall concentration levels are lower than at the other two testing sample locations. The salinity at Middle River, which is east of the two other stations, is typically lower than the salinity at the two Old River sampling locations in the summer and fall. This is consistent with the southern and western portions of the Delta being saltier than the northern and eastern portions. Salinity control and monitoring is the responsibility of the CVP and SWP, and is regulated by the SWRCB. Salinity is monitored



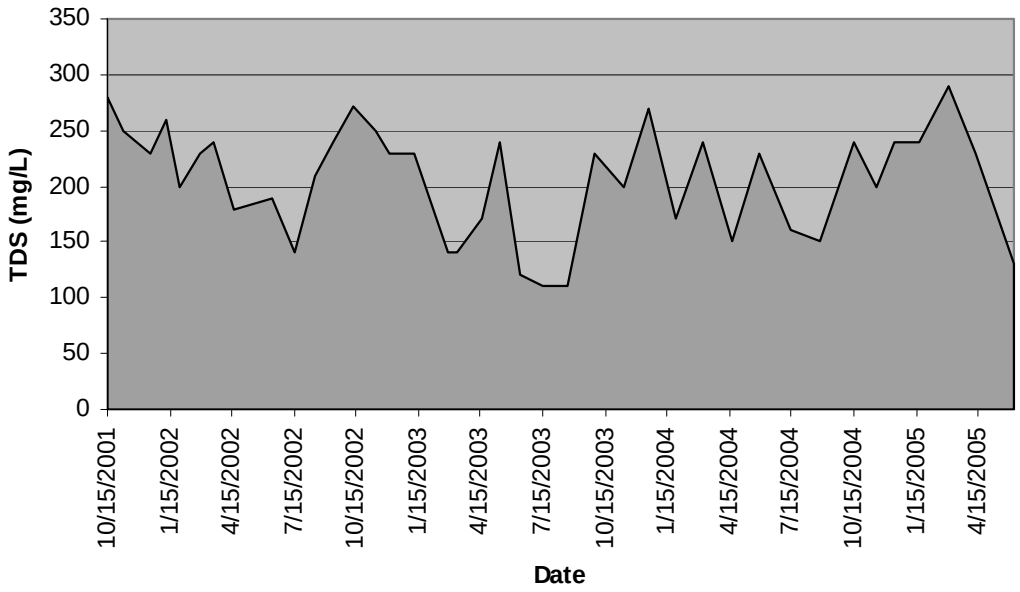
Los Vaqueros Reservoir Expansion Project. 201110

Figure 4.2-6
Regional Survey Grab Sample Data
Station #14 – Old River at CCWD Intake



Los Vaqueros Reservoir Expansion Project. 201110

Figure 4.2-7
Station #15 – Confluence of Old River and
Victoria Canal at Widows Island



Los Vaqueros Reservoir Expansion Project. 201110

Figure 4.2-8
Station #18 – Middle River at Highway 4 Bridge

because water diverted and exported from the Delta is used for a variety of municipal, industrial, and agricultural uses (CALFED, 2000; SWRCB, 1997). Salinity control in the Delta is necessary because the Delta is influenced by the ocean, and because Delta water channels are at or below sea level. Unless forced back by a continuous seaward flow of fresh water, seawater will advance into the Delta and degrade water quality. Salinity varies geographically and seasonally within the Delta and varies depending on water-year type (CALFED, 2000; SWRCB, 1997).

Bromide

Bromide is an important component of salinity because it reacts with natural organic compounds in the water to form DBPs such as trihalomethanes, haloacetic acids (HAAs), and bromate during disinfection of drinking water. Four types of trihalomethane compounds are regulated in drinking water: chloroform, bromodichloromethane, dibromochloro-methane, and bromoform, as well as total HAAs. CCWD established a source water quality goal of 50 micrograms per liter (µg/L) for bromide on the basis of a 1998 study by the California Urban Water Agencies.

The primary source of bromide in the Delta is saltwater intrusion. Other sources include drainage returns in the San Joaquin River and the Delta, and connate water beneath some Delta islands. The bromide in river and agricultural irrigation sources primarily comes from seawater intrusion into applied water delivered from the Delta. As shown in Table 4.2-2, TDS, electrical conductivity, bromide, and Cl data indicate that seawater intrusion is highest in the western and southern portions of the Delta, where the direct effects of recirculated bromide from the San Joaquin River are evident (DWR, 2001).

Overall, bromide patterns in the Delta are similar to salinity patterns in the Delta (DWR, 2001). Like salinity, bromide concentrations are highest in the west and south Delta channels affected by the San Joaquin River (DWR, 2001). Like salinity, bromide concentrations are higher in dry years than in wet years, and bromide concentrations are higher during low Delta outflows as compared to medium or high flows (DWR, 2001).

Figure 4.2-9, **Figure 4.2-10**, and **Figure 4.2-11** illustrate the bromide concentrations at various locations in the Delta. As was seen in the charts for salinity, the bromide concentration shows an increase between August and December. The levels are much higher during these months than during the rest of the year. Bromide concentrations in Delta waters tend to be strongly correlated with Cl concentration.

X2

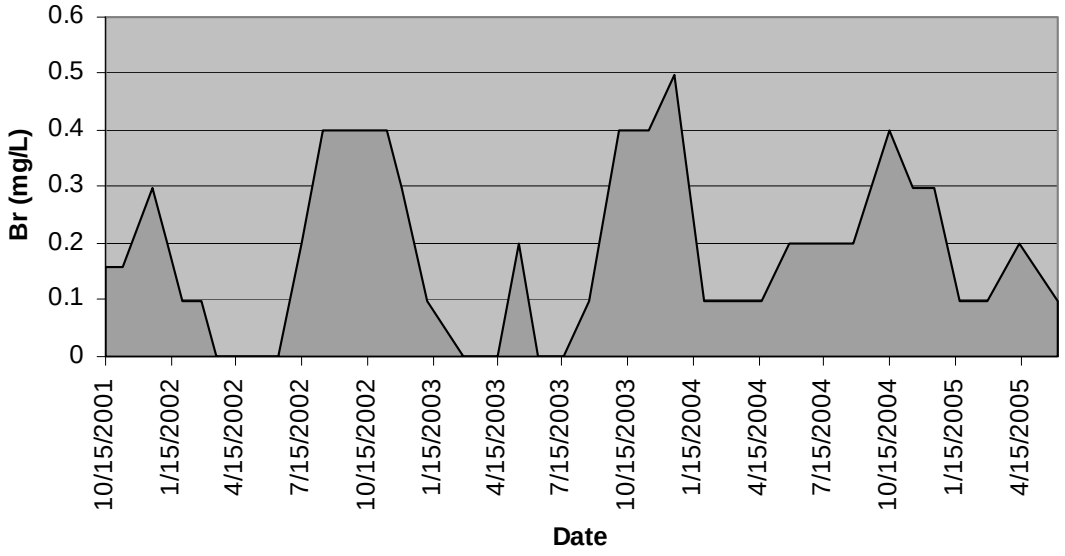
Delta outflow, along with tidal action, is one of the primary factors controlling water quality in the Delta. While tidal action pushes saline water into and out of the Delta, Delta outflow provides an ongoing barrier against saline water intrusion. The standards governing X2 (the distance in kilometers from the Golden Gate of 2 parts per thousand (ppt) salinity within the Delta) are a tool used to regulate and manage salinity within the Delta and modeling results are available in Appendix C4. When Delta outflow is low, seawater can intrude farther into the Delta, increasing the value of X2 and salinity / bromide concentrations at drinking water intakes. When Delta outflow is high, seawater is driven back towards San Francisco Bay, decreasing the values of X2 and salinity / bromide concentrations at drinking water intakes.

The position of X2 is managed through reservoir releases and, in some instances, curtailment of Delta pumping. The length of time that X2 must be positioned at set locations in the Delta each month is determined by a formula that considers the previous month's inflow to the Delta from the Sacramento and San Joaquin Rivers. The February through June period is regulated by the X2 standard, to provide protection to Delta fisheries.

X2 is currently used as a key indicator in managing Delta conditions. It is correlated with a variety of biological indicators and is related to the magnitude of fresh water flowing downstream through the Delta, and saltwater moving upstream within the lower portion of the Delta. The *Water Quality Control Plan for the San Francisco Bay/Sacramento–San Joaquin Delta* (Basin Plan) defines requirements for maintaining X2 at Port Chicago, Chipps Island, and Collinsville (SWRCB, 1995).

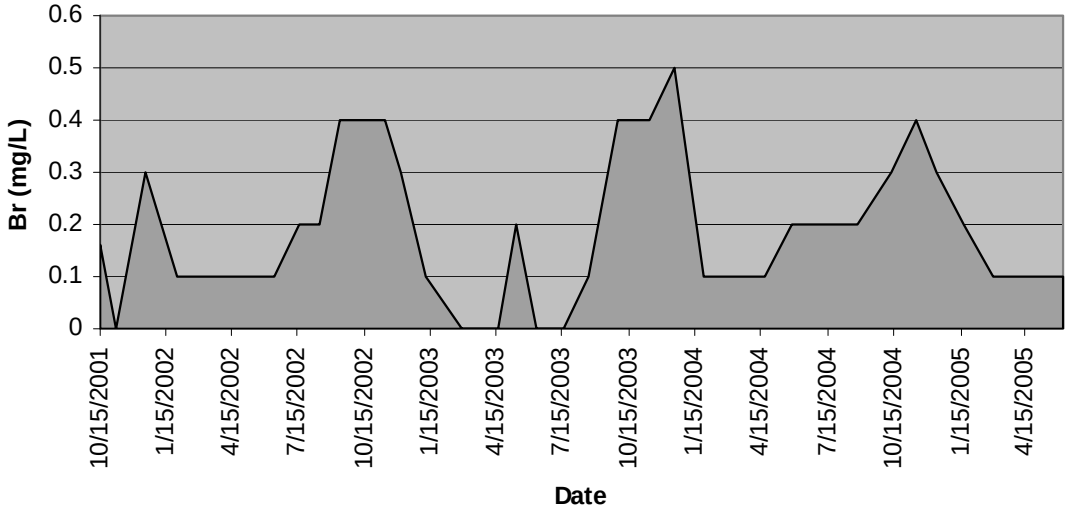
Organic Carbon

Like salinity and bromide concentrations, organic carbon concentrations in the Delta vary both geographically and seasonally. Like salinity and bromide, organic carbon concentrations are higher in the west and south Delta than in locations nearer to the Sacramento River (Table 4.2-2). However, unlike salinity and bromide, organic carbon concentrations are typically lower in the summer and higher during the wetter, winter months. Organic carbon is important because of its role in the formation of DBPs, specifically trihalomethanes. Only a portion of organic carbon is responsible for DBP formation. Studies conducted by the California Department of Water Resources (DWR,



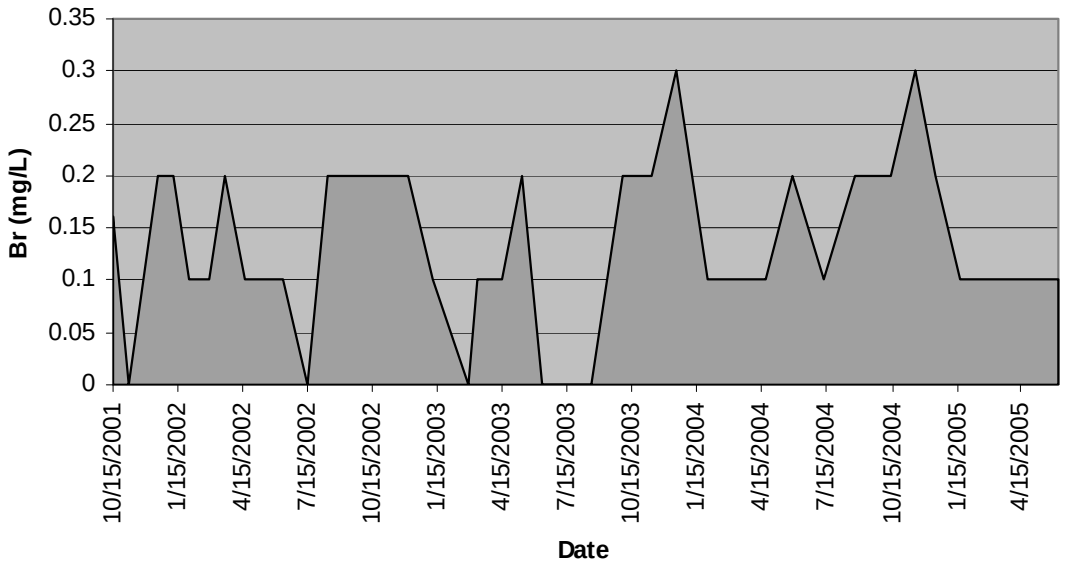
Los Vaqueros Reservoir Expansion Project. 201110

Figure 4.2-9
Regional Survey Grab Sample Data -
Station #14 – Old River at CCWD Intake



Los Vaqueros Reservoir Expansion Project. 201110

Figure 4.2-10
Station #15 – Confluence of Old River and
Victoria Canal at Widows Island



Los Vaqueros Reservoir Expansion Project. 201110

Figure 4.2-11
Station #18 – Middle River at Highway 4 Bridge

2001) suggest that Delta island drainage contributes 38 to 52 percent of the DBP-forming carbon in the Delta during the winter, and 40 to 45 percent in the summer during the irrigation season.

The Sacramento and San Joaquin Rivers and drainage return flows from in-Delta islands are important sources of DOC and TOC to the Delta (CALFED, 2000). Of the organic carbon loading contributed by tributary inflow, the Sacramento River contributes an estimated 71 percent of the total carbon load to the Delta (DWR, 2001). The Sacramento River is a major contributor of organic carbon because about three-quarters of the total Delta inflow comes from the Sacramento River (DWR, 2001). The San Joaquin River contributes about 20 percent of the TOC load attributed to tributary inflow (DWR, 2001).

Sacramento and San Joaquin Rivers

As shown in Table 4.2-2, concentrations of many water quality constituents, including TDS, bromide, and organic carbon, are typically higher in Delta exports than in Sacramento River inflow. Water quality in the Sacramento River upstream of the Delta is generally good and acceptable for agricultural and municipal/industrial (M&I) uses although the Colusa Drain and a major wastewater discharge near Freeport degrade the Sacramento River water quality as it enters the Delta.

Salinity along the lower San Joaquin River, near its point of entry into the Delta, is relatively high in comparison to salinity in the Sacramento River. During the irrigation season, daily electrical conductivity (EC) values at Vernalis are generally less than 750 microSiemens per centimeter (μS/cm), and are usually less than 1,000 μS/cm during the remainder of the year. Salt concentrations in the San Joaquin River downstream of Vernalis increase because of agricultural activities discharges from the Stockton wastewater treatment plant.

4.2.2 Environmental Consequences

Analysis of Project Alternatives

Potential effects of the project alternatives on the Delta and upstream areas were assessed with the aid of computer models developed by DWR and Reclamation, as updated for this project by CCWD and the consultant team for the project. Water supply, water management, and water quality conditions were modeled and analyzed for a 2005 (existing) level of development and 2030 (future) level of development. The 2005 level of development reflects the level of water supply demand in 2005, patterns of land use in 2005, and the water-related facilities assumed to be in place under existing conditions. The 2030 level of development reflects the projected level of water supply demand in 2030, projected patterns of land use in 2030, and the additional water-related facilities assumed to be in place by 2030. Conditions without any of the project alternatives were modeled under both 2005 and 2030 levels of development. For the 2005 modeling, those conditions are labeled "Existing Condition." For the 2030 modeling, those conditions are labeled "Future Without Project."

Conditions with each of the project alternatives were also modeled under both 2005 and 2030 levels of development (Alternative 3 was not simulated in this model analysis). This modeling methodology allows comparisons to be made between the Existing Condition and each of the project alternatives under the 2005 level of development, and between the Future Without Project and each of the project alternatives under the 2030 level of development. This is a standard modeling approach for water-related projects. The following discussion provides a description of the models used for this purpose. Additional detailed information on the models, model assumptions, and the modeling process can be found in Appendix C-3.

Hydrology, Water Operations, Hydrodynamics, and Water Quality Models

Potential effects of the project alternatives on Delta flows, Sacramento and San Joaquin River instream flows, SWP and CVP reservoir releases, and reservoir storage levels were evaluated using DWR/Reclamation's hydrology and water operations model, California Simulation Model II (CalSim II). Model output from the CalSim II analysis was then used as input to DWR's hydrodynamic/water quality model of the Delta (Delta Simulation Model, Version 2 [DSM2]). The CalSim II and DSM2 models represent the industry standard analytical tools for predicting changes in Delta conditions and CVP and SWP operations. A discussion of background information and key elements, assumptions, and limitations of CalSim II and DSM2 is provided below.

As discussed in Sections 3.1.2 and 3.4.1 (Vol. 1), operational restrictions imposed on the SWP and CVP to protect fishery resources are an important part of the background conditions in the Delta. However, considerable uncertainty exists regarding both what the regulations will be and how they will be implemented from year to year.

~~To capture the range of operations likely with fishery restrictions, both current and future, and the resulting SWP and CVP operations, two scenarios were simulated. The "moderate fishery restriction" scenario represents the least restrictive array of requirements that are reasonably to be expected under current and future regulatory conditions, while the "severe fishery restriction" scenario captures the most restrictive requirements reasonably to be expected.~~

~~Analyses using both the moderate and severe fishery restrictions assumptions were used to bracket the range of background conditions that are likely to occur in any year, and to evaluate the environmental effects of the project alternatives under this range of conditions.~~ The assumptions used to estimate these restrictions are described in Appendix C3 (Vol. 4).

Water supply and management model results are provided in Appendix C4. Water quality and hydrodynamic model results are provided in Appendix C5 (Vol. 4).

CalSim II: Key Elements and Background Information

CalSim II is considered the best available tool for modeling operations of the CVP and SWP and is the system-wide hydrologic and operations model used by Reclamation and DWR to conduct planning and impact analyses for the Sacramento River, San Joaquin River, and Delta. CalSim II is also the only peer-reviewed model available to analyze the impacts of the project on the water resources of the Delta and the upstream watershed. CalSim II was developed to determine the reliability of water deliveries to CVP and SWP contractors. The model is now regularly used for water resources studies in the Delta, including water-right studies prepared for the SWRCB and CEQA and NEPA documents to estimate potential changes in surface water resources.

Land use, water infrastructure, water supply contracts, and regulatory requirements are held constant over the period of simulation, representing a fixed level of water demands and operational parameters in CalSim II. DWR and Reclamation have developed land-use-based estimates of water demands associated with current and anticipated future land uses in the Central Valley.

The historical flow record from October 1921 to September 2003, adjusted for the influence of land use changes and upstream flow regulation, is used to represent the possible range of water supply conditions at a given level of development. This 82-year historical period provides a sufficient variety of hydrological conditions (e.g., droughts and wet-year periods of varying magnitude and length) to evaluate the potential consequences of a project that would change water operations in the Delta.

The analyses performed for the Draft EIS/EIR for this project are based on CalSim II studies for 2005 and 2030 levels of development prepared as part of the Common Assumptions effort for the ongoing CALFED surface storage projects.[1] The Common Assumptions 2030 level of development

[1] ~~Common Assumptions has not yet developed a standard constraint equation for Old and Middle River Flows under either the Wanger Ruling or the 2008 OCAP. Currently, more than one equation is being evaluated by the Common Assumptions effort. To evaluate moderate and severe Delta fishery restrictions in CalSim II, a method first implemented by the Bay-Delta Conservation Plan modeling team was used which averages three equations to determine net flows in Old and Middle rivers (See Appendices C-2 and C-3). Each equation includes pumping at the SWP Banks and CVP Jones pumping facilities, and the portion of pumping at Los Vaqueros intakes that had been shifted from SWP and CVP facilities for the South Bay water agencies (Alternative 1 and Alternative 2). The portion of pumping at the Los Vaqueros intakes to meet CCWD demand and other project benefits (including Delta Supply Restoration in Alternative 1 and Dedicated Storage for Environmental Water in Alternative 2), either through direct diversion or diversion to storage, is not included in the equations used in the CalSim II model to constrain modeled net flow in Old and Middle rivers. The impact analysis performed using the DSM2 Delta hydrodynamics model calculates flows in Old and Middle rivers based upon all simulated boundary flows and diversions, including all diversions at the Los Vaqueros intakes (See Section 4.3.2, Subsection titled, Old and Middle Rivers, page 4.3-87).~~

scenarios include future water supply facilities and operations that are considered reasonably likely to be implemented, as described in Section 4.1.2 (Vol. 1). To ensure that model analysis of the Los Vaqueros Reservoir Expansion Project more precisely captures any effects of the project alternatives resulting from the operation of the CVP and SWP under the OCAP BOs, the analyses performed for this Final EIS/EIR are updated using CalSim II studies developed in August 2009 for the 2005 and 2030 levels of development. These studies modified the Common Assumptions studies to include modeling assumptions that capture the export restrictions based on Old and Middle River flow and the other regulations on state and federal water project operations imposed by the OCAP BOs.

A review of the methodology, software, and application of CalSim II was conducted in 2003 (Close et al., 2003). The main limitations of CalSim II that are relevant to its application for this EIS/EIR are as follows:

Monthly time step. Since CalSim II uses a monthly time step, it does not represent daily variations that may occur in the rivers under actual flow and weather conditions. The hydrodynamic and water quality modeling conducted using DSM2 uses a 15-minute time step, but uses the CalSim II average monthly inflows to the Delta as boundary conditions. Water quality results from DSM2 are averaged over a month to provide input salinity to CalSim II that drives simulated Los Vaqueros Reservoir operations. Changes in salinity on a monthly time step can be substantial and may not accurately capture operational decisions that change over the time scale of days or weeks. This is a recognized limitation of the model, and is addressed through careful interpretation of model results that include large changes between subsequent months.

Threshold Sensitivity in CalSim II. CalSim II simulates operational rules to guide reservoir and pumping operations and decisions. Some of these rules specify threshold values that, when exceeded, trigger a different operation. This can result in simulated operations with changes greater than might be expected in practice, because in practice operator judgment plays a role in interpreting and implementing operational rules.

Similarly, some regulatory requirements specify thresholds that trigger different standards, which cannot be simulated with accuracy in a monthly time-step model. For example, the X2 requirement at Port Chicago applies only in months when the average EC at Port Chicago during the 14 days just before the first day of the month is less than or equal to 2.64 millimhos per centimeter (mmhos/cm).

Use of these threshold values in CalSim II, coupled with a monthly time step, can result in responses to small changes that might be larger than expected in practice for any given month, but generally average out over several months. Changes in simulated CVP and SWP operations between an Existing or Future Without Project scenario and a project alternative are carefully investigated to determine whether such changes would reasonably be caused by the project alternative or are an artifact of the approximations used in the model.

CalSim II is recognized as a valuable tool when used in a comparative analysis, such as for this EIS/EIR. Results from a single simulation may not necessarily correspond to actual system operations for a specific month or year, but are representative of general water supply conditions.

Model results are best interpreted using various statistical measures such as long-term and year-type average, and probability of exceedance. In this form, the model results adequately estimate the potential impacts of the project alternatives, notwithstanding the limitations of CalSim II previously discussed.

DSM2: Key Elements and Background Information

DSM2 is a one-dimensional numerical model developed by DWR for simulation of tidal hydraulics, water quality, and particle tracking in the Delta. This model is the standard tool used by DWR and Reclamation for analyzing potential impacts of the project alternatives on water conditions in the Delta. The DSM2 model was used in conjunction with CalSim II to evaluate the potential impacts of the project alternatives on Delta channel flow, water level, and water quality. Appendix C3 provides the input assumptions and other criteria used for the DSM2 modeling analysis. A brief summary is provided below.

The DSM2 analysis used monthly simulated boundary flows from the CalSim II analysis described above. Changes in simulated Delta tidal flows, stage, and water quality, in comparison to Existing and Future Without Project conditions, were determined for the 16-year period from 1976 to 1991. This period includes the 2-year drought from 1976 to 1977, as well as the 6-year drought, from 1987 to 1992. This shorter period of simulation, rather than the 82 year CalSim II analysis period, has been standard practice for DSM2 modeling studies.

A recognized issue in using CalSim II inputs to DSM2 is that the estimation of Delta water quality is approached differently by the two models. This sometimes leads to a condition in which the CalSim II model estimates the amount of outflow required to avoid causing a Delta water quality violation, but the subsequent DSM2 estimate of Delta salinity shows that the standard might be exceeded. This mismatch between the models is generally small, but still occurs. Due to this known mismatch, interpretation of DSM2 results that are based on CalSim II inputs for analysis of compliance with Delta water quality standard compliance is best done in a comparative fashion between two model studies.

Most water quality impacts were analyzed using DSM2 outputs for electrical conductivity, either directly or as converted to Cl concentrations. Changes in X2 location were assessed from the CalSim II output.

Operations and Benefits Provided by Project Alternatives

To perform the analysis of the Los Vaqueros Reservoir Expansion Project, the CalSim II model described was modified to include Los Vaqueros Reservoir, the existing intakes, and the new Delta intake and pump station. This allowed estimation of Los Vaqueros Reservoir operations in conjunction with the state and federal water facilities represented within the CalSim II model. Details on the inclusion of Los Vaqueros Reservoir operations within the CalSim II model are presented in Appendix C.

The terms of the USFWS and NMFS OCAP BOs require changes to the prior operation of the CVP and SWP in the Delta. To ensure that the modeling analysis of the Los Vaqueros Reservoir

Expansion Project more precisely captures any effects of the project alternatives resulting from the operation of the CVP and SWP under the OCAP BOs, the analyses performed for this Final EIS/EIR have been updated using CalSim II studies completed in August 2009 that incorporate the requirements of the OCAP BOs.

The modeling analysis for the Draft EIS/EIR included restrictions on CVP and SWP exports from the Delta that were based on terms in the December 2007 court order in *NRDC vs. Kempthorne*, as modified to include further OMR flow requirements anticipated to be required for protection of longfin smelt. Due to uncertainty about future implementation of OMR flow restrictions at the time the Draft EIS/EIR analysis was performed, a bracketed approach was used in that analysis in which the best available information was used to predict the likely high and low bounds for OMR flow restrictions (moderate and severe restrictions). The analysis performed for the Final EIS/EIR incorporates updated modeling of CVP and SWP operations under the USFWS and NMFS OCAP BOs, which both include restrictions on OMR flows. Diversions at the CCWD Old River and AIP Intakes are included in the calculation of OMR net flow within the CalSim II model. The bracketed approach was not used in the CalSim II modeling. Remaining uncertainty regarding the implementation of OMR flow restrictions, which are adaptively managed based on real-time Delta water quality and fishery monitoring, is addressed in the Final EIS/EIR analysis through the use of multi-year model simulations, which capture a range of operations and potential effects.

The studies include modeling assumptions that capture the export restrictions based on OMR flow. Operational assumptions have been updated for Alternatives 1 and 2 of the Los Vaqueros Reservoir Expansion Project so that increased diversions for Delta Supply Restoration or Dedicated Storage of Environmental Water are not made for those project alternatives when the new OMR flow regulations are controlling CVP and SWP exports from the Delta. Operations for Delta Supply Restoration and additional Dedicated Storage for Environmental Water are not included in Alternative 4; therefore, this updated assumption did not affect the analysis of Alternative 4.

CCWD, Reclamation and DWR have reviewed Delta water supply operations in light of the recently issued OCAP BOs, comments on the Draft EIS/EIR, and the Special Delta Term included in D1629, and have developed a proposed set of operations for CCWD that will avoid potential conflicts, improve overall coordination of Delta water operations, while maintaining fishery protection, water supply and water quality for CCWD, CVP and SWP. The proposed operations represent changes to the default timing of the no fill and no diversion periods described in the biological permits that govern the operations of Los Vaqueros Reservoir (1993 USFWS and NMFS Biological Opinions and 2009 CDFG Incidental Take Permit). These changes in timing would be allowable under the existing permits, with approval from the permit-issuing agencies. The proposed operations may be refined during Endangered Species Act consultation with NMFS, USFWS and/or CDFG. The proposed operations that are included in this updated modeling analysis are:

- The 75 to 90 day no fill period for Los Vaqueros Reservoir is implemented in half or all of February and all of March and June, and the 30-day CCWD no diversion period is implemented in March. This reduces the potential influence of filling Los Vaqueros Reservoir when OMR flow restrictions govern Delta operations, and will protect aquatic resources

while maintaining water right priorities. These operations are implemented within the CalSim II model used in the updated analysis for the project alternatives. The model simulations for Existing Conditions and Future Without Project used the current default timing for no fill and no diversion periods, which implements the no fill requirement variably in February, and from March 15 through May 31, and implements the no diversion period in April.

- During periods when OMR flow restrictions occur, the screened Rock Slough Intake (described in Section 3.1.3 of the Final EIS/EIR, Vol. 4, Section 3.1, Master Response 1: Project Purpose and Description,) is used to the maximum extent possible for direct diversions to CCWD customers while maintaining the chloride delivery goal. This also protects aquatic resources while avoiding adverse effects on water supply and quality. This operation is implemented in the updated CalSim II modeling performed for the Final EIS/EIR for simulations of Alternatives 1, 2, and 4 under both 2005 and 2030 level of development. In the modeling of this operation, it is assumed that between December and June, all direct diversions to CCWD would be made from Rock Slough Intake when the chloride concentration at that location is below the CCWD delivery goal of 65 mg/L. If the chloride concentration at the Rock Slough Intake is above 65 mg/L during the December through June period, diversions are made from other CCWD intakes to blend the Rock Slough Intake salinity to 65 mg/L, if possible based on the salinity at the other CCWD intakes.

- Releases from Los Vaqueros Reservoir are minimized from September through November, while still maintaining the chloride delivery goal for CCWD customers. Los Vaqueros Reservoir is also filled during this period when water quality allows. This improves fishery protection and avoids water supply or quality impacts. This operation is included in the CalSim II modeling performed for the Final EIS/EIR by using the CCWD intake with lowest salinity for diversions to CCWD customers in the September through November period, and by allowing the reservoir to be filled when salinity at one or more intakes is below 65 mg/L.

- When diversions from the Freeport Intake are available to CCWD pursuant to the agreement with EBMUD for shared use of this intake, these diversions were used to fill Los Vaqueros Reservoir whenever other Delta water quality and CCWD operational conditions allow. This minimizes the potential effects of filling Los Vaqueros Reservoir on OMR flow to maintain fishery protections while avoiding water quality and supply impacts. This operation was incorporated in the modeling performed for the Final EIS/EIR by instructing the model to fill Los Vaqueros Reservoir with diversions of 3.2 TAF from the Freeport Intake, under the terms of the agreement with EBMUD, at the first opportunity in each CVP contract year when Rock Slough Intake water quality is below the CCWD delivery goal of 65 mg/L chloride, as this condition allows CCWD customer demand to be met from Rock Slough Intake while the reservoir is filled from the Freeport Intake.

The modified CCWD operations described above are used for the analysis of alternatives in the updated modeling presented in this section. The modifications are assumed to occur in Alternatives 1, 2, and 4 under both 2005 and 2030 levels of development. (Alternative 3 was not re-evaluated because even with these changes it cannot avoid significant impacts.) The modifications to the timing of no fill and no diversion periods were not used for the existing or future Without Project Conditions because such modifications are not currently in place, and would not be sought absent approval of the project or one of the alternatives. The operation of the Rock Slough Fish Screen is assumed to occur in Alternatives 1, 2, and 4. The Rock Slough Fish Screen is not assumed to be operated in the existing Without Project Conditions, but is assumed to be operated in the future Without Project Conditions. This is because the Rock Slough fish

screen is not currently in place and was not approved at the time environmental review commenced, but will be constructed regardless of whether the project is approved. However, the Rock Slough Intake is not preferentially used in the Future Without Project conditions. Instead, intake selection for direct diversions to CCWD customers is assumed to be made based on best available water quality in the simulation of Future Without Project conditions.

As described in Chapter 3 (Vol. 1), the alternatives were designed to provide various levels of water supplies for environmental water management and water supply reliability, while improving delivered drinking water quality. The project alternatives were modeled using the tools described previously in this section to determine the benefits they would provide and to assess the impacts of providing those benefits. The physical and operational characteristics of each alternative are described in detail in Chapter 3 (Vol. 1).

Table 4.2-3 presents the annual average of the total diversions that would be taken at Rock Slough, Old River, AIP, and, under Alternatives 1 and 2, the new Delta intake facilities. These diversions would be either directly delivered or stored. Diversions to storage would be later released (e.g. releases to South Bay water agencies or wildlife refuges). These releases are not included in Table 4.2-3 but are discussed as part of the project benefits. The diversions are grouped by the initial destination of the water that is pumped. For a further breakdown of the water use (for instance, by CCWD water right, month, and water year type), see Appendix C4 (Vol. 4).

TABLE 4.2-3 (REVISED)*
ANNUAL AVERAGE DELTA DIVERSIONS AT ROCK SLOUGH, OLD RIVER, VICTORIA CANAL, AND NEW DELTA INTAKE FACILITIES, BY WATER USE (TAF/YR)

	Long-Term Average			1987-1992 Drought Average			1976-1977 Drought Average		
	Direct Delivery to CCWD	Direct Delivery to Others	Diversion to LV Storage	Direct Delivery to CCWD	Direct Delivery to Others	Diversion to LV Storage	Direct Delivery to CCWD	Direct Delivery to Others	Diversion to LV Storage
2005 Level of Development									
Existing Condition	102	0	23	118	0	13	111	0	0
Alternative 1	103	147	32	121	67	7	102	86	0
Alternative 2	103	146	31	121	65	7	102	86	0
Alternative 4	100	0	26	116	0	6	82	0	0
2030 Level of Development									
Future Without Project	139	0	25	159	0	12	150	0	0
Alternative 1	139	137	35	159	53	8	137	74	2
Alternative 2	139	137	35	159	54	8	137	74	2
Alternative 4	136	0	29	155	0	7	118	0	2

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

CCWD = Contra Costa Water District
LV = Los Vaqueros
TAF = thousand acre-foot (feet)
YR = year

As shown in Table 4.2-3, direct deliveries to CCWD under each of the project alternatives would decrease during droughts compared to the Existing and Future Without Project conditions, because of the use of CCWD's share of the increased storage capacity in Los Vaqueros Reservoir. ~~Direct deliveries to CCWD under Alternative 3 would decrease during all conditions because the reservoir is operated to provide additional environmental water management benefits as described in Chapter 3.~~ Annual average diversions to storage would be greater for ~~all alternatives~~ Alternatives 1 and 2 compared to the Existing and Future Without Project conditions because a larger demand for water deliveries from the reservoir that includes customers at South Bay water agencies is assumed for ~~the larger reservoir provides more available storage space~~these alternatives. The additional stored water would then be available for release to project participants, providing environmental water management, water supply reliability, and water quality benefits as described in the following subsections. In Alternative 4, annual average diversions to storage are not greater than in the Existing and Future Without Project conditions, other than small increases to make up for increased evaporation from the larger reservoir surface area.

Project Benefits Analysis

The evaluation of benefits described in this report is intended to provide information for potential project participants and to provide a basis for evaluating potential environmental impacts. All of the project alternatives share two primary objectives: to use an expanded Los Vaqueros Reservoir to develop water supplies for environmental water management, and to increase water supply reliability for Bay Area water providers. The facilities considered and the manner in which the alternatives are operated determine to what extent the primary objectives are achieved. All of the project alternatives also share a secondary objective: to use an expanded Los Vaqueros Reservoir to improve the quality of water deliveries to municipal and industrial customers in the San Francisco Bay Area, without impairing the project's ability to meet the environmental and water supply reliability objectives. (See Chapter 1 (Vol. 1) for a discussion of project purpose and need and objectives.) The extent of the benefits achieved in each of these areas will depend on several factors, including future Delta conveyance and habitat improvements, Delta operations requirements, and the project's precise environmental water management actions as further developed in project permits and agreements with project partners.

Some of the project benefits estimated in the Final EIS/EIR analysis have decreased relative to the benefits estimates provided in the Draft EIS/EIR analysis. These changes occur primarily because of the model updates in the Final EIS/EIR. Diversions for Delta Supply Restoration and Dedicated Storage for Environmental Water are limited by OMR flow requirements in the Final EIS/EIR modeling, which reduces the estimated benefit for each of these categories by limiting these operations relative to what was assumed in the Draft EIS/EIR analysis. Environmental Water Management associated with shifting diversions to CCWD intakes with positive barrier fish screens are based on CVP and SWP contract allocation values in the CalSim II model, which have decreased relative to the Draft EIS/EIR analysis with the inclusion of the OCAP BO terms in the CalSim II model used for the Final EIS/EIR analysis. The Environmental Water Management deliveries to South Bay water agency customers are also diminished during the CCWD no diversion periods by the OMR flow limits placed on filling Los Vaqueros Reservoir for South Bay water agency supply in

the Final EIS/EIR analysis. CCWD operations are modified in the Final EIS/EIR analysis to better coordinate fishery protection operations with CVP and SWP, as described above, but the CCWD water supply reliability benefits of the project alternatives are not substantially affected by these modifications. Incidental water quality benefits to customers of South Bay water agencies are expected to decrease along with the amount of water potentially delivered from Los Vaqueros Reservoir to those agencies. Incidental water quality benefits to CCWD customers are expected to occur along with the water supply reliability benefit to CCWD in the project alternatives.

Environmental Water Management

Benefits are determined by the facilities and operations for each project alternative. The modeling results show that improvements in environmental water management are similar for a given project alternative across levels of development and fishery restrictions. Appendix C4 (Vol. 4) provides detailed model results for water supply and management.

The project alternatives result in varying degrees of improvement in environmental water management depending on the water system operations implemented. Under Alternative 1, most of the improvement in environmental water management would be provided through Improved Fish Screening (see Section 3.1.2 and 3.4.2 in Vol. 1). **Table 4.2-4** shows the amount of water that would be diverted through the Los Vaqueros Reservoir system positive-barrier fish screens and delivered to the South Bay water agencies to replace water that would otherwise have been diverted at the existing SWP and CVP export pumps. CVP and SWP Delta export pumping would be reduced to correspond with the use of the Los Vaqueros Reservoir pumping system for the South Bay water agencies. Shifting this water diversion to the more effectively screened Los Vaqueros Reservoir system intakes would have fewer impacts to fish than the same amount of water diverted from either the SWP or CVP export facilities.

As analyzed in this EIS/EIR, this export pumping reduction takes place at the same time as the shift to Los Vaqueros Reservoir system intakes, but DWR, Reclamation and the state and federal fisheries agencies could optimize the timing of the reduction to further benefit fish. For example, the SWP and CVP Delta export pumps could be operated at minimal levels ~~in April to improve salmon migration or to allow delta smelt larvae to move out of the South Delta, or they could be operated at minimal levels in February to allow longfin smelt larvae to move out of the South Delta~~at critical periods for the Delta fisheries, to allow fish passage through or out of the south Delta. Initial estimates indicate that such operation could yield about 100 to 150 TAF of water per year to use in this manner. In either case, using the Los Vaqueros Reservoir system to deliver water to South Bay water agencies would result in improvement in environmental water management. Alternative 1 would also provide improvement in environmental water management through the No-Diversion Period and Multiple Delta Intake Locations (see Section 3.1.2 and 3.4.2 in Vol. 1).

In Alternative 2, most of the improvement in environmental water management would be provided through Improved Fish Screening, as described above, and Dedicated Storage for Environmental Water (see Section 3.1.2 and 3.4.2 in Vol. 1). **Table 4.2-5** shows the amount of water that would be diverted through the Los Vaqueros Reservoir system positive-barrier fish screens and delivered

TABLE 4.2-4 (REVISED)*
ALTERNATIVE 1 SUMMARY OF BENEFITS

Operations	Benefits					
	2005 Level of Development			2030 Level of Development		
		6-Year Drought[1]			6-Year Drought	
	Long-term Avg[2]	Annual Avg	Total	Long-term Avg	Annual Avg	Total
Environmental Water Management[3]	151 TAF/yr	68 TAF/yr	410 TAF	141 TAF/yr	55 TAF/yr	328 TAF
South Bay Water Agencies Water Supply Reliability	5 TAF/yr	7 TAF/yr	43 TAF	6 TAF/yr	10 TAF/yr	58 TAF
CCWD Water Supply Reliability[4]	NA	3 TAF/yr	20 TAF	NA	3 TAF/yr	20 TAF
Emergency Water Storage[5]	106 TAF	64 TAF	NA	107 TAF	67 TAF	NA
Additional Real-time Operating Benefits	Multiple intake locations to further avoid fish impacts; increased water supply reliability by reducing regulatory pumping restrictions Timing of pumping reductions at SWP/CVP Delta export facilities to further benefit fish					
South Bay Water Agencies Water Quality	Incidental taste & odor improvements, Incidental salinity improvements					
CCWD Water Quality	Incidental improvement in CCWD's ability to meet its delivered water quality goal					

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

1 6-year drought values based on hydrology of 1987-1992 drought
2 Long-term average values shown based on 82-year simulation
3 Environmental Water Management in Alternative 1 includes screened intakes, a 30-day No-Diversion period, multiple intake locations, and possible optimization of export reduction timing to benefit Delta fish
4 Assumes 20 TAF additional storage for CCWD
5 Average amount of water available in the reservoir for a single-year emergency

to the South Bay water agencies, plus the amount of water that would be provided for environmental water supplies for Delta fishery protection, San Joaquin Valley refuges, instream flows or other environmental purposes. For purposes of modeling, this water is assumed to be transferred to San Luis Reservoir where it would be available for delivery to Central Valley wildlife refuges. Alternative 2 would also provide improvement in environmental water management through the No-Diversion Period and Multiple Delta Intake Locations (see Section 3.1.2 and 3.4.3 in Vol. 1).

~~In the case of Alternative 3, most of the improvement in environmental water management would be provided through both the No-Diversion Period and Dedicated Environmental Water Storage (see Section 3.1.2 and 3.4.2). Under this alternative, CCWD could temporarily stop pumping from the Delta and instead draw from the stored Los Vaqueros Reservoir supplies to serve its customers during periods that would allow Reclamation to retain cold water stored in upstream reservoirs. The water stored upstream of the Delta in CVP reservoirs that had been reserved for delivery to CCWD could be reallocated for environmental purposes. These purposes could include cold water releases to support salmon spawning or pulse flow releases to support salmon migration in addition to water for wildlife refuges or other environmental purposes. The CVP water supply foregone by CCWD in this manner could also be conveyed through the Delta by existing export facilities for~~

TABLE 4.2-5 (REVISED)*
ALTERNATIVE 2 SUMMARY OF BENEFITS

Operations	Benefits					
	2005 Level of Development			2030 Level of Development		
	Long-term Avg[2]	6-Year Drought[1]		Long-term Avg	6-Year Drought	
		Annual Avg	Total		Annual Avg	Total
Environmental Water Management[3]	155 TAF/yr	69 TAF/yr	413 TAF	146 TAF/yr	54 TAF/yr	322 TAF
CCWD Water Supply Reliability[4]	NA	3 TAF/yr	20 TAF	NA	3 TAF/yr	20 TAF
Emergency Water Storage[5]	100 TAF	58 TAF	NA	101 TAF	58 TAF	NA
Additional Real-time Operating Benefits	Multiple intake locations to further avoid fish impacts; increased water supply reliability by reducing regulatory pumping restrictions Timing of pumping reductions at SWP/CVP Delta export facilities to further benefit fish					
South Bay Water Agencies Water Quality	Incidental taste & odor improvements, Incidental salinity improvements					
CCWD Water Quality	Incidental improvement in CCWD 's ability to meet its delivered water quality goal					

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

1 6-year drought values based on hydrology of 1987-1992 drought
2 Long-term average values shown based on 82-year simulation
3 Environmental Water Management in Alternative 2 includes screened intakes, a 30-day No-Diversion period, multiple intake locations, dedicated storage for environmental water, and possible optimization of export reduction timing to benefit Delta fish
4 Assumes 20 TAF additional storage for CCWD
5 Average amount of water available in the reservoir for a single-year emergency

~~environmental purposes south of the Delta. **Table 4.2-6** shows the amount by which CCWD would decrease its diversions, the amount stored upstream for environmental purposes, and the amount conveyed through the Delta for San Joaquin Valley Refuge use. Alternative 3 would also provide improvement in environmental water management through Multiple Delta Intake Locations (see Section 3.1.2 and 3.4.4).~~

The improvement in environmental water management under Alternative 4 would be smaller than under the other alternatives. Most of the benefit would be provided through the No-Diversion Period operations (see Section 3.1.2 and 3.4.2 in Vol. 1). When the reservoir is above emergency levels, the no-fill and no-diversion periods described ~~in Section 3.4.5~~above would apply. During extended dry conditions, the existing reservoir can fall below emergency levels, which results in exemptions from the no-fill and no-diversion periods so that it can be refilled up to emergency levels. The additional storage constructed under Alternative 4 would increase the number of years in which CCWD would implement the no-fill and no-diversion periods. The quantity presented in **Table 4.2-7** represents the reduction in diversions required to maintain the expanded reservoir at or above emergency levels. Alternative 4 would also provide improvement in environmental water management through Multiple Delta Intake Locations (see Section 3.1.2 and 3.4.5 in Vol. 1).

TABLE 4.2-6
ALTERNATIVE 3 SUMMARY OF BENEFITS

Operations	Benefits											
	Moderate Fishery Restrictions						Severe Fishery Restrictions					
	2005 Level of Development			2030 Level of Development			2005 Level of Development			2030 Level of Development		
		6-Year Drought[1]			6-Year Drought			6-Year Drought			6-Year Drought	
	Long-term Avg[2]	Annual Avg	Total	Long-term Avg	Annual Avg	Total	Long-term Avg	Annual Avg	Total	Long-term Avg	Annual Avg	Total
Environmental Water Management[3]	15 TAF/yr	45 TAF/yr	275 TAF	20 TAF/yr	65 TAF/yr	385 TAF	10 TAF/yr	55 TAF/yr	340 TAF	10 TAF/yr	45 TAF/yr	275 TAF
CCWD Water Supply Reliability[4]	NA	3 TAF/yr	20 TAF	NA	3 TAF/yr	20 TAF	NA	3 TAF/yr	20 TAF	NA	3 TAF/yr	20 TAF
Emergency Water Storage[5]	245 TAF	180 TAF	NA	235 TAF	130 TAF	NA	235 TAF	130 TAF	NA	220 TAF	105 TAF	NA
CCWD Water Quality	Incidental improvement in CCWD 's ability to meet its delivered water quality goal											

1 6-year drought values based on hydrology of 1987-1992 drought
2 Long-term average values shown based on 82-year simulation
3 Environmental Water Management in Alternative 3 includes screened intakes, a 30-day No-Diversion period, and dedicated storage for environmental water
4 Assumes 20 TAF additional storage for CCWD
5 Average amount of water available in the reservoir for a single-year emergency

TABLE 4.2-7 (REVISED)*
ALTERNATIVE 4 SUMMARY OF BENEFITS

Operations	Benefits					
	2005 Level of Development			2030 Level of Development		
	Long-term Avg[2]	6-Year Drought[1]		Long-term Avg	6-Year Drought	
		Annual Avg	Total		Annual Avg	Total
Environmental Water Management[3]	NA	2 TAF/yr	14 TAF/yr	NA	3 TAF/yr	20 TAF/yr
Water Supply Reliability[4]	NA	10 TAF/yr	60 TAF	NA	10 TAF/yr	60 TAF
Emergency Water Storage[5]	117 TAF	69 TAF	NA	116 TAF	69 TAF	NA
CCWD Water Quality[6]	5%			6%		

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

1 6-year drought values based on hydrology of 1987-1992 drought
2 Long-term average values shown based on 82-year simulation
3 Environmental Water Management in Alternative 4 includes screened intakes and a 30-day No-Diversion period
4 Assumes 60 TAF additional storage for CCWD and any other participating Bay Area water agencies
5 Average amount of water available in the reservoir for a single-year emergency
6 Improvement in amount of time CCWD water quality goal met

Water Supply Reliability

Water supply reliability benefits are determined by the facilities and operations for each project. The modeling results show that these benefits are similar for a given project alternative across levels of development and fishery restrictions. Appendix C4 (Vol. 4) provides detailed model results of water supply and management.

Under Alternative 1, the water supply reliability benefit would be provided through Delta supply restoration, dry-year storage, and increased emergency water storage (see Section 3.1.2 in Vol. 1). With Delta supply restoration, direct diversions, and stored water supplies would be used to partially restore delivery reductions to the South Bay water agencies that have occurred and are expected to continue to occur due to regulatory restrictions at the SWP and CVP Delta export pumps. Dry-year storage would increase the amount of water available in dry years to South Bay water agencies and CCWD, reducing the need to purchase supplemental dry year supplies, activate dry-year exchange programs, or institute drought management measures. For South Bay water agencies, the combination of Delta supply restoration and dry-year storage is measured by the quantity of water available to participating agencies above that which would be available in the absence of the project.

For CCWD, dry-year storage is measured by the additional amount of water that could be available to CCWD at the beginning of a multi-year drought above that which would be available in the absence of the project. Emergency storage is measured by the amount of water that would be available to the Bay Area during shortages caused by natural disasters or other emergencies. Table 4.2-4 presents the Delta supply restoration, dry-year storage, and emergency water storage for Alternative 1.

Under Alternatives 2~~, 3~~ and 4, the water supply reliability benefit would be provided through dry-year storage and increased emergency water storage (see Section 3.1.2 in Vol. 1). Dry-year storage in each of these alternatives would increase the amount of water available in dry years to CCWD. Emergency storage would increase the amount of water that would be available to the Bay region during shortages caused by natural disasters or other emergencies.

Tables 4.2-5 and 4.2-7 present~~s~~ the dry-year storage and emergency water storage under Alternatives 2~~, 3~~ and 4.

Table 4.2-6 has not been updated for the Final EIS/EIR. Alternative 3 was found to have significant and unavoidable fisheries impacts in modeling analysis performed for the Draft EIS/EIR, as explained in Section 4.3 of that document. This alternative was not included in the updated modeling analysis performed for the Final EIS/EIR because it would not be environmentally superior to the other alternatives.

Water Quality Improvements

All alternatives would meet the secondary project objective of improving the quality of water deliveries to municipal and industrial customers in the San Francisco Bay Area, without impairing the project's ability to meet the environmental and water supply reliability objectives. The water quality improvements would primarily benefit CCWD customers, as measured by the delivered salinity levels. For all of the alternatives, the expanded storage would provide additional dry year supply for CCWD, which would also provide an inherent water quality improvement for CCWD in dry years, when this type of benefit is most needed.

The long-term average improvement in delivered water quality for CCWD would be small in Alternatives 1~~,~~ and 2~~, and 3~~; these benefits have not been quantified. The benefit to CCWD delivered water quality would be relatively larger in Alternative 4, and is shown in Table 4.2-7. Alternatives 1 and 2 also are expected to result in minor improvements in the quality of water delivered to South Bay water agencies by providing low salinity water from the Los Vaqueros Reservoir to the South Bay water agencies during dry periods. This would reduce deliveries of Delta water to the South Bay water agencies through Clifton Court Forebay during such dry periods, where salinity would be relatively high, and where warm, shallow, slow-moving water often results in algae growth and a resulting increase in organic carbon content and taste and odor issues. These minor improvements are noted, but not quantified.

Methodology for Impact Assessment

The changes in Delta operations identified in the previous section have been analyzed to determine whether they would change water supplies for other water users, Delta water quality, or Delta water levels. An impact analysis was conducted to assess whether changes under each project alternative would cause a significant adverse impact. Impacts are classified as no impact, less than significant impact, less than significant with mitigation, significant and unavoidable, or beneficial.

The parameter values used to determine potential impacts have been obtained from the hydrologic modeling analysis described in the previous section.

The assessment relies on a comparative analysis of operational and resulting environmental conditions between Existing and Future Without Project conditions and each of the project alternatives. Such comparisons were performed for both the 2005 level of development and the 2030 level of development ~~and for moderate and severe fishery restrictions (described in the previous section and Chapter 3)~~. Water supply and management model results are provided in Appendix C4 (Vol. 4). Water quality and hydrodynamic model results are provided in Appendix C5 (Vol. 4).

Significance Criteria

The following thresholds for determining significance of the project impacts are based on the environmental checklist in Appendix G of the California Environmental Quality Act Guidelines, thresholds that have been developed by state and federal agencies for other Delta water projects, and the judgment of the lead agencies and the EIS/EIR preparers. The following thresholds also encompass factors taken into account under National Environmental Policy Act to determine the significance of an action in terms of its context and the intensity of its effects. An alternative was determined to result in a significant effect on water supply, water quality, or water level if it would do any of the following:

- Result in substantial adverse effects on operations or decreases in water deliveries for water users including the SWP, CVP, and Delta agricultural diverters, or significant changes in carryover storage, or timing or rate of river flows
- Violate existing water quality standards
- Result in substantial water quality changes that would adversely affect beneficial uses
- Reduce surface water elevations in the Delta to a level that would not support existing land uses or planned land uses for which permits have been granted or to a level that would restrict water transfers at the SWP and/or CVP export facilities due to conflicts with in-Delta diversions

Impact Summary

Table 4.2-8 provides a summary of the impact analysis for issues related to water supply, water quality, and water levels based on actions outlined in Chapter 3.

Impact Analysis

No Project/No Action Alternative

Under the No Project/ No Action Alternative, no new facilities would be constructed, and CCWD would continue operating the existing Los Vaqueros Reservoir and other facilities to deliver the highest quality water available subject to regulatory and physical constraints. This alternative would not change operations of the Los Vaqueros Reservoir system or the CVP or SWP in a way

TABLE 4.2-8 (REVISED)*
SUMMARY OF IMPACTS – WATER SUPPLY, WATER QUALITY, AND WATER LEVEL

Impact	Project Alternatives			
	Alternative 1	Alternative 2	~~Alternative 3~~	Alternative 4
4.2.1: The project alternatives would not adversely alter deliveries of water to other users.	LS	LS	~~LS~~	LS
4.2.2: The project alternatives would not result in significant adverse changes in Delta water quality causing the violation of a water quality standard.	LS	LS	~~LS~~	LS
4.2.3: The project alternatives would not result in changes to Delta water quality that would result in significant adverse effects on beneficial uses.	LS	LS	~~LS~~	LS
4.2.4: Diversions of Delta water under the project alternatives would not result in a significant reduction of Delta water levels.	LS	LS	~~LS~~	LS
4.2.5: The project alternatives would not result in a cumulatively considerable contribution to significant adverse cumulative effects on deliveries of water to other users, changes in Delta water quality, or change in Delta water levels.	LS	LS	~~LS~~	LS

* Results presented in this table have been updated based on analysis for the Final EIS/EIR.

SU = Significant Unavoidable Impact
LSM = Less-than-Significant Impact with Mitigation
LS = Less-than-Significant Impact
NI = No Impact

that would have a direct or indirect effect on water supply, water quality, or water levels for other Delta water users, and would not considerably contribute to any adverse cumulative water resource effects.

Delta water supply reliability for the South Bay water agencies is currently limited by recent actions taken in the Delta to protect fish. This condition would continue in the Existing and Future Without Project Conditions. Water supply reliability for CCWD and other Bay Area water agencies would not be improved and additional emergency storage for CCWD and other Bay Area water agencies would not be increased. No additional supplies for improved environmental water management would be provided, and no additional water would be diverted through positive-barrier fish screens, with the exception of the Rock Slough Fish Screen currently under construction.

Impact 4.2.1: The project alternatives would not adversely alter deliveries of water to other users. (Less Than Significant Impact)

Each of the alternatives would alter the quantity, location, and timing of water diversions from the Delta to varying degrees. The following analysis addresses the potential for these changes to affect deliveries of water to other users. The effects of the alternatives on water deliveries to CVP and SWP customers may be evaluated directly by comparing the model estimates of these deliveries in the Existing and Future Without Project conditions to the corresponding estimates under each of the project alternatives. Other parameters, including reservoir carry-over storage and river flows into the Delta, are used to support the evaluation of effects on CVP and SWP water users, and also to evaluate potential effects on other water users, including other in-Delta diverters.

Effects on Delta water deliveries were analyzed by assessing changes in CVP and SWP exports from the Delta, changes in carry-over storage in CVP and SWP reservoirs, changes in Sacramento and San Joaquin River flows into the Delta, and changes in net Delta outflow. **Table 4.2-9** shows long-term averages of the parameters used to evaluate the effects of each of the project alternatives. Additionally, the changes were analyzed by the five water year types used in hydrologic planning in California, based on Sacramento Valley hydrology: wet, above normal, below normal, dry, and critical. This analysis by water year type assessed whether changes caused by the project alternatives were more pronounced during certain hydrologic conditions. The results of each of these analyses are discussed in the following paragraphs. See Appendix C4 and Appendix C4 (Vol. 4) for additional presentation of modeled deliveries, storage, and Delta flows.

TABLE 4.2-9 (REVISED)*
SUMMARY OF CHANGES USED TO EVALUATE WATER DELIVERY TO OTHER USERS (all years)

		Annual CVP Exports[1,3] [TAF]	Annual SWP Exports[2,3] [TAF]	CVP and SWP Carry-over Storage[4] [TAF]	Sacramento River Flow at Hood [TAF]	San Joaquin River Flow at Vernalis [TAF]	Net Delta Outflow [TAF]
2005 Level of Development							
Existing Condition		2,191	2,625	7,471	16,121	3,073	15,865
Percent Change from Existing Condition	Alt. 1	0.2%	0.2%	0.1%	0.0%	0.0%	-0.1%
	Alt. 2	0.2%	0.2%	0.2%	0.0%	0.0%	-0.1%
	Alt. 4	0.2%	0.3%	0.1%	0.0%	0.0%	-0.1%
2030 Level of Development							
Future Without Project		2,193	2,634	7,420	16,130	3,191	15,976
Percent Change from Future Without Project	Alt. 1	0.1%	0.0%	0.1%	0.0%	0.0%	-0.1%
	Alt. 2	0.1%	0.0%	0.1%	0.0%	0.0%	-0.1%
	Alt. 4	0.2%	0.1%	0.0%	0.0%	0.0%	-0.1%

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

1 CVP exports include agricultural, refuge, municipal, and industrial deliveries.
2 Table A, Article 56 and Article 21 components of SWP exports are shown.
3 CVP and SWP exports include water pumped at Jones and Banks pumping plants and water delivered to the South Bay water agencies in lieu of Jones and Banks pumping. Delta supply restoration deliveries to South Bay water agencies in Alternative 1 are not included.
4 CVP and SWP carry-over storage includes storage in Shasta, Trinity, Oroville, Folsom and San Luis reservoirs.

% = percent
Alt. = Alternative
CVP = Central Valley Project
SWP = State Water Project
TAF = thousand-acre foot (feet)

Annual CVP and SWP Deliveries

The CVP pumps water from the Delta for delivery to customers in the Bay Area and San Joaquin Valley. The SWP also pumps water from the Delta, for delivery to customers in the Bay Area, San Joaquin Valley, central coast, and southern California. By design, the project alternatives should

not affect these deliveries. In Alternatives 1 and 2, SWP deliveries to the South Bay water agencies are made through the Los Vaqueros Reservoir system facilities. In all alternatives, increased filling of Los Vaqueros Reservoir occurs primarily during surplus conditions when there is good water quality in the South Delta.

2005 Level of Development. CVP and SWP deliveries under each project alternative are compared to the Existing Condition. Typically deliveries increased slightly under the 2005 level of development. CVP and SWP deliveries do not change appreciably under any of the alternatives ~~or fishery restrictions~~.

Table 4.2-9 presents the long-term average for CVP and SWP exports from the Delta. The long-term average shows that CVP exports increase slightly or remain the same for ~~all~~ project ~~a~~Alternatives 1, 2, and 4 ~~and both fishery restrictions~~ compared to the Existing Condition. SWP exports vary slightly more but decrease no more than 0.1 percent for ~~all~~ project ~~alternatives~~ Alternatives 1, 2, and 4 ~~and both levels of fishery restriction~~.

Table 4.2-10 presents the wet year averages. **Table 4.2-11** presents the above normal year averages. **Table 4.2-12** presents the below normal averages. **Table 4.2-13** presents the dry year averages. **Table 4.2-14** presents the critical year averages. During critical years CVP and SWP exports increase compared to the Existing Condition. Decreases in CVP and SWP deliveries were less than 1 percent from the Existing Condition in all water year types and would not be expected to result in a significant effect on deliveries.

2030 Level of Development. CVP and SWP exports under each project alternative are compared to the Future Without Project. CVP and SWP exports do not change appreciably under any of the alternatives ~~or fishery restrictions~~.

Table 4.2-9 presents the long-term average for CVP and SWP exports. The long-term average shows that decreases in CVP or SWP exports are no more than 0.~~2~~ 1 percent for ~~all project alternatives~~ Alternatives 1, 2, and 4 ~~and both fishery restrictions~~.

Table 4.2-10 presents the wet year averages. Table 4.2-11 presents the above normal year averages. Table 4.2-12 presents the below normal averages. Table 4.2-13 presents the dry year averages. Table 4.2-14 presents the critical year averages. Decreases in CVP and SWP deliveries were less than 1 percent from the Future Without Project condition in all water year types and would not be expected to result in a significant effect on deliveries.

CVP and SWP Carry-over Storage

The stored water remaining in reservoirs at the end of the water year in September is referred to as carry-over storage. In general, this quantity is representative of stored water that will be available for use in the following year. Decreases in carry-over storage in CVP and SWP reservoirs could mean that less water is available for delivery to CVP and SWP customers in following years. The total carry-over storage available to the CVP and SWP is a useful measure for evaluating the potential effects of the project alternatives on water supply. Total carry-over storage in Shasta, Trinity, Oroville, Folsom and San Luis reservoirs was used for this analysis.

TABLE 4.2-10 (REVISED)*
WET YEAR ANNUAL AVERAGES OF CHANGES USED TO EVALUATE WATER DELIVERY TO OTHER USERS

		Annual CVP Exports[1,3] [TAF]	Annual SWP Exports[2,3] [TAF]	CVP and SWP Carry-over Storage[4] [TAF]	Sacramento River Flow at Hood [TAF]	San Joaquin River Flow at Vernalis [TAF]	Net Delta Outflow [TAF]
2005 Level of Development							
Existing Condition		2,511	3,329	9,721	24,127	5,350	28,933
Percent Change from Existing Condition	Alt. 1	0.2%	0.3%	0.1%	0.0%	0.0%	-0.1%
	Alt. 2	0.2%	0.3%	0.1%	0.0%	0.0%	-0.2%
	Alt. 4	0.3%	0.4%	0.1%	0.0%	0.0%	-0.1%
2030 Level of Development							
Future Without Project		2,550	3,347	9,613	24,120	5,490	28,973
Percent Change from Future Without Project	Alt. 1	0.0%	0.1%	0.1%	0.0%	0.0%	-0.1%
	Alt. 2	0.0%	0.1%	0.1%	0.0%	0.0%	-0.1%
	Alt. 4	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.
1 CVP exports include agricultural, refuge, municipal and industrial deliveries.
2 Table A, Article 56 and Article 21 components of SWP exports are shown.
3 CVP and SWP exports include water pumped at Jones and Banks pumping plants and water delivered to the South Bay water agencies in lieu of Jones and Banks pumping. Delta supply restoration deliveries to South Bay water agencies in Alternative 1 are not included.
4 CVP and SWP carry-over storage includes storage in Shasta, Trinity, Oroville, Folsom and San Luis reservoirs.

Alt. = alternative
CVP = Central Valley Project
SWP = State Water Project
TAF = thousand acre-feet

TABLE 4.2-11 (REVISED)*
ABOVE NORMAL YEAR ANNUAL AVERAGES OF CHANGES USED TO EVALUATE WATER DELIVERY TO OTHER USERS

		Annual CVP Exports[1,3] [TAF]	Annual SWP Exports[2,3] [TAF]	CVP and SWP Carry-over Storage[4] [TAF]	Sacramento River Flow at Hood [TAF]	San Joaquin River Flow at Vernalis [TAF]	Net Delta Outflow [TAF]
2005 Level of Development							
Existing Condition		2,262	2,864	8,411	18,600	2,892	17,484
Percent Change from Existing Condition	Alt. 1	0.4%	0.3%	0.1%	0.0%	0.0%	-0.1%
	Alt. 2	0.5%	0.4%	0.2%	0.0%	0.0%	-0.1%
	Alt. 4	0.3%	0.4%	0.1%	0.0%	0.0%	-0.1%
2030 Level of Development							
Future Without Project		2,302	2,853	8,267	18,639	3,044	17,628
Percent Change from Future Without Project	Alt. 1	0.2%	0.2%	0.0%	0.0%	0.0%	0.0%
	Alt. 2	0.3%	0.3%	0.0%	0.0%	0.0%	-0.1%
	Alt. 4	0.2%	0.1%	0.0%	0.0%	0.0%	-0.1%

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.
1 CVP exports include agricultural, refuge, municipal and industrial deliveries.
2 Table A, Article 56 and Article 21 components of SWP exports are shown.
3 CVP and SWP exports include water pumped at Jones and Banks pumping plants and water delivered to the South Bay water agencies in lieu of Jones and Banks pumping. Delta supply restoration deliveries to South Bay water agencies in Alternative 1 are not included.
4 CVP and SWP carry-over storage includes storage in Shasta, Trinity, Oroville, Folsom and San Luis reservoirs.

Alt. = alternative
CVP = Central Valley Project
SWP = State Water Project
TAF = thousand acre-feet

TABLE 4.2-12 (REVISED)*
BELOW NORMALYEAR ANNUAL AVERAGES OF CHANGES USED TO EVALUATE WATER DELIVERY TO OTHER USERS

		Annual CVP Exports[1,3] [TAF]	Annual SWP Exports[2,3] [TAF]	CVP and SWP Carry-over Storage[4] [TAF]	Sacramento River Flow at Hood [TAF]	San Joaquin River Flow at Vernalis [TAF]	Net Delta Outflow [TAF]
2005 Level of Development							
Existing Condition		2,211	2,648	7,345	12,942	2,416	10,198
Percent Change from Existing Condition	Alt. 1	0.3%	0.1%	0.3%	0.0%	0.0%	-0.1%
	Alt. 2	0.3%	0.1%	0.3%	0.0%	0.0%	-0.2%
	Alt. 4	0.3%	0.5%	0.3%	0.0%	0.0%	-0.2%
2030 Level of Development							
Future Without Project		2,242	2,653	7,339	12,959	2,547	10,318
Percent Change from Future Without Project	Alt. 1	0.0%	0.3%	0.1%	0.0%	0.0%	-0.2%
	Alt. 2	0.0%	-0.1%	0.1%	0.0%	0.0%	-0.1%
	Alt. 4	0.1%	0.5%	0.0%	0.0%	0.0%	-0.2%

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.
1 CVP exports include agricultural, refuge, municipal and industrial deliveries.
2 Table A, Article 56 and Article 21 components of SWP exports are shown.
3 CVP and SWP exports include water pumped at Jones and Banks pumping plants and water delivered to the South Bay water agencies in lieu of Jones and Banks pumping. Delta supply restoration deliveries to South Bay water agencies in Alternative 1 are not included.
4 CVP and SWP carry-over storage includes storage in Shasta, Trinity, Oroville, Folsom and San Luis reservoirs.

Alt. = alternative
CVP = Central Valley Project
SWP = State Water Project
TAF = thousand acre-feet

TABLE 4.2-13 (REVISED)*
DRY YEAR ANNUAL AVERAGES OF CHANGES USED TO EVALUATE WATER DELIVERY TO OTHER USERS

		Annual CVP Exports[1,3] [TAF]	Annual SWP Exports[2,3] [TAF]	CVP and SWP Carry-over Storage[4] [TAF]	Sacramento River Flow at Hood [TAF]	San Joaquin River Flow at Vernalis [TAF]	Net Delta Outflow [TAF]
2005 Level of Development							
Existing Condition		2,058	2,228	6,082	10,826	1,652	7,490
Percent Change from Existing Condition	Alt. 1	0.4%	0.0%	0.1%	0.0%	0.0%	0.0%
	Alt. 2	0.4%	0.0%	0.1%	0.0%	0.0%	-0.1%
	Alt. 4	0.0%	0.1%	0.1%	-0.1%	0.0%	-0.1%
2030 Level of Development							
Future Without Project		2,013	2,198	6,059	10,798	1,757	7,664
Percent Change from Future Without Project	Alt. 1	0.2%	-0.4%	0.0%	0.0%	0.0%	0.1%
	Alt. 2	0.2%	-0.4%	0.0%	0.0%	0.0%	0.1%
	Alt. 4	0.4%	-0.1%	0.0%	0.1%	0.0%	0.0%

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.
1 CVP exports include agricultural, refuge, municipal and industrial deliveries.
2 Table A, Article 56 and Article 21 components of SWP exports are shown.
3 CVP and SWP exports include water pumped at Jones and Banks pumping plants and water delivered to the South Bay water agencies in lieu of Jones and Banks pumping. Delta supply restoration deliveries to South Bay water agencies in Alternative 1 are not included.
4 CVP and SWP carry-over storage includes storage in Shasta, Trinity, Oroville, Folsom and San Luis reservoirs.

Alt. = alternative
CVP = Central Valley Project
SWP = State Water Project
TAF = thousand acre-feet

TABLE 4.2-14 (REVISED)*
CRITICAL YEAR ANNUAL AVERAGES OF CHANGES USED TO EVALUATE WATER DELIVERY TO OTHER USERS

		Annual CVP Exports[1,3] [TAF]	Annual SWP Exports[2,3] [TAF]	CVP and SWP Carry-over Storage[4] [TAF]	Sacramento River Flow at Hood [TAF]	San Joaquin River Flow at Vernalis [TAF]	Net Delta Outflow [TAF]
2005 Level of Development							
Existing Condition		1,601	1,429	3,887	7,945	1,216	5,108
Percent Change from Existing Condition	Alt. 1	-0.1%	0.1%	0.1%	0.0%	0.0%	0.0%
	Alt. 2	-0.8%	0.1%	0.5%	-0.2%	0.0%	-0.1%
	Alt. 4	-0.3%	0.3%	0.2%	-0.2%	0.0%	-0.1%
2030 Level of Development							
Future Without Project		1,520	1,503	3,956	8,003	1,258	5,235
Percent Change from Future Without Project	Alt. 1	0.1%	0.1%	0.2%	-0.1%	0.0%	-0.1%
	Alt. 2	0.1%	0.1%	0.2%	-0.1%	0.0%	-0.1%
	Alt. 4	0.3%	0.2%	0.3%	-0.1%	0.0%	-0.1%

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.
1 CVP exports include agricultural, refuge, municipal and industrial deliveries.
2 Table A, Article 56 and Article 21 components of SWP exports are shown.
3 CVP and SWP exports include water pumped at Jones and Banks pumping plants and water delivered to the South Bay water agencies in lieu of Jones and Banks pumping. Delta supply restoration deliveries to South Bay water agencies in Alternative 1 are not included.
4 CVP and SWP carry-over storage includes storage in Shasta, Trinity, Oroville, Folsom and San Luis reservoirs.

Alt. = alternative
CVP = Central Valley Project
SWP = State Water Project
TAF = thousand acre-feet

2005 Level of Development. Carry-over storage under each project alternative was compared to the Existing Condition. The analysis shows that CVP and SWP carry-over storage under both levels of development would be essentially the same under the Existing Conditions compared to each of the project alternatives.

Table 4.2-9 presents the long-term average for carry-over storage. The long-term average shows that changes in carry-over storage are no more than 0.~~1~~2 percent for ~~all~~ project ~~alternatives~~ Alternatives 1, 2, and 4 ~~and both fishery restrictions~~. Table 4.2-10 presents the wet year averages. Table 4.2-11 presents the above normal year averages. Table 4.2-12 presents the below normal averages. Table 4.2-13 presents the dry year averages. Table 4.2-14 presents the critical year averages. Decreases in carry-over storage would be no more than ~~1~~0.4 percent from the Existing Condition in all water year types and would not be expected to result in a significant effect on deliveries.

2030 Level of Development. Carry-over storage under each project alternative was compared to the Future Without Project. The analysis shows that CVP and SWP carry-over storage under both levels of development would be essentially the same under the Future Without Project condition compared to each of the project alternatives.

Table 4.2-9 presents the long-term average for carry-over storage. The long-term average shows that decreases in carry-over storage would be no more than 0.3 percent for ~~all project a~~Alternatives 1, 2, and 4 ~~and both fishery restrictions~~. Table 4.2-10 presents the wet year averages. Table 4.2-11 presents the above normal year averages. Table 4.2-12 presents the below normal averages. Table 4.2-13 presents the dry year averages. Table 4.2-14 presents the critical year averages. Decreases in carry-over storage would be no more than ~~1~~0.4 percent from the Future Without Project condition by water year type and would not be expected to result in a significant effect on deliveries.

Sacramento and San Joaquin River Flow

Sacramento River flow at Hood represents the largest source of water that enters the Delta. At this location, flow in the Sacramento River can include water released from Trinity, Shasta, Oroville, and Folsom reservoirs for delivery to CVP or SWP customers in or south of the Delta, or for environmental purposes. In the dry season of each year, and especially during dry years, the flow in the Sacramento River at Hood is largely controlled by releases from these reservoirs. At such times, the releases are often made by CVP and SWP operators to ensure compliance with Delta salinity or flow standards. Changes in Sacramento River flow at this location could indicate changes in Delta conditions, and could affect reservoir carry-over storage, which could then affect water supply for Delta water users, including CVP and SWP customers south of the Delta.

San Joaquin River flow at Vernalis represents another source of water that enters the Delta. At this location, flow in the San Joaquin River can include water released from CVP reservoirs to meet salinity control standards in the south Delta. Changes in San Joaquin River flow at Vernalis could indicate changed conditions in the Delta, which could affect reservoir carry-over storage, and thus affect deliveries to other water users.

2005 Level of Development. Sacramento and San Joaquin inflows under each project alternative were compared to the Existing Condition. The analysis shows that Sacramento and San Joaquin inflow would not change appreciably under any alternative compared to the Existing Conditions. Table 4.2-9 presents the long-term average of change in Sacramento and San Joaquin inflow. The long-term average shows no changes in inflow.

Table 4.2-10 presents the wet year averages. Table 4.2-11 presents the above normal year averages. Table 4.2-12 presents the below normal averages. Table 4.2-13 presents the dry year averages.

Table 4.2-14 presents the critical year averages. During critical years, Sacramento inflow would decrease slightly, by less than 1 percent. San Joaquin inflow would remain the same during critical years. Decreases in Sacramento and San Joaquin inflow would be less than 1 percent from the Existing Condition for all water year types and would not be expected to result in a significant effect on deliveries.

2030 Level of Development. Sacramento and San Joaquin inflow under each project alternative was compared to the Future Without Project. The analysis shows that Sacramento and San Joaquin inflow would not change appreciably under any alternative compared to the Future Without Project. Table 4.2-9 presents the long-term average of change in Sacramento and San Joaquin inflow. The long-term average shows no changes in inflow.

Table 4.2-10 presents the wet year averages. Table 4.2-11 presents the above normal year averages. Table 4.2-12 presents the below normal year averages. Table 4.2-13 presents the dry year averages.

Table 4.2-14 presents the critical year averages. During critical years, Sacramento inflow would decrease slightly, by less than 1 percent. San Joaquin inflow would remain the same during critical years. Decreases in Sacramento and San Joaquin inflow would be less than 1 percent from the Future Without Project condition for all water year types and would not be expected to result in a significant effect on deliveries.

Net Delta Outflow

Net Delta outflow is an indicator of general Delta conditions. It represents the water that flows from the Delta into the San Francisco Bay. Relatively high net Delta outflow generally results in surplus Delta water supply and good Delta water quality. When Delta outflow is low, surplus water is generally not available in the Delta, and salt intrusion into the Delta from San Francisco Bay can occur. The Los Vaqueros Reservoir Expansion Project is designed to fill primarily with surplus Delta water, as part of the design to avoid impacts to other water users. This can reduce net Delta outflow at times when surplus Delta water supply is available, but would not affect water supply for other users.

2005 Level of Development. Net Delta outflow under each project alternative was compared to the Existing Condition. Table 4.2-9 presents the long-term average of change in net Delta outflow.

Table 4.2-10 presents the wet year averages. Table 4.2-11 presents the above normal year averages. Table 4.2-12 presents the below normal year averages. Table 4.2-13 presents the dry year averages.

Table 4.2-14 presents the critical year averages. The analysis shows that net Delta outflow would decrease by less than 1 percent under ~~all a~~Alternatives 1, 2, and 4 ~~1, 2 and 4 relative to the Existing Condition~~ for all water year types. ~~The decrease in net Delta outflow under Alternative 3 during critical years, assuming moderate fishery restrictions, would be 1.6 percent. These decreases would not be expected to significantly impact deliveries. They are discussed further below.~~

2030 Level of Development. Net Delta outflow under each project alternative was compared to the Future Without Project. Table 4.2-9 presents the long-term average of change in net Delta outflow.

Table 4.2-10 presents the wet year averages. Table 4.2-11 presents the above normal year averages. Table 4.2-12 presents the below normal year averages. Table 4.2-13 presents the dry year averages. Table 4.2-14 presents the critical year averages. The analysis shows that net Delta outflow would decrease by less than 1 percent under project Alternatives 1, 2, and 4 for all water year types.

~~Table 4.2-14 presents the critical year averages. The analysis shows that net Delta outflow would decrease by less than 1 percent under Alternatives 1, 2 and 4 relative to the Future Without Project condition for all water year types. Decrease in net Delta outflow under Alternative 3 during critical years assuming severe fishery restrictions would be 1.1 percent.~~

The small decrease in net Delta outflow represents additional diversions made by these project alternatives in times of surplus flow, when water supply for other Delta water users would not be affected. Because the project alternatives were not shown to adversely impact the direct measures of water supply for other users, including CVP and SWP exports, and because the Los Vaqueros Reservoir Expansion Project alternatives are designed to primarily use surplus Delta water, these small changes in net Delta outflow would not affect water supply for other users.

Alternatives 1 ~~through~~, 2 and 4

Alternatives 1 ~~through~~, 2 and 4 would result in no significant changes that would adversely affect deliveries to other water users. They would result in small changes in total Delta diversions, largely in periods with surplus flows, resulting in a more reliable water supply for the South Bay agencies, and no discernible changes in SWP and CVP water supply deliveries to other customers of those projects. They ~~It~~ would not affect water supplies of other water users. Average Delta outflow changes would be less than significant in both magnitude and timing, decreasing by less than one half of 1 percent from the Existing and Future Without Project conditions. Changes to upstream flows and reservoir carryover storage would be less than significant and the water supplies of other water users would not be significantly impacted.

The analysis performed for the Draft EIS/EIR found no significant changes that would adversely affect the deliveries to other water users. When compared to the analysis performed for the Draft EIS/EIR, the conclusion presented above for the updated modeling analysis regarding potential impacts of Alternatives 1, 2 and 4 on deliveries to of other water users has not changed.

Mitigation: None required.

Impact 4.2.2: The project alternatives would not result in significant adverse changes in Delta water quality causing the violation of a water quality standard. (Less Than Significant Impact)

Delta water quality standards are established by the SWRCB in the 1995 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary, which is discussed above in Section 4.2.1. These Delta water quality standards govern salinity at Rock Slough, Emmaton, Jersey Point, Brandt Bridge, Old River near Middle River, and Old River near Tracy Bridge, as shown in **Table 4.2-15**.

TABLE 4.2-15
SUMMARY OF SELECTED WATER QUALITY STANDARDS IN THE DELTA

Compliance Location	Description	Value
Rock Slough	Maximum mean daily Cl	250 mg/L
Sacramento River at Emmaton	14-day running average of mean EC during the spring and summer months depending on water year type	0.45-2.78 mmhos/cm depending on water year type and time of year
San Joaquin River at Jersey Point	14-day running average of mean EC during the spring and summer months depending on water year type	0.45 -2.20 mmhos/cm depending on water year type and time of year
San Joaquin River at Brandt Bridge	Maximum 30-day running average of mean daily EC	Apr – Aug: 0.7 mmhos/cm Sep – Mar: 1.0 mmhos/cm
Old River near Middle River	Maximum 30-day running average of mean daily EC	Apr – Aug: 0.7 mmhos/cm Sep – Mar: 1.0 mmhos/cm
Old River at Tracy Bridge	Maximum 30-day running average of mean daily EC	Apr – Aug: 0.7 mmhos/cm Sep – Mar: 1.0 mmhos/cm

Cl = chloride
cm = centimeter
EC = electrical conductivity
mg/L = milligram(s) per liter
mmhos/cm = millimhos per centimeter

Salinity at the standards compliance locations was simulated using the DSM2 model throughout the Delta for the Existing and Future Without Project conditions and each of the project alternatives, as described in the preceding subsection titled Hydrology, Water Operations,

Hydrodynamics, and Water Quality Models. Appendix C5 presents complete model results of Delta water quality changes for each alternative.

Potential standards violations were found in all model runs, including the Existing Condition and Future Without Project runs. The apparent violations in the model results are referred to as “potential violations” because they occur in the model but would not occur in actual operations. The Delta is operated to meet water quality standards and would continue being operated to meet standards if the Los Vaqueros Reservoir Expansion Project is built.

The apparent standards violations under the Existing and Future Without Project conditions are caused solely by modeling inadequacies which are discussed in more detail below and in the modeling section above. Apparent violations in the project alternatives modeling could also be caused by model inadequacies, like in the Existing and Future Without Project conditions, or could reflect the impacts of project alternative operations.

For some standards (Rock Slough, Emmaton, and Jersey Point), potential standards violations in the alternatives model results are caused solely by a mismatch between the CalSim II operations model and the DSM2 Delta hydrodynamics and mixing model, and are not caused by project operations. CalSim II defines flows into and out of the Delta such that these standards are met. A CalSim II – DSM2 mismatch occurs when the flows calculated by CalSim II are fed into the DSM2 hydrodynamics and mixing model and the salinity calculated by DSM2 does not meet the standards, as explained above in the Monthly Time Step description and in the DSM2 description. Modeled standards violations caused by DSM2- CalSim II mismatches occur because CalSim's monthly time step is not well suited to handling daily or 14-day standards, or running average standards that span more than 1 month. Furthermore, CalSim II uses empirical approximations for estimating Delta salinities that may not match the physically-based salinity calculations done in DSM2.

For other standards (San Joaquin River at Brandt Bridge, Old River near Middle River, and Old River at Tracy Road Bridge), potential standards violations in the model results for project alternatives could also be caused by CalSim II – DSM2 mismatches. However, CalSim II does not operate the SWP and CVP to meet these standards so it is also possible that potential violations at these sites in the model results reflect the impacts of project alternative operations.

A statistical analysis (chi-squared test) was performed to compare the occurrence of potential violations in the Existing and Future Without Project conditions and in each of the project alternatives. This analysis shows that the potential violations do not occur more often in any of the project alternatives than they do in the Existing and Future Without Project conditions. This finding supports the conclusion that the apparent violations of the Rock Slough, Emmaton, and Jersey Point standards in the model results are modeling artifacts, and suggests that apparent violations of the San Joaquin River at Brandt Bridge, Old River near Middle River, and Old River at Tracy Road Bridge are also modeling artifacts. Violations that are modeling artifacts would be expected to occur about as often in the Existing and Future Without Project conditions model runs as they do in the project alternatives runs, while potential violations caused by project operations would result in statistically significant increases in the number of violations under the alternatives as compared with the Existing and Future Without Project conditions.

The numbers of potential water quality standards violations in the Existing and Future Without Project conditions model runs were compared to the numbers of potential violations in the project alternatives model runs. The statistical analysis provides a means to determine (within certain limits of precision or confidence) whether the number of violations modeled under the alternatives was significantly different from the number modeled under the Existing and Future Without Project

conditions. ("Significant" in this sense is a quantitative designation with a specific mathematical meaning based on the type of test used and the precision or confidence limits used.)

If no statistically significant difference occurred in the numbers of potential violations at a compliance location, then the potential violations found in the alternatives runs were attributed to modeling artifacts and it was determined that the project alternative would not be expected to cause standards violations. If a statistically significant difference occurred, then project alternative operations could potentially cause standards violations. See Appendix C6 (Vol. 4) for complete details of the statistical analysis.

The analysis showed that none of the alternatives had a statistically significant increase in the frequency of potential standards violations at any of the stations compared to the Existing and Future Without Project conditions. This means that the changes in the frequency of potential standards violations are likely to be the result of modeling artifacts, and that changes to operations under the alternatives do not produce statistically significant differences from the Existing and Future Without Project conditions, with respect to Delta water quality standards. The alternatives would have less than significant impacts on compliance with water quality standards in the Delta.

Table 4.2-16 presents the number of days of standards violations in the Existing and Future Without Project conditions, and the changes in the number of days that standards could be violated under the project alternatives. The following paragraphs discuss the data and results for 2005 and 2030 levels of development.

TABLE 4.2-16
FREQUENCY OF POTENTIAL STANDARDS VIOLATIONS

		Rock Slough [days]	Sacramento River at Emmaton [days]	San Joaquin River at Jersey Pt [days]	San Joaquin at Brandt Bridge [days]	Old River near Middle River [days]	Old River at Tracy [days]
2005 Level of Development							
Existing Condition		294	203	369	175	171	258
Change from Existing Condition	Alt. 1	-24	-2	1	0	0	-3
	Alt. 2	-25	-5	0	0	0	-3
	Alt. 4	-29	-2	-3	0	0	2
2030 Level of Development							
Future Without Project		272	149	358	94	93	150
Change from Existing Condition	Alt. 1	-18	0	4	0	0	0
	Alt. 2	-18	0	4	0	0	0
	Alt. 4	-42	0	-3	0	0	1

2005 Level of Development. Comparison of potential standards violations shows that the numbers of potential violations under all project alternatives would be about equal to the number of potential violations under the Existing Condition. Statistical analysis confirms that no statistically significant changes exist in the numbers of potential violations, which supports the conclusion that the alternatives would have less than significant impacts on compliance with water quality standards in the Delta.

2030 Level of Development. Comparison of potential standards violations shows that the numbers of potential violations under ~~all~~ project ~~alternatives~~ Alternatives 1, 2, and 4 would be about equal to the number of potential violations under the Future Without Project condition. Statistical analysis confirms that there are no ~~the only~~ statistically significant changes in the numbers of potential standards ~~violations are improvements in compliance with the Rock Slough standard in Alternatives 1, 2, and 3 under the moderate fishery restrictions and in Alternative 3 under severe fishery restrictions~~. These results support the conclusion that the alternatives would have less than significant impacts on compliance with water quality standards in the Delta.

Alternative 1

Compared to the Existing and Future Without Project conditions, the operation of Alternative 1 would not result in significant adverse changes in Delta water quality standards compliance. ~~The only significant difference between Alternative 1 and the Existing of Future Without Project conditions in standards compliance were found at Rock Slough, where there would be a reduced likelihood of water quality standard violations under the 2030 level of development. (See Table 4.2-16.)~~ No statistically significant differences in the number of potential standards violations were found at any other water quality stations under any of the modeling scenarios. Alternative 1 would have less than significant impacts on compliance with water quality standards in the Delta.

Alternative 2

The operation of Alternative 2 as compared with both Existing and Future Without Project conditions would have results nearly identical to Alternative 1. ~~There would be improvements in standards compliance at Rock Slough under the moderate fishery restrictions and 2030 level of development. (See Table 4.2-16)~~ No statistically significant differences were found at any other stations. Alternative 2 would have less than significant impacts on compliance with water quality standards in the Delta.

~~*Alternative 3*~~

~~Under Alternative 3, water quality improvements were also found at Rock Slough under both moderate and severe fishery restrictions. (See Table 4.2-16.) No significant differences in numbers of potential standards violations were found at any other stations. Alternative 3 would have less than significant impacts on compliance with water quality standards in the Delta.~~

Alternative 4

No significant differences appeared in the numbers of standards violations found at any standard compliance stations. Alternative 4 would have less than significant impacts on compliance with water quality standards in the Delta. (See Table 4.2-16.)

The analysis performed for the Draft EIS/EIR found no significant changes that would adversely affect Delta water quality standard compliance. When compared to the analysis performed for the Draft EIS/EIR, the conclusion presented above for the updated modeling analysis regarding potential impacts of Alternatives 1, 2 and 4 on Delta water quality standard compliance has not changed.

Mitigation: None required.

Impact 4.2.3: The project alternatives would not result in changes to Delta water quality that would result in significant adverse effects on beneficial uses. (Less Than Significant Impact)

Changes in timing and location of diversions have the potential to affect water quality conditions in the Delta so as to adversely affect beneficial uses. To assess these effects, estimated Delta salinity concentrations were compared between each project alternative and the Existing or Future Without Project conditions under the 2005 and 2030 levels of development. Potential beneficial use impacts were assessed at current and proposed drinking water intakes by examining both long-term average changes in salinity and sizable short-term changes in salinity. The intakes include Jones Pumping Plant, Clifton Court Forebay, Barker Slough at the North Bay Aqueduct intake, Cache Slough at the City of Vallejo Intake, and the proposed City of Stockton Delta Intake. A complete analysis of water quality changes is provided in Appendix C5 (Vol. 4).

Long-term Changes in Salinity

Table 4.2-17 presents modeled long-term salinity for Existing and Future Without Project conditions and the modeled changes in salinity for each alternative. At some intakes under some alternatives the model shows no change in long-term average salinity, and at some intakes under some alternatives the model shows small changes in long-term average salinity. Some of these changes are increases and some are decreases, but all increases are less than ~~in only a single case does the magnitude of the change exceed~~ 0.5 percent~~. The exception at Barker Slough for Alternative 3 is discussed in more detail below.~~ The magnitude of changes as well as the fact that in some cases salinity improved slightly and in others it degraded by similar amounts would further indicate that the changes are on the whole not significant.

2005 Level of Development

Clifton Court Forebay. On average, small increases in salinity, less than 0.3 percent, were found at Clifton Court Forebay for project Alternatives 1, 2, and 4.~~Alternatives 1, 2, and 3 under both moderate and severe fishery restrictions. A small decrease in salinity occurred at Clifton Court Forebay for Alternative 4 under moderate fishery restrictions and no change occurred under severe fishery restrictions.~~

Jones Pumping Plant. Changes at Jones Pumping Plant were nearly identical to those at Clifton Court Forebay.

City of Stockton Delta Intake. At the City of Stockton Delta Intake small increases in salinity were found for ~~all of the alternatives~~ Alternatives 1, 2, and 4 ~~under both moderate and severe fishery restrictions~~.

Barker Slough North Bay Aqueduct. ~~All a~~Alternatives 1, 2, and 4 ~~except Alternative 3~~ showed ~~small decreases~~negligible changes in salinity at Barker Slough~~ under moderate fishery restrictions~~. ~~For Alternative 3 under moderate fishery restrictions a 1 percent increase in salinity occurred at~~

TABLE 4.2-17 (REVISED)*
SUMMARY OF LONG-TERM SALINITY CHANGES AT DELTA INTAKES

		Entrance to Clifton Court Forebay [µS/cm]	Jones Pumping Plant [µS/cm]	City of Stockton Delta Intake [µS/cm]	Barker Slough at North Bay Aqueduct Intake [µS/cm]	Cache Slough at City of Vallejo Intake [µS/cm]
2005 Level of Development						
Existing Condition		506	526	373	265	287
Percent Change from Existing Condition	Alt. 1	0.3%	0.3%	0.0%	0.0%	0.0%
	Alt. 2	0.3%	0.2%	0.0%	0.0%	0.0%
	Alt. 4	-0.2%	-0.1%	-0.2%	0.0%	-0.1%
2030 Level of Development						
Future Without Project		481	498	361	259	287
Percent Change from Existing Condition	Alt. 1	0.3%	0.2%	0.1%	0.0%	0.0%
	Alt. 2	0.3%	0.2%	0.1%	0.0%	0.0%
	Alt. 4	-0.1%	-0.1%	0.0%	0.1%	0.0%

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

Alt. = alternative
µS/cm = microSiemens per centimeter

~~Barker Slough; the only instance of any change greater than 0.5 percent. Further investigation found that the 1 percent increase was influenced by an isolated event involving changes not related to the alternative under evaluation, and it was concluded that this estimated difference in Barker Slough water quality does not reflect an impact that would be caused by the Alternative 3 operations.~~

Cache Slough, City of Vallejo. ~~All of the a~~Alternatives 1, 2, and 4 showed ~~no change~~small decreases in the salinity at Cache Slough Vallejo Intake ~~under both moderate and severe fishery restrictions~~.

2030 Level of Development

Clifton Court Forebay. Alternatives 1 and 2 showed a small increase in salinity while Alternative 4 showed a small decrease. ~~All alternatives showed small decreases in salinity at Clifton Court Forebay under moderate fishery restrictions. Under severe restrictions, Alternatives 1, 2, and 3 showed small increases in salinity at Clifton Court Forebay and Alternative 4 showed a small decrease.~~

Jones Pumping Plant. The changes in salinity at Jones Pumping Plant were nearly identical to those at Clifton Court Forebay.

City of Stockton Delta Intake. At the City of Stockton Delta Intake, small decreases in salinity occurred in Alternatives 1, 2, and 4. ~~under moderate fishery restrictions for all alternatives. Under severe fishery restrictions, Alternative 1 showed no change, Alternative 2 showed a small decrease, Alternative 3 showed a small increase, and Alternative 4 showed a small decrease at the City of Stockton's intake.~~

Barker Slough North Bay Aqueduct. Alternatives 1, 2, and 4 showed negligible changes in salinity at Barker Slough. ~~Small increases in salinity occurred at Barker Slough for Alternatives 1, 2, and~~

~~3 under moderate fishery restrictions; Alternative 4 showed no change. Alternative 3 showed a small increase in salinity at Barker Slough under severe fishery restrictions and the other alternatives showed no change.~~

Cache Slough City of Vallejo. Alternatives 1, 2, and 4 showed negligible changes in salinity at Cache Slough Vallejo Intake. ~~Alternative 1 showed a small increase in salinity at Cache Slough under moderate fishery restrictions and the other alternatives showed no changes.~~

Short-term Changes in Salinity

Although the long-term average changes in salinity would be very small and would not significantly affect beneficial uses, changes in operations under the alternatives could impact beneficial uses if there were consistent but sizable changes in short-term salinity. Sizable short-term changes in salinity were analyzed at Jones Pumping Plant, Clifton Court Forebay, Barker Slough, Cache Slough, City of Stockton Delta Intake, and Antioch.

A sizable increase in salinity was defined as a monthly average salinity difference between a project alternative and the Existing or Future Without Project conditions that is greater than 5 percent and greater than 5 mg/ L Cl. A sizable decrease in salinity was defined as a monthly average salinity difference between a project alternative and the Existing or Future Without Project conditions that is less than -5 percent and less than -5 mg/L Cl.

Sizable salinity changes at the City of Antioch intake were defined separately because an operational threshold is established at that location, and effects on the beneficial use of water could be caused by changing the amount of time that Antioch's source water salinity is below that threshold. When Cl concentration is greater than 250 mg/L, the City of Antioch uses water from other sources. If the monthly average Cl concentration was modeled for the Existing or Future Without Project conditions as less than 250 mg/L, and operations under a project alternative increased the concentration to 250 mg/L Cl or more, the month was flagged as showing a sizable increase in salinity. Conversely, if the monthly average Cl concentration was modeled as greater than 250 mg/L under the Existing or Future Without Project conditions, and was lowered below 250 mg/L Cl under a project alternative, a sizable salinity decrease was indicated for that month.

Sizable changes in salinity modeled under a project alternative could be due to two factors:

- CalSim II threshold sensitivity, as explained in the preceding Threshold Sensitivity in CalSim II section. Sizable changes in salinity caused by CalSim II threshold sensitivity are modeling artifacts rather than genuine project impacts. CalSim II threshold sensitivity would be expected to result in about the same numbers of sizable salinity decreases and sizable salinity increases in the project alternatives modeling runs as in the Existing or Future Without Project conditions modeling runs.

- Effects of project alternative operations. Water quality standards violations that are caused by project alternative operations and are not modeling artifacts would lead to a statistically significant difference between the number of sizable increases in salinity and the number of sizable decreases in salinity in the project alternatives modeling runs, as compared to the Existing or Future Without Project conditions model runs.

A statistical analysis (one-tailed binomial test),was performed to determine whether sizable changes in salinity found in the project alternatives model runs were the result of project alternative operations. The analysis was based on comparing the numbers of sizable salinity increases to sizable decreases. If no statistically significant difference occurred in the numbers of increases compared to decreases, then the changes found in the project alternatives runs were attributed to threshold sensitivity. If a statistically significant difference occurred, then project alternative operations could cause impacts. See Appendix C6 (Vol. 4) for complete details of the statistical analysis.

~~In this analysis, none of the project alternatives had more statistically significant sizable salinity increases than decreases except for Barker Slough under Alternative 3 conditions. This difference is discussed in more detail below.~~ **Table 4.2-18** presents the numbers of sizable changes in salinity at the drinking water intakes. The data and results are discussed below for 2005 and 2030 levels of development.

2005 Level of Development. Under the 2005 level of development, the numbers of short-term sizable changes in salinity at existing and proposed drinking water intakes are generally low, and the numbers of sizable decreases in salinity are comparable to the numbers of sizable increases, as shown in Table 4.2-18. Statistical analysis confirms that no statistically significant difference exists between salinity decreases and increases under ~~any~~ project ~~alternative~~Alternatives 1, 2, and 4~~, with the single exception of Barker Slough in Alternative 3 under moderate fishery restrictions~~.

~~Further investigation found that the number of sizable salinity increases at Barker Slough under the aforementioned conditions was influenced by an event lasting several consecutive months where changes not related to Alternative 3 operations caused the changes in salinity. It was concluded that this estimated difference in Barker Slough water quality does not reflect an impact that would be caused by the Alternative 3 operations. The statistical analysis supports the conclusion that project alternative operations would not cause changes in short-term water quality that would adversely affect beneficial uses.~~ Project alternative operations would not cause changes in short-term water quality that would adversely affect beneficial uses.

2030 Level of Development. Under the 2030 level of development, the numbers of sizable short-term changes in salinity at existing and proposed drinking water intakes are generally low and the numbers of sizable decreases in salinity are comparable to the numbers of sizable increases, as shown in Table 4.2-18**.** Statistical analysis confirms that no statistically significant difference exists between salinity decreases and increases under any project alternative. Project alternative operations would not cause changes in short-term water quality that would adversely affect beneficial uses.

Alternative 1

Compared to the Existing and Future Without Project conditions, the operation of Alternative 1 would not result in significant long-term or short-term changes in Delta water quality that would adversely affect beneficial uses.

TABLE 4.2-18 (REVISED)*
FREQUENCY OF SIZABLE CHANGES IN SALINITY AT DRINKING WATER INTAKES

	Jones Pumping [months]		Clifton Court Forebay [months]		Barker Slough [months]		Cache Slough [months]		City of Stockton Delta Intake [months]		Antioch [months]	
	Sizable Salinity Increase	Sizable Salinity Decrease	Sizable Salinity Increase	Sizable Salinity Decrease	Sizable Salinity Increase	Sizable Salinity Decrease	Sizable Salinity Increase	Sizable Salinity Decrease	Sizable Salinity Increase	Sizable Salinity Decrease	Sizable Salinity Increase	Sizable Salinity Decrease
2005 Level of Development												
Existing Condition												
Alt. 1	0	0	0	0	0	0	0	0	0	0	2	4
Alt. 2	0	0	0	0	0	0	0	0	0	0	4	2
Alt. 4	1	2	3	5	0	0	0	1	2	3	2	7
2030 Level of Development												
Future Condition												
Alt. 1	0	0	0	1	0	0	0	0	0	0	1	0
Alt. 2	0	0	0	0	0	0	0	0	0	0	3	0
Alt. 4	0	1	0	2	0	0	0	0	0	1	2	0

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

Alternative 2

Compared to the Existing and Future Without Project conditions, the operation of Alternative 2 would not result in significant long-term or short-term changes in Delta water quality that would adversely affect beneficial uses.

~~*Alternative 3*~~

~~Compared to the Existing and Future Without Project conditions, the operation of Alternative 3 would not result in significant long-term or short-term changes in Delta water quality that would adversely affect beneficial uses. The apparent change in Barker Slough water quality between the Existing Condition and the Alternative 3 scenario under the 2005 level of development with moderate fishery restrictions was not found to be caused by project operations. It was concluded that this estimated difference in Barker Slough water quality does not reflect an impact that would be caused by the Alternative 3 operations.~~

Alternative 4

Compared to the Existing and Future Without Project conditions, the operation of Alternative 4 would not result in significant long-term or short-term changes in Delta water quality that would adversely affect beneficial uses.

The analysis performed for the Draft EIS/EIR found no significant changes in Delta water quality that would adversely affect beneficial uses. When compared to the analysis performed for the Draft EIS/EIR, the conclusion presented above for the updated modeling analysis regarding potential impacts of Alternatives 1, 2 and 4 on changes in Delta water quality that would affect beneficial uses has not changed.

Mitigation: None required.

Impact 4.2.4: Diversions of Delta water under the project alternatives would not result in a significant reduction of Delta water levels. (Less Than Significant Impact)

Delta water users have a substantial interest in maintaining Delta water levels so that their siphons and pumps, installed at fixed elevations, can continue to divert water onto Delta islands for agricultural irrigation. To evaluate water level effects of the project alternatives, modeling results were examined for sites in the vicinity of the Los Vaqueros system intakes, and at the four monitoring locations identified in the CVP/SWP Joint Point of Diversions Water Level Response Plan.

Table 4.2-19 presents a summary of model results showing the changes in water level at lower-low tide during irrigation season. Delta agricultural irrigation users are primarily concerned with effects on the water level at lower-low tide because it represents the minimum water level they would experience. Irrigation season is assumed to be April through September. Complete model estimates of Delta water level changes are presented in Appendix C5 (Vol. 4).

TABLE 4.2-19 (REVISED)*
LARGEST WATER LEVEL DECREASE AT LOWER-LOW TIDE IN IRRIGATION SEASON (in feet)

		Doughty Cut above Grant Line Canal Barrier	Old River near Tracy Road Bridge	Middle River near Howard Road Bridge	East of Coney Island	Old River Intake	AIP Intake
2005 Level of Development							
Change from Existing Condition	Alt. 1	-0.03	-0.02	-0.02	-0.06	-0.06	-0.06
	Alt. 2	-0.03	-0.03	-0.03	-0.06	-0.06	-0.06
	Alt. 4	-0.04	-0.04	-0.02	-0.08	-0.04	-0.05
2030 Level of Development							
Change from Future Without Project	Alt. 1	-0.02	-0.02	-0.02	-0.05	-0.05	-0.05
	Alt. 2	-0.02	-0.02	-0.02	-0.06	-0.06	-0.06
	Alt. 4	-0.02	-0.02	-0.02	-0.01	-0.01	-0.02

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

NOTES: Irrigation season is assumed to be April through September

AIP = Alternative Intake Project
Alt. = alternative

Table 4.2-20 presents the frequency at which water level decreases exceed 0.1 foot during the typical irrigation season. Water level changes of less than 0.1 foot would be difficult to measure, and are within the level of accuracy of the model tools used for this analysis.

2005 Level of Development. ~~Table 4.2-20 presents the frequency at which water-level decreases exceed 0.1 foot during the typical irrigation season. Water level changes of less than 0.1 foot would be difficult to measure, and are within the level of accuracy of the model tools used for this analysis.~~ As shown in **Table 4.2-19**, the maximum estimated decrease in water level at lower-low tide is less than 0.06 ~~0.1~~ foot (less than 1 inch~~es~~) ~~in nearly~~for ~~all of the project a~~Alternatives 1, 2, and 4 at the 2005 level of development. ~~The only exceptions are Alternative 1 at the east of Coney Island location under moderate fishery restrictions, which has a maximum decrease of 0.11 foot (less than 1.5 inches), and Alternative 3 under moderate fishery restrictions, which had maximum water level decreases of greater than a tenth of a foot at all locations evaluated, the largest being 0.23 foot (less than 3 inches) at Old River near Tracy Road Bridge.~~

Table 4.2-20 presents the frequency at which water-level decreases exceed 0.1 foot during the typical irrigation season. Water level changes of less than 0.1 foot would be difficult to measure, and are within the level of accuracy of the model tools used for this analysis. Changes larger than 0.1 ft did not occur under any of the proposed alternatives.

~~Table 4.2-20 shows how often the maximum decrease in water level exceeds 0.1 foot. This condition occurs only once (which is less than 0.1 percent of the time) over the 16-year study period in Alternative 1 at the east of Coney Island location, and this condition did not occur at all at the other locations evaluated for this alternative. The water level decreased by more than 0.1 foot less than 1 percent of the time over the 16-year study period at the locations evaluated in Alternative 3 under~~

TABLE 4.2-20 (REVISED)*
PERCENT OF TIME WHEN MAXIMUM DECREASE IN WATER LEVEL EXCEEDS 0.1 FOOT

		Doughty Cut above Grant Line Canal Barrier	Old River near Tracy Road Bridge	Middle River near Howard Road Bridge	East of Coney Island	Old River Intake	AIP
2005 Level of Development							
Percent Change from Existing Condition	Alt. 1	0%	0%	0%	0%	0%	0%
	Alt. 2	0%	0%	0%	0%	0%	0%
	Alt. 4	0%	0%	0%	0%	0%	0%
2030 Level of Development							
Percent Change from Future Without Project	Alt. 1	0%	0%	0%	0%	0%	0%
	Alt. 2	0%	0%	0%	0%	0%	0%
	Alt. 4	0%	0%	0%	0%	0%	0%

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

NOTES: Irrigation season is assumed to be April through September

% = percent
AIP = Alternative Intake Project
Alt. = alternative

~~moderate fishery restrictions. Water levels never decreased by more than 0.1 foot at the locations evaluated in Alternatives 2 and 4.~~

2030 Level of Development. ~~Table 4.2-20 shows the frequency at which water level decreases exceed 0.1 foot during the typical irrigation season. Water level changes below 0.1 foot would be difficult to measure, and are within the level of accuracy of the model tools used for this analysis.~~ As shown in Table 4.2-19, the maximum estimated decrease in water level at lower-low tide is less than 0.06 foot (less than 1inch~~es~~) at each of the locations evaluated in ~~all four project alternatives~~Alternatives1, 2, and 4. Table 4.2-20 shows how often the maximum decrease in water level would exceed 0.1 foot. As shown, this condition would not occur at the locations evaluated in the project alternatives.

Table 4.2-20 shows the frequency at which water level decreases exceed 0.1 foot during the typical irrigation season. None of the proposed alternatives would result in water level decreases exceeding 0.1 ft during the irrigation season compared to the future without project conditions.

The results of this comparison show that all of the project alternatives would have a less than significant impact on Delta water levels.

Alternative 1

Alternative 1 would result in small water level changes~~ so small that they would be difficult to measure~~. The largest change estimated at lower-low tide would be -0.06 ~~0.11~~ foot, which is less

than 1.5 inches, and would occur infrequently ~~(once during an irrigation season in a 16-year study period)~~. A change in water level surface elevation of this magnitude and frequency would not affect the ability of local water users to divert water for their beneficial uses. Therefore, this impact would be less than significant.

Alternative 2

Alternative 2 would result in small water level changes. The largest change estimated at lower-low tide would be -0.06 foot. A change in water level surface elevation of this magnitude and frequency would not affect the ability of local water users to divert water for their beneficial uses. Therefore, this impact would be less than significant. ~~would result in water level changes so small that they would be difficult to measure. The largest change estimated at lower-low tide during irrigation season would be 0.08 foot, or about 1 inch, and the estimated decrease in water level would not exceed 0.1 foot during irrigation season. A change in water level surface elevation of this magnitude would not affect the ability of local water users to divert water for their beneficial uses. Therefore, this impact would be less than significant.~~

~~*Alternative 3*~~

~~Alternative 3 would most often result in water level changes so small that they would be difficult to measure. The largest estimated change at lower-low tide during irrigation season would be 0.23 foot, which is less than 3 inches, and water level decreases greater than 0.1 foot would occur less than 1 percent of the time during the irrigation season. A change in water level surface elevation of this magnitude and frequency would not affect the ability of local water users to divert water for their beneficial uses. Therefore, this impact would be less than significant.~~

Alternative 4

Alternative 4 would result in small water level changes so small that they would be difficult to measure. The largest change estimated at lower-low tide during irrigation season would be -0.04 ~~0.05~~ foot~~, and the estimated decrease in water level would not exceed 0.1 foot during the irrigation season~~. A change in water level surface elevation of this magnitude would not affect the ability of local water users to divert water for their beneficial uses. Therefore, this impact would be less than significant.

The analysis performed for the Draft EIS/EIR found no significant changes that would adversely affect Delta water levels. When compared to the analysis performed for the Draft EIS/EIR, the conclusion presented above for the updated modeling analysis regarding potential impacts of Alternatives 1, 2 and 4 on Delta water levels has not changed.

Mitigation: None required.

Impact 4.2.5: The project alternatives would not result in a cumulatively considerable contribution to significant adverse cumulative effects on deliveries of water to other users, changes in Delta water quality, or change in Delta water levels. (Less Than Significant Impact)

All Alternatives

A cumulative impact arises when two or more individual effects which, when considered together, are considerable, or which compound or increase other environmental impacts. Cumulative impacts can result from individually minor but collectively significant impacts, meaning that the project's incremental effects must be viewed in connection with the effects of past, current, and probable future projects.

Cumulative impacts were determined considering the reasonably foreseeable projects described in Section 4.1.2 (Vol. 1). The foreseeable future projects or operational conditions that could combine with the impacts of the project alternatives are included in the Common Assumptions for the 2030 level of development conditions in the statewide operations model (CalSim II) and Delta water quality model (DSM2). The assumptions and projects included in the model analyses of 2030 level of development include the following:

- Future level of development, including population growth and land-use changes
- ~~South Delta Improvements Program Phase 1 (permanent operable barriers in the south Delta)~~
- CCWD Rock Slough Canal Replacement
- CCWD-Reclamation Rock Slough Fish Screen Project
- Delta-Mendota Canal-California Aqueduct Intertie
- Freeport Regional Water Project, including delivery of 3.2 TAF per year of CCWD CVP water supply from the Freeport intake through the CCWD- East Bay Municipal Utility District intertie to CCWD
- ~~A limited Environmental Water Account program~~
- Revised operations for SWP and CVP instituting modified export pumping rules to address Delta fishery protection to represent future assumed operations associated with OCAP reconsultation on biological opinions for delta smelt and chinook salmon
- Stockton Drinking Water Supply Project
- Increased discharges from Sacramento Regional County Sanitation District's wastewater treatment plant.

The analysis of the 2030 level of development described under each impact discussion in this section therefore is an analysis of the project's contribution to cumulative impacts, and shows that in the context of combined reasonably foreseeable future development, the project alternatives would not result in a cumulatively considerable contribution to significant cumulative impact on Delta hydrology or water quality. The results of the analyses show that the Delta inflows, outflows, water levels, and water quality, as well as both CVP and SWP deliveries, remain largely unchanged in

the Future Without Project condition compared to the Existing Condition, and in the existing or future conditions with the project alternatives.

Additional future projects or operational influences that are not included in the statewide operations model (CalSim II) and Delta water quality model (DSM2) include:

- ~~Stockton Drinking Water Supply Project (DWSP)~~
- Delta Wetlands Project (DWP)
- Bay Delta Conservation Plan (BDCP)

Operational permits have not been issued for the Stockton DWSP. Because specific information on the operation of the project was unavailable, it was not included quantitatively in the modeling used in this cumulative impacts analysis. However, the Stockton DWSP is anticipated to have negligible effects on Delta water supply, water quality, and water levels. Accordingly, the effects of operating the Stockton DWSP are not likely to influence or change the conclusions of this cumulative analysis.

The Delta Wetlands Project released modeling for project alternatives in 2001, but both the affected environment and their project proposals have changed since that release; no current modeling appropriate for this cumulative analysis has been provided by the DWP. In qualitatively assessing the potential for cumulative impacts associated with this project, it is assumed that the terms of a settlement agreement between DWP, CUWA and CCWD will preclude impacts to Delta water quality. Water discharges from the DWP will be managed to avoid causing impacts associated with increases in organic carbon in Delta water quality, and water diversions by the DWP will be managed to avoid causing salinity intrusion impacts in the Delta. Therefore, no cumulative impact to Delta hydrology or water quality based on future operation of Los Vaqueros Reservoir Expansion Project and DWP is anticipated.

As described in Chapter 2, the BDCP is in the early stages of planning, and quantitative information available from that planning process is insufficient for inclusion in this cumulative impacts analysis.

The impacts analyses performed for the project alternatives using assumptions for future level of development indicate no cumulative impact.

The project alternatives are in part a response to changes in Delta water supply that have already occurred and to additional Delta water supply challenges expected in the future. The project alternatives are designed to improve environmental water management and water supply reliability without substantially adversely affecting water supply and quality for others. The potential changes caused by project alternative operations are based on conservative assumptions about Delta and CCWD operations. The determination that the project alternative's contribution to cumulative impacts would not be significant takes into account the combined impact of existing and future projects, as described above.

A number of future projects and situations might result in Delta water quality degradation and decreased supply, including climate change, population growth, increased water use, wastewater discharges, specific legal rulings, as well as other projects in the Delta. Regardless of whether future cumulative increases in salinity and decreases in water supply are considered to be a significant adverse impact on Delta water users, the changes caused by the project alternatives would remain small and they would not be cumulatively considerable in the context of combined past, present, and probable future projects. These future projects will not change the overall impact of the project alternatives or the conclusion that the alternative's contribution to a significant cumulative effect would not be considerable.

The analysis performed for the Draft EIS/EIR found no cumulative impacts when considering the effects of the Los Vaqueros Reservoir Expansion Project along with the effects of other reasonably foreseeable projects. When compared to the analysis performed for the Draft EIS/EIR, the conclusion presented above for the updated modeling analysis regarding potential cumulative impacts of Alternatives 1, 2 and 4 with other reasonably foreseeable projects has not changed.

Mitigation: None required.

4.3 Delta Fisheries and Aquatic Resources (Updated)

This section describes the existing fishery and aquatic habitat conditions within the Bay-Delta estuary that would potentially be affected by the Los Vaqueros Reservoir Expansion Project, presents the applicable regulatory background, provides an assessment of potential fisheries and aquatic resources effects, and, where appropriate, identifies suitable mitigation to reduce potentially significant impacts to a less-than-significant level.

4.3.1 Affected Environment

Regulatory Setting

Federal

Federal Endangered Species Act

Under the Federal Endangered Species Act (FESA), the Secretary of the Interior and the Secretary of Commerce have joint authority to list a species as threatened or endangered (United States Code [USC], Title 16, Section 1533[c]). FESA prohibits the "take" of endangered or threatened fish and wildlife species, the take of endangered or threatened plants in areas under federal jurisdiction or in violation of state law, or adverse modifications to their critical habitat. Under FESA, the definition of "take" is to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." The U.S. Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration/National Marine Fisheries Service (NMFS) also interpret the definition of "harm" to include significant habitat modification that could result in the take of a species.

If an activity would result in the take of a federally listed species, one of the following is required: an incidental take permit under Section 10(a) of FESA, or an incidental take statement issued pursuant to federal interagency consultation under Section 7 of FESA. Such authorization typically requires various measures to avoid and minimize species take, and to protect the species and avoid jeopardy to the species' continued existence.

Pursuant to the requirements of Section 7 of FESA, a federal agency reviewing a proposed project which it may authorize, fund, or carry out must determine whether any federally listed threatened or endangered species, or species proposed for federal listing, may be present in the project area and determine whether implementation of the proposed project is likely to affect the species. In addition, the federal agency is required to determine whether a proposed project is likely to jeopardize the continued existence of a listed species or any species proposed to be listed under FESA or result in the destruction or adverse modification of critical habitat proposed or designated for such species (16 USC 1536[3], [4]).

NMFS administers FESA for marine fish species, including anadromous salmonids such as Central Valley steelhead, winter-run and spring-run chinook salmon, and green sturgeon. USFWS administers FESA for non-anadromous and non-marine fish species such as delta smelt (and longfin

smelt, which has been recently proposed for listing). Projects for which a federally listed species is present and likely to be affected by an existing or proposed project must receive authorization from USFWS and/or NMFS. Authorization may involve a letter of concurrence that the project will not result in the potential take of a listed species, or may result in the issuance of a Biological Opinion (BO) that describes measures that must be undertaken to minimize the likelihood of an incidental take of a listed species. A project that is determined by NMFS or USFWS to jeopardize the continued existence of a listed species cannot be approved under a BO.

Where a federal agency is not authorizing, funding, or carrying out a project, take that is incidental to the lawful operation of a project may be permitted pursuant to Section 10(a) of FESA through approval of a habitat conservation plan (HCP).

FESA requires the federal government to designate "critical habitat" for any species it lists under the Endangered Species Act. "Critical habitat" is defined as: (1) specific areas within the geographical area occupied by the species at the time of listing, if they contain physical or biological features essential to the species conservation, and those features that may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species if the agency determines that the area itself is essential for conservation.

Implementation of the State Water Project (SWP) and Central Valley Project (CVP) coordinated Operations Criteria and Plan (OCAP), under which the U.S. Department of the Interior, Bureau of Reclamation, Mid-Pacific Region (Reclamation) and California Department of Water Resources (DWR) jointly manage dam releases to the Delta and exports from the Delta, is a key factor affecting hydrology and aquatic habitat conditions within the Bay-Delta estuary. This is described in Chapter 2 (Vol. 1) and Appendix C3 (Vol. 4).

Magnuson-Stevens Fishery Conservation and Management Act – Essential Fish Habitat

The Pacific Fishery Management Council (PFMC) has designated the Delta, San Francisco Bay, and Suisun Bay as Essential Fish Habitat (EFH) to protect and enhance habitat for coastal marine fish and macroinvertebrate species that support commercial fisheries such as Pacific salmon. The amended Magnuson-Stevens Fishery Conservation and Management Act, also known as the Sustainable Fisheries Act (Public Law 104-297), requires that all federal agencies consult with NMFS on activities or proposed activities authorized, funded, or undertaken by that agency that may adversely affect EFH of commercially managed marine and anadromous fish species.

As part of the OCAP Biological Assessment, Reclamation and DWR have addressed anticipated effects of SWP and CVP operations on EFH within the Bay-Delta estuary for use in the reconsultation for compliance with the Act. The EFH provisions of the Sustainable Fisheries Act are designed to protect fishery habitat from being lost due to disturbance and degradation. The Act requires that EFH must be identified for all species federally managed by the PFMC, which is responsible for managing commercial fishery resources along the coasts of Washington, Oregon, and California. Three fishery management plans cover species that occur in the project area, and designate EFH within the entire Bay-Delta estuary:

- Pacific Groundfish Fishery Management Plan: starry flounder

- Coastal Pelagic Fishery Management Plan: northern anchovy and Pacific sardine
- Pacific Salmon Fishery Management Plan: chinook salmon

Clean Water Act

The U.S. Army Corps of Engineers (USACE) administers a number of laws and programs designed to protect fish and wildlife resources. Principal of these, with respect to the project alternatives, is Section 404 of the Clean Water Act. Section 404 regulates activities in wetlands and "other waters of the United States." Wetlands are a subset of waters of the U.S., which are defined in the Code of Federal Regulations (33 CFR 328.3[a]; 40 CFR 230.3[s]) as:

1. All waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide

2. All interstate waters including interstate wetlands. Wetlands are defined by the federal government [33 CFR 328.3(b), 1991] as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions

3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mud flats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce including any such waters

    - Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
    - From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    - Which are used or could be used for industrial purposes by industries in interstate commerce.

4. All impoundments of waters otherwise defined as waters of the United States under the definition
5. Tributaries of waters identified in paragraphs (1) through (4)
6. The territorial sea
7. Wetlands adjacent to waters identified in paragraphs (1) through (6)

State

California Endangered Species Act

Pursuant to the California Endangered Species Act (CESA) and Section 2081 of the California Fish and Game Code, a permit from the California Department of Fish and Game (CDFG) is required for activities that could result in the take of a state-listed threatened or endangered species (i.e., species listed under CESA). The definition of "take" is to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill (Fish and Game Code Section 86).

The state definition does not include "harm" or "harass," as the federal definition does. As a result, the threshold for take under CESA is typically higher than that under FESA. Section 2080 of the Fish and Game Code prohibits the taking of plants and animals listed under the authority of CESA, except as otherwise permitted under Fish and Game Code Sections 2080.1, 2081, and 2835. Under CESA, the California Fish and Game Commission maintains a list of threatened species and endangered species (Fish and Game Code Section 2070). The California Fish and Game Commission also maintains two additional lists:

- Candidate species (CDFG has issued a formal notice that the species is under review for addition to either the list of endangered species or the list of threatened species such as longfin smelt)
- Species of special concern, which serves as a watch list

Consistent with the requirements of CESA, a lead agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in a proposed project area and determine whether the proposed project may take a listed species. If a take would occur, an incidental take permit would be required from the CDFG, including a mitigation plan that provides measures to minimize and fully mitigate the impacts of the take. The measures must be roughly proportional in extent to the impact of the taking and must be capable of successful implementation. Issuance of an incidental take permit may not jeopardize the continued existence of a state-listed species. For species that are also listed as threatened or endangered under the FESA, CDFG may rely on a federal incidental take statement or incidental take permit to authorize an incidental take under CESA.

Streambed Alteration Agreements

The state's authority to regulate activities in waters of the U.S. resides primarily with CDFG. CDFG provides comment on USACE permit actions under the Fish and Wildlife Coordination Act. CDFG is also authorized under California Fish and Game Code Sections 1600–1616 to develop mitigation measures and enter into streambed alteration agreements with applicants whose projects would obstruct the flow or alter the bed, channel, or bank of a river or stream, including intermittent and ephemeral streams, in which a fish or wildlife resource is present.

Regional Water Quality Control Board

The Federal Clean Water Act, in Section 401, specifies that states must certify that any activity subject to a permit issued by a federal agency, such as USACE, meets all state water quality standards. In California, the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs) are responsible for certifying activities subject to any permit issued by USACE pursuant to Section 404 or pursuant to Section 10 of the Rivers and Harbors Act of 1899. Such certification actions, also known as a 401 certification or water quality certification, include issuing a 401 certification that the activity subject to the federal permit complies with state water quality standards, issuing a 401 certification with conditions, denying 401 certification, or denying 401 certification without prejudice, should procedural matters preclude taking timely action on a 401 certification application. Should 401 certification be denied, the federal permit is deemed denied also.

Regional boards or their executive officers may issue 401 certifications. The State Board issues 401 certifications for projects that will take place in two or more regions. The regulations governing California's issuance of 401 certifications were updated in 2000, and are contained in Sections 3830 through 3869 of Title 23 of the California Code of Regulations.

Natural Community Conservation Planning Act

The Natural Community Conservation Planning Act (NCCPA) authorizes the Natural Community Conservation Plan (NCCP) program, which is designed to promote conservation of natural communities at the ecosystem scale while accommodating compatible land use.

The following subsection on the CALFED Bay-Delta Program (CALFED) provides additional discussion regarding the NCCP prepared for that program. The East Contra Costa County HCP Association completed a Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP) in 2007. The HCP/NCCP took effect in January 2008. The HCP/NCCP covers terrestrial areas that may be affected by the project alternatives but does not include the aquatic resources inhabiting the Bay-Delta estuary. The East County HCP/NCCP is discussed in greater detail in Section 4.6 (Vol. 2).

CALFED

The CALFED Program, described in Chapter 2, includes an objective to conserve important biological resources that occur in the Bay-Delta estuary and elsewhere within the Central Valley rivers and tributaries. The CALFED Program includes proposals to protect, restore, and enhance many habitats, particularly in the Delta, that have experienced a loss of ecological function due to human-caused activities.

To comply with FESA, CESA, and NCCPA, CALFED prepared a program level Multi-Species Conservation Strategy (MSCS). USFWS and NMFS issued programmatic BOs for the CALFED Program based on the MSCS. CDFG approved the MSCS as in compliance with the NCCPA for certain species including most of the fish species addressed in this document.

The programmatic BOs and NCCPA compliance finding do not provide take authorization. Instead, entities implementing CALFED actions may seek take authorization through an Action Specific Implementation Plan that would be tiered from the MSCS and submitted to USFWS, NMFS, and CDFG as the basis for project-specific BO and NCCPA determination. The Action Specific Implementation Plans would be based on the MSCS, including specifically the conservation measures identified in the MSCS. An action-specific implementation plan (ASIP) will be prepared for the Los Vaqueros Reservoir Expansion Project should one of the project alternatives be approved for implementation.

Existing Los Vaqueros Reservoir

Contra Costa Water District's (CCWD's) operations of the existing Los Vaqueros Reservoir are governed in part by the following three biological documents:

(a) 1993 NMFS BO for winter-run chinook salmon

(b) 1993 USFWS BO for delta smelt

~~(c) 1994 Memorandum of Understanding between CDFG and CCWD regarding the existing Los Vaqueros Reservoir~~

(c) 2009 CDFG Incidental Take Permit for maintenance and operation of the Los Vaqueros Reservoir and Alternative Intake Project

These are described in Chapter 2 and Section 4.2 (Vol. 1).

Environmental Setting

The following discussion primarily addresses the fisheries and aquatic resources of the Delta, where construction- and operations-related impacts on special-status fish species and their habitat could result from the project alternatives. In the case of anadromous (migratory) species, freshwater fishery and habitat conditions upstream of the Delta are included to provide context to the discussion.

In addition to the Delta, aquatic habitat is present within the project area in the form of seasonal freshwater drainages, such as Kellogg Creek, Brushy Creek, and several unnamed drainages. Due to the seasonal nature of these streams, as well as the absence of special-status fish species or critical habitat designations for fish, no project-related impacts on fishery resources would occur in these drainages; thus, these drainages are not further discussed in this section. In addition, Los Vaqueros Reservoir does not support any special-status fish species or designated critical habitat. The reservoir does, however, support a recreational fishery. Potential impacts to the recreational fishery of Los Vaqueros Reservoir are discussed in Section 4.15, Recreation (Vol. 1).

Regional Setting

Both the existing and new water intake structures would be in the south Delta vicinity of Old and Middle rivers, which provides shallow open-water and emergent marsh habitat for a variety of resident and migratory fish and macroinvertebrates. The primarily open-water habitat within the Delta is relatively shallow (typically less than 20 feet deep) and has a relatively uniform channel bottom composed of silt, sand, peat, and decomposing organic matter. Tules (*Scirpus* spp.) and other emergent and submerged aquatic vegetation occur both within the open-water areas and along the shoreline margins of sloughs and channels, providing habitat for fish migration, spawning, juvenile rearing, and adult holding and foraging.

Waters within the south Delta are characterized by low salinity levels under most environmental conditions; however, saltwater intrusion upstream into the central and south Delta does occur under low outflow conditions. Although much of the Delta provides shallow open-water aquatic habitat, the channels within the south Delta vary in size and hydraulic complexity. Levees surrounding the sloughs and channels within the south Delta have been stabilized by riprap and other materials placed along the channel margins. These levees are typically vegetated by native and non-native grasses and shrubs. Mature riparian trees are not abundant along south Delta levees.

The water quality and hydrodynamic conditions that affect fishery habitat within the south Delta are influenced by a variety of factors, including the magnitude of seasonal freshwater inflow to the Bay-Delta estuary from the Sacramento and San Joaquin rivers and east-side tributaries, tidal circulation patterns within the south Delta, salinity, and seasonal variation in water temperature. Turbidity and suspended sediment concentrations within the south Delta are influenced by wind- and wave-induced turbulence and river flows. Specifically, large open-water surface areas such as Mildred Island and Franks Tract promote wind-generated waves, which can in turn resuspend sediments within these shallow open waters.

Sampling for fish populations has been conducted throughout the Delta, including at sampling locations within the project area. These locations are shown in **Figure 4.3-1**. Results of fishery sampling within the Bay-Delta estuary have shown that 55 fish species inhabit the estuary (Baxter et al., 1999), of which about half are non-native introduced species. Many of these non-native species, such as striped bass (*Morone saxatilis*) and American shad (*Alosa sapidissima*), were purposefully introduced to provide recreational and commercial fishing opportunities. Other non-native fish species, such as threadfin shad (*Dorosoma petenense*) and inland silversides (*Menidia beryllina*), were accidentally introduced into the estuary through the movement of water among connecting waterways; a number of other fish species, including yellowfin (*Acanthogobius flavimanus*) and chameleon gobies (*Tridentiger trigonocephalus*), were introduced through ballast water discharges from commercial cargo transports traveling primarily from Asia and the Orient.

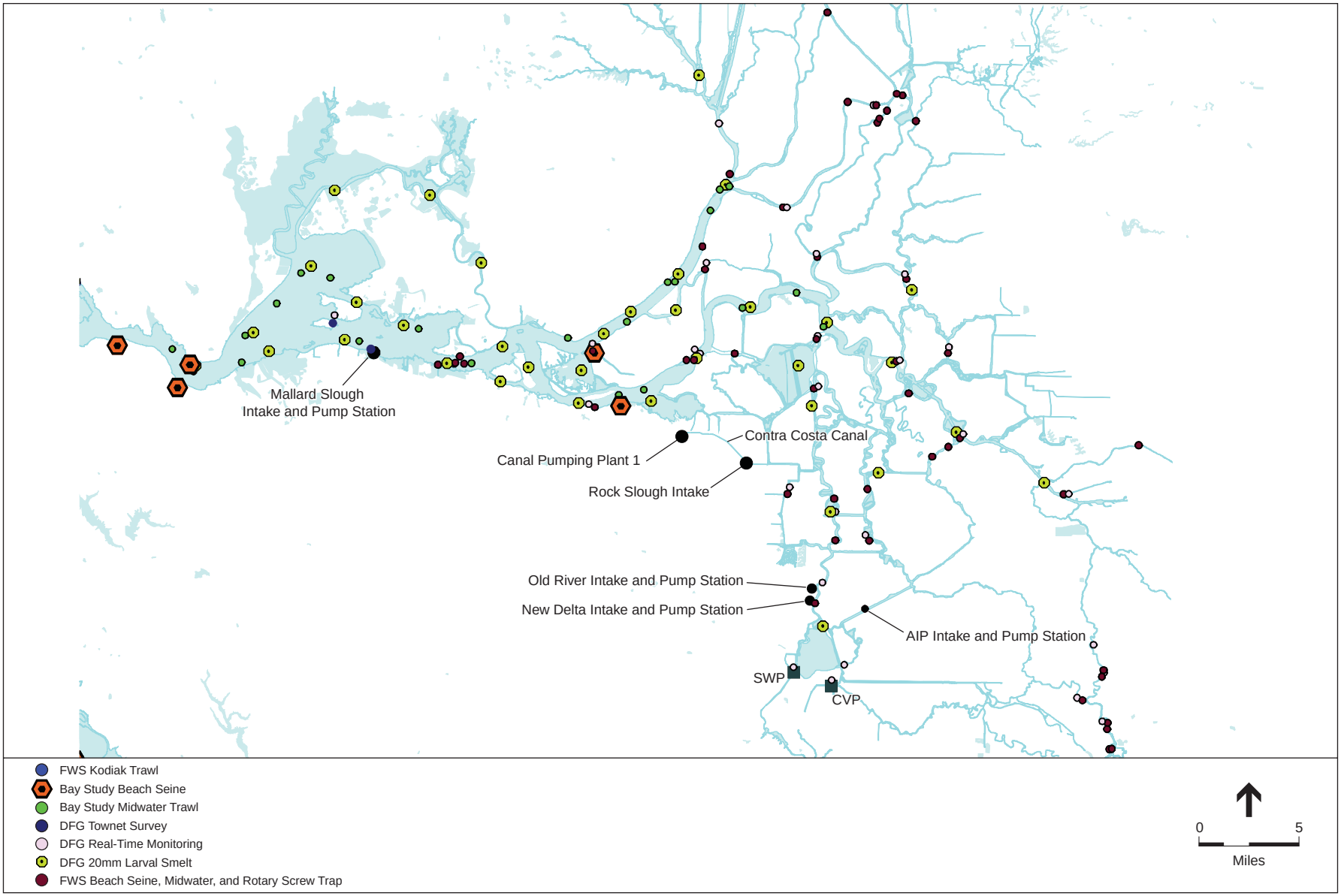
In addition, an estimated 100 macroinvertebrate species have been introduced into the estuary, primarily through ballast water discharges (Carlton, 1979). Many non-native aquatic plants have also become established within the estuary. The purposeful and unintentional introductions of non-native fish, macroinvertebrates, and aquatic plants have contributed to a substantial change in the species composition, trophic dynamics, and competitive interactions affecting the population dynamics of native Delta species. Many of these introduced fish and macroinvertebrates inhabit the central and south Delta.

Pelagic Organism Decline

Pelagic organisms are organisms that inhabit the open water portion of a water body such as the ocean or the Bay-Delta estuary. The Interagency Ecological Program (IEP), a consortium of nine state and federal agencies, has been monitoring fish populations in the San Francisco Estuary for decades.

One of the most widely-used IEP databases is fish catch from the Fall Midwater Trawl (FMWT) Survey, which has been regularly conducted by CDFG since 1967. This survey samples the pelagic fish assemblage in the upper estuary from the Delta to San Pablo Bay. Two of the resident pelagic fishes captured are native species, delta smelt (*Hypomesus transpacificus*) and longfin smelt (*Spirinchus thaleichthys*). Two of the most abundant introduced species are striped bass and threadfin shad.

Annual abundance of these populations is extremely variable and much of this variability is associated with hydrology (Sommer et al., 2007). Historically, the lowest abundance levels for the



SOURCE: Hanson Environmental, 2006; DWR, 2006; DFG, 2006; and ESA, 2008

Figure 4.3-1

Major Delta Fish Sampling Survey Locations within the Delta

pelagic fishes typically have occurred in dry years, such as a 6-year drought from 1987 to 1992. Between 1995 and 2000, a wet period, abundance indices of most pelagic species increased markedly. Results of analyses have shown that many of the estuarine fish and macroinvertebrates have higher juvenile abundance in wet years when Delta outflows are relatively high, however in recent years the response of these species to hydrologic conditions has been lower than in the past, which has been hypothesized to reflect the effects of introduced non-native species (e.g., the Asian overbite clam Corbula) on the aquatic ecosystem inhabiting the estuary. By 2000, FMWT abundance indices for these four pelagic fishes (delta and longfin smelt, striped bass, threadfin shad) began to decline and continued to do so over the next several years. Abundance indices for the period between 2002 and 2008 included record lows for delta smelt and young-of-the-year striped bass, and near record lows for longfin smelt and threadfin shad (Sommer et al., 2007). By 2004, these declines became widely recognized and discussed as a serious issue, and collectively became known as the Pelagic Organism Decline (POD).

Project Area

Under Alternatives 1 and 2, the new Delta Intake and Pump Station would be constructed on Old River south of CCWD's existing Old River Intake. For the purposes of the impacts analysis concerning in-water construction activities for the new Delta Intake, the project area is considered to be within Old River, extending about 1,000 feet upstream and downstream of the construction site, as this is the estimated distance over which construction-related effects such as increased turbidity and underwater noise may extend. Alternatives 3 and 4 do not include any in-water construction activities at Delta intakes.

Potential operational effects of the Los Vaqueros Reservoir Expansion Project, such as entrainment of larval fish and other aquatic resources, may also occur within this project area. For the purposes of analyzing potential operational effects, the project area also includes any other portions of the Delta where hydraulic or hydrodynamic conditions affecting aquatic habitat may be changed such that there could be project-related indirect effects on fish or other aquatic organisms.

The new Delta Intake would be on Old River within an area of the estuary influenced by freshwater inflow from the Sacramento and San Joaquin River systems, CVP and SWP export operations, and tidal effects from coastal marine waters and the San Francisco Bay. As described in Chapter 2, CCWD currently operates a water intake with positive barrier fish screen on Old River that has been designed and is operated in compliance with the CDFG, NMFS and USFWS criteria (e.g., screen mesh size, approach velocity of 0.2 feet per second (fps), screen cleaning) that has been shown through extensive fishery monitoring to be effective in reducing and avoiding entrainment and impingement of Delta fish species. CCWD is currently constructing a similar intake structure on Victoria Canal (Alternative Intake Project – AIP), which is in the south Delta, that has also been designed to meet the screen design criteria for delta smelt and other fish species.

The new Delta Intake structure on Old River would also be designed and operated in accordance with CDFG, NMFS and USFWS criteria to protect delta smelt, juvenile salmon, and other fish species within the Delta. Old River, in the vicinity of the intake sites, is characterized by shallow water depths ranging from about 15 to 20 feet deep (measured at low slack tide) within 20 feet of the

shoreline. Substrate on the channel bottom is characterized by silt and fine- and coarse-grained sand. The channel banks consist of a combination of natural earthen berm and armored riprap. Vegetation is characterized by intermittent stands of tules and submerged aquatic vegetation along the shoreline margins, grass and weedy vegetation along the channel banks, and sparse riparian (shrubs and trees) vegetation along the channel margins.

Table 4.3-1 identifies resident and migratory fish species that are known to occur in the Delta and may potentially be affected by the construction and operation of the project alternatives.

Special-Status Fish Species

Fish species identified for protection under the CESA and/or FESA that are known to occur in the Delta and may potentially be affected by the construction and operation of the project alternatives include green sturgeon, delta smelt, longfin smelt, winter-run chinook salmon, spring-run chinook salmon, and Central Valley steelhead. USFWS and NMFS have designated all or part of the Delta as critical habitat for delta smelt, Central Valley steelhead, and winter-run and spring-run chinook salmon. Therefore, this section provides additional information specifically focusing on these sensitive and protected species and their habitat. Other special-status species, including Sacramento splittail, river lamprey, and hardhead are also discussed. **Table 4.3-2** lists the special-status fish species that may potentially be affected by the construction or operation of the project alternatives.

The following is a brief discussion of the listing status, life history, and factors affecting population abundance for the special-status fish species that seasonally inhabit the Delta and may be affected by construction or operation of the project alternatives.

Chinook Salmon

Chinook salmon are an anadromous species, spawning in freshwater and spending a portion of their life cycle within the Pacific Ocean. The species is divided into the following four runs according to spawning migration timing and reproductive behavioral differences: winter run, spring run, fall run, and late fall run. Chinook salmon generally require cool, clean, and well-oxygenated water in streams and rivers that contain adequately sized spawning gravels, instream cover, and riparian shading. Migration barriers in the form of dams, grade control structures, culverts, or water diversion structures significantly limit chinook salmon access to historical habitat throughout their range. Chinook salmon do not spawn within the Delta in the vicinity of the project area. However, this species seasonally uses the south Delta, including Old River, during adult upstream migration, smolt emigration, and juvenile rearing (Moyle, 2002). The Delta historically served as an important rearing habitat for juvenile chinook salmon. The Delta was characterized by extensive shallow-water habitats with dendritic channels and emergent wetland vegetation such as tules.

Levee construction and reclamation of wetland areas within the Delta for agriculture and other purposes has significantly modified much of the Delta, reducing the areal extent of wetlands and increasing the channelization of tributary rivers and Delta islands. Changes in hydrologic conditions resulting from the construction of upstream water storage impoundments and operations for flood

TABLE 4.3-1
FISH SPECIES INHABITING THE DELTA POTENTIALLY AFFECTED BY CONSTRUCTION OR OPERATION OF THE PROJECT ALTERNATIVES

Common Name	Scientific Name
Pacific lamprey *	*Lampetra tridentate*
River lamprey *	*Lampetra ayersi*
White sturgeon *	*Acipenser transmontanus*
Green sturgeon *	*Acipenser medirostris*
American shad	*Alosa sapidissima*
Threadfin shad	*Dorosoma petenense*
Central Valley steelhead *	*Oncorhynchus mykiss*
chinook salmon (winter, spring, fall, and late-fall runs) *	*Oncorhynchus tshawytscha*
Longfin smelt *	*Spirinchus thaleichthys*
Delta smelt *	*Hypomesus transpacificus*
Wakasagi	*Hypomesus nipponensis*
Northern anchovy*	*Engraulis mordax*
Starry flounder*	*Platichthys stellatus*
Hitch *	*Lavinia exilicauda*
Sacramento blackfish *	*Orthodon microlepidotus*
Sacramento splittail *	*Pogonichthys macrolepidotus*
Sacramento pikeminnow *	*Ptychocheilus grandis*
Fathead minnow	*Pimephales promelas*
Golden shiner	*Notemigonus crysoleucas*
Common carp	*Cyprinus carpio*
Goldfish	*Carassius auratus*
Sacramento sucker *	*Catostomus occidentalis*
Black bullhead	*Ameiurus melas*
Brown bullhead	*Ameiurus nebulosus*
Yellow bullhead	*Ameiurus natalis*
White catfish	*Ameiurus catus*
Channel catfish	*Ictalurus punctatus*
Western mosquitofish	*Gambusia affinis*
Rainwater killfish	*Lucania parva*
Striped bass	*Morone saxatilis*
Inland silverside	*Menidia beryllina*
Bluegill	*Lepomis macrochirus*
Redear sunfish	*Lepomis microlophus*
Green sunfish	*Lepomis cyanellus*
Warmouth	*Lepomis gulosus*
White crappie	*Pomoxis annularis*
Black crappie	*Pomoxis nigromaculatus*
Largemouth bass	*Micorpterus salmoides*
Smallmouth bass	*Micropterus dolomieu*
Tule perch *	*Hysterocarpus traski*
Threespine stickleback *	*Gasterosteus aculeatus*
Yellowfin goby	*Acanthogobius flavimanus*
Shimofuri goby	*Tridentiger bifasciatus*
Shokihaze goby	*Tridentiger barbulatus*
Staghorn sculpin	*Leptocottus armatus*
Prickly sculpin *	*Cottus asper*

* Indicates native species.

SOURCE: CCWD and Reclamation, 2006.

TABLE 4.3-2
SPECIAL-STATUS FISH SPECIES INHABITING THE DELTA POTENTIALLY AFFECTED BY CONSTRUCTION OR OPERATION OF THE PROJECT ALTERNATIVES

	Listing Status[a]		
Species	**Federal**	**State**	**Designated Habitat**
Sacramento River winter-run chinook salmon	FE	CE	Critical Habitat
Central Valley spring-run chinook salmon	FT	CT	Critical Habitat
Central Valley fall/late fall-run chinook salmon	FSC	CSC	Essential Fish Habitat
Central Valley steelhead	FT	–	Critical Habitat
Delta smelt[b]	FT	~~CT~~CE	Critical Habitat
North American green sturgeon	FT	CSC	–
Longfin smelt[c]	Candidate Species	~~Candidate Species~~CT	–
Sacramento splittail	–	CSC	–
River lamprey	–	CSC	–
Hardhead	–	CSC	–
Pacific smelt	Candidate Species	CSC	–
Northern anchovy	–	–	Essential Fish Habitat
Pacific sardine	–	–	Essential Fish Habitat
Starry flounder	–	–	Essential Fish Habitat

a FE = Federal Endangered
FT = Federal Threatened
FSC = Federal Species of Concern
CE = California Endangered
CT = California Threatened
CSC = California Species of Special Concern
b Delta smelt are currently being evaluated as a candidate under ~~CESA~~ FESA for uplisting to endangered status
c Longfin smelt are currently being evaluated as a candidate species for listing under ~~CESA and~~ FESA

control, in combination with increased levels of water diversions both upstream and within the Delta, contributed to reduced habitat quality and availability for juvenile salmon rearing within the Delta. In addition, the introduction of a number of non-native fish (e.g., striped bass, largemouth bass) increased predation mortality for juvenile salmon rearing and migrating through the Delta.

Life Histories of Winter-, Spring-, Fall-, and Late Fall-Run Chinook Salmon

The general seasonal timing of migration and spawning by each of the runs is detailed in **Table 4.3-3**.

Winter-run Chinook Salmon

Winter-run chinook salmon spend 1 to 3 years in the ocean before migrating upstream into the Sacramento River to spawn upstream of Red Bluff. Adult winter-run chinook salmon migrate upstream through San Francisco Bay, Suisun Bay, and the Delta during winter and early spring, with peak migration occurring during March (Moyle, 2002). Spawning occurs from mid-April through August (Moyle, 2002). Egg incubation continues through the fall. Juvenile winter-run chinook salmon rear within the Sacramento River throughout the year, and smolts migrate downstream through the lower reaches of the Sacramento River, Delta, Suisun Bay, and San Francisco Bay during winter and early spring (November through May) (USFWS, 2001).

TABLE 4.3-3
SEASONAL TIMING OF CHINOOK SALMON MIGRATION THROUGH THE SACRAMENTO-SAN JOAQUIN DELTA

	Sacramento River				San Joaquin River
Life stage	**Fall Run**	**Late Fall Run**	**Winter Run**	**Spring Run**	**Fall Run**
Adult upstream migration	July - December	November-May	Late November - June	March-July	September - December
Juvenile Rearing and Emigration	January – July (fry/smolts) October - December (yearlings)	December-April	November - May	October - June (young-of-the-year) mid-October - March (yearlings)	January - June

SOURCES: CCWD and Reclamation 2006.

Cold-water releases from the upstream Shasta and Keswick reservoirs are important in maintaining the quality and availability of suitable habitat in the mainstem Sacramento River for adult holding before spawning, spawning and egg incubation, and juvenile rearing. Adult holding, spawning, and egg incubation occurs primarily in the reach of the river from Keswick Dam downstream to the Red Bluff Diversion Dam (RBDD). Instream flow releases to the mainstem river are important year-round for the various lifestages of winter run salmon. The availability and release of cold water in the mainstem river is particularly important during the late spring, summer, and early fall (winter run salmon spawn and eggs incubate between about July and October – water temperatures less than about 56°F are important for successful egg development and hatching). The Sacramento River mainstem is the primary upstream and downstream migration corridor for winter-run chinook salmon. Winter-run chinook salmon are not present in the San Joaquin River drainage.

Historical Sacramento River winter-run chinook salmon population estimates, which included males and females, were as high as near 100,000 fish in the 1960s, but declined to under 200 fish in the 1990s (Good et al,. 2005). Because of the substantial decline in abundance, the species was listed as endangered under both the FESA and CESA.

Since the 1994 low point, the number of adult winter-run salmon returning to the Sacramento River has gradually increased. Population estimates in 2003 (8,218), 2004 (7,701), and 2005 (15,730) show a recent increase in population size (CDFG GrandTab, February 2007). The 2006 run was the highest since the 1994 listing. Overall, abundance measures over the past decade suggest that the abundance is increasing (Good et al., 2005). However, escapement estimates for 2007 showed a substantial decline in escapement numbers (about 2,500 adults) based on redd counts and carcass surveys.

As with other chinook salmon stocks, NMFS is continuing to evaluate the status of the winter-run chinook salmon population and the effectiveness of various management actions implemented within the Sacramento River, Delta, and ocean to ensure improved protection and reduce mortality for winter-run salmon. The increasing trend in winter-run chinook salmon abundance over the past decade was encouraging and supported preliminary discussions regarding the potential to modify the listing status from endangered to threatened, reflecting the trend toward recovery of the species.

The decline in adult winter-run salmon abundance, and the abundance of other Central Valley salmon observed in 2007, which is thought to reflect poor ocean-rearing conditions, has been identified as a significant concern, particularly given the critically dry hydrologic conditions occurring in 2008 and early 2009. NMFS is currently preparing a recovery plan for Central Valley salmonids, based in part on results of the status review that will provide additional guidance on evaluating the status of winter-run salmon and the criteria for assessing recovery of the species.

Although the majority of adult winter-run chinook salmon migrate upstream in the mainstem Sacramento River, a possibility exists (although low) that adults may migrate into the south Delta and the vicinity of both the existing and new intake structures. The occurrence of adult winter-run chinook salmon within the central and south Delta would be limited to the winter and early spring period of adult upstream migration. The majority of adult winter run salmon are thought to migrate upstream through the Delta during the period from about December to March or early April.

During their downstream migration, juveniles may enter into the central Delta via the Delta Cross Channel, Georgiana Slough, or Three Mile Slough. The migration timing of juvenile winter-run chinook salmon varies within and among years in response to a variety of factors, including increases in river flow and turbidity resulting from winter storms. Thus, potential presence of juvenile winter-run chinook salmon in the vicinity of the Old River, Rock Slough and AIP intake structures, the new Delta Intake structure, and the SWP and CVP south Delta export facilities varies by season and among years within the period from November through May.

Spring-run Central Valley Chinook Salmon

Adult spring-run salmon migrate upstream through the Delta and the Sacramento River from March through October. The adults typically migrate into upstream tributaries, such as Mill, Deer, Butte, and Clear creeks, although some adults also hold and subsequently spawn in the mainstem Sacramento River in the reach from Keswick Dam to about RBDD and in the Feather River downstream of Oroville Dam. Over the summer months, adults hold in deep cold pools within the rivers and tributaries before spawning, which occurs from September to October. Cold-water releases from the upstream Shasta and Keswick reservoirs and Oroville Dam are important in maintaining the quality and availability of suitable habitat in the mainstem Sacramento and Feather rivers for adult holding before spawning, spawning and egg incubation, and juvenile rearing.

Instream flow releases from dams to the mainstem rivers are important year-round for the various lifestages of spring run salmon. The availability and release of cold water in the mainstem rivers is particularly important during the late spring, summer, and early fall (spring run adult salmon hold in the rivers during the summer months and spawn and eggs incubate from about late August through November – water temperatures less than about 56°F are important for successful egg development and hatching).

Fry emerge from spawning areas during the late fall and winter. A portion of the fry migrate downstream soon after emerging and rear in downstream river channels, and potentially in the Delta estuary, during winter and spring months. The remainder of the fry reside in creeks and upstream tributaries/rivers and rear for about 1 year. The juvenile spring-run chinook salmon that remain in

the upstream habitats migrate downstream as 1–year-old smolts, primarily during the late fall, winter, and early spring, with peak migration occurring in November (Hill and Weber, 1999).

The downstream migration of both spring-run chinook salmon fry and smolts during the late fall and winter typically coincides with increased flow and water turbidity during winter storm water runoff. Construction of major dams and reservoirs on the Sacramento and San Joaquin River systems eliminated access to the upper reaches for spawning and juvenile rearing and completely eliminated the spring-run salmon population from the San Joaquin River system. Spring-run spawning and juvenile rearing currently occur on a consistent basis only within a small fraction of their previous geographic distribution.

Although the majority of adult spring-run chinook salmon migrate upstream within the mainstem Sacramento River, a possibility exists (although low) that adults may migrate into the central and south Delta. The occurrence of adult spring-run chinook salmon within the Delta in the vicinity of both the existing and new intake structures would be limited to the late winter and spring period (primarily March-May) of adult upstream migration. Juvenile spring-run chinook salmon may migrate from the Sacramento River, including its tributaries, into the Delta during their downstream migration and also use the Delta as a foraging area and migration pathway during the winter and early spring migration period. The occurrence of juvenile spring-run chinook salmon in the vicinity of the Old River, Rock Slough and AIP intake structures, the new Delta Intake structure, and the SWP and CVP south Delta export facilities would be expected during late fall through spring (October-June), when water temperatures within the Delta would be suitable for juvenile spring-run chinook salmon migration.

Fall-run and Late Fall-run Chinook Salmon

Adult fall-run chinook salmon migrate upstream from July through December (greatest migration through the Delta occurs in September-November) and spawn in October through December (Moyle, 2002), with the greatest spawning activity typically occurring in November and early December. Fall run and late fall run chinook salmon migrate upstream and spawn in rivers tributary to the Delta including the American, Feather, mainstem Sacramento, Mokelumne, Cosumnes, Tuolumne, Stanislaus, and Merced rivers and a number of smaller watersheds.

Instream flows and the release of cold water from upstream reservoirs are two of the important factors affecting habitat quality and availability for adults, eggs, and juvenile salmon. The success of fall-run chinook salmon spawning is dependent, to a large extent, on seasonal water temperatures. Seasonal water temperatures are most critical for pre-spawning adults and incubating eggs (primarily September-October) and for juvenile rearing and downstream migration (primarily April-June). After incubating and hatching, the young salmon emerge from the spawning areas as fry. A portion of the fry population migrates downstream soon after emergence, rearing in the downstream river channels and the Delta estuary (including the area next to the Old River, Rock Slough and AIP intakes, the new Delta Intake, and the SWP and CVP south Delta export facilities) during the late winter and spring months.

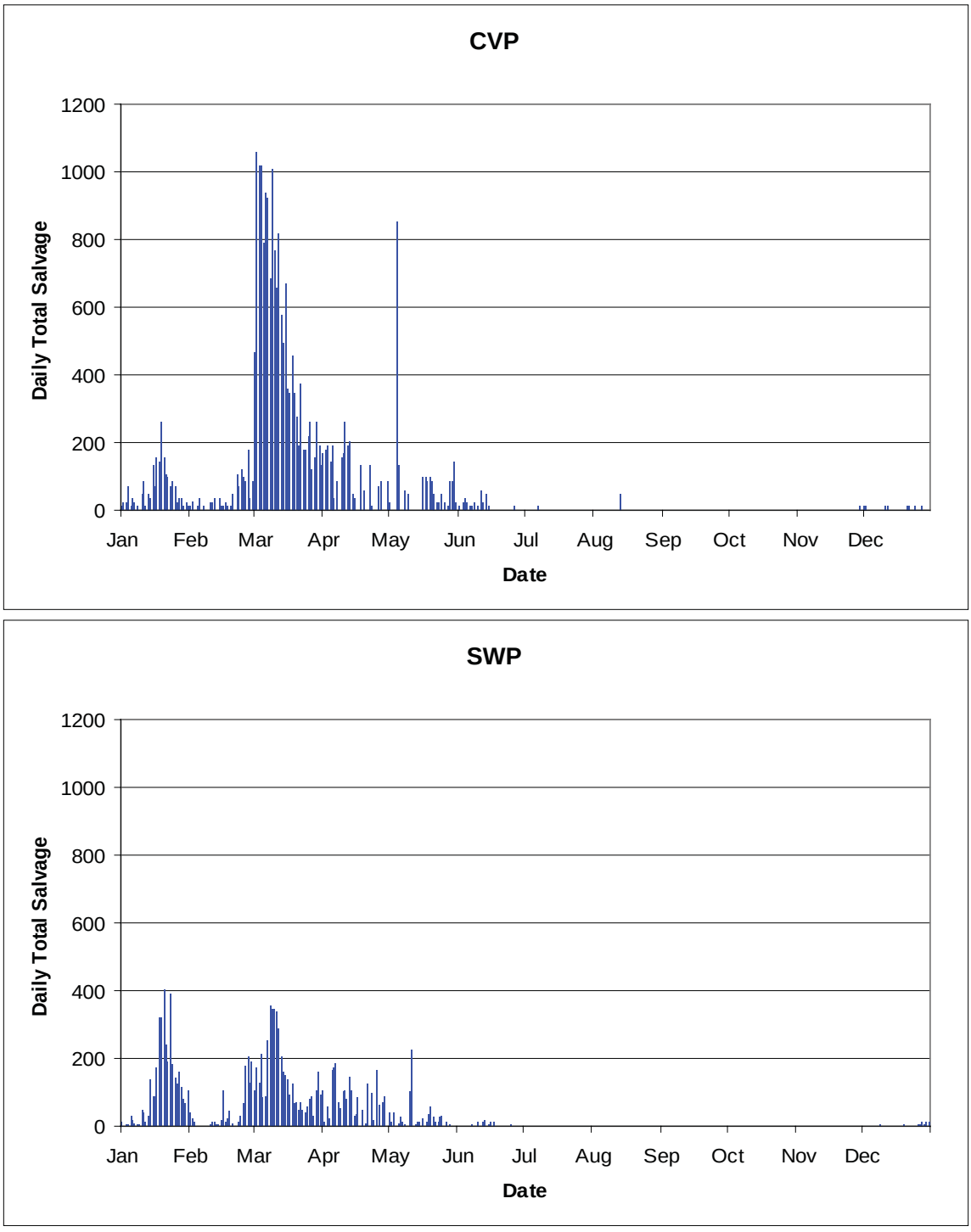
The remaining portion of juvenile salmon continues to rear in the upstream systems through the spring months until they have adapted to migration into salt water (smolting), which typically takes place between April and early June. In some streams, a small proportion of the fall-run chinook salmon juveniles may rear through the summer and fall months, migrating downstream during the fall, winter, or early spring as 1-year-old smolts.

Historically, before construction of major dams and water storage impoundments on Central Valley rivers, spring-run chinook salmon were considered to be the most abundant salmon species inhabiting the Sacramento and San Joaquin river systems (Yoshiyama et al., 1998). Currently, fall-run chinook salmon is the most abundant species of Pacific salmon inhabiting the Sacramento and San Joaquin Delta and Central Valley rivers. However, the 2007 adult spawning escapement for Sacramento River failed to meet the escapement goal of 122,000 to 180,000 adults for the first time in 15 years. The count of "jacks" or immature fish that return to the rivers at age two was a record low of only 2,000. This is much lower than the long-term average of 40,000 and the previous low of 10,000 (Environmental News Service, 2008). Future abundance projections are based on the previous years' jacks and it is estimated that 2008 will also record low numbers. In response to the low observed adult escapement in 2007 and projected low returns in 2008 the PFMC closed the coastal commercial and recreational fisheries for all chinook salmon beginning in spring 2008.

The occurrence of adult fall-run chinook salmon within the south Delta in the vicinity of both the existing and new intake structures would be limited to the fall period (primarily October through December) of adult upstream migration. Juvenile chinook salmon, particularly in the fry stage, may rear within the Delta and Suisun Bay, foraging along channel and shoreline margins and lower velocity backwater habitats. Juvenile fall-run chinook salmon would be expected to occur within the Delta, and specifically within the area of the Old River, Rock Slough, and AIP intakes, the new Delta Intake, and the SWP and CVP south Delta export facilities during late winter (fry; primarily February-March) through early spring (smolts; April-early June), when water temperatures within the Delta would be suitable for juvenile chinook salmon migration.

Late-fall-run chinook salmon adults migrate upstream through the Delta, in the vicinity of the existing and new CCWD intake structures and the SWP and CVP south Delta export facilities, from November through May. Late fall run chinook salmon migrate upstream, primarily into areas such as the mainstem Sacramento River between Keswick Reservoir and RBDD, and spawn from January through April. Juvenile fall-run and late-fall-run chinook salmon migrate downstream through the Delta, in the vicinity of the Old River, Rock Slough and AIP intake structures, the new Delta Intake structure, and the SWP and CVP south Delta export facilities during the late winter and spring migration period (December-April).

The seasonal occurrence of juvenile chinook salmon (all runs) observed during CVP and SWP fish salvage operations (see **Figure 4.3-2**) reflects the seasonal distribution of the species within the south Delta.



SOURCE: DFG, 2005; Central Valley Bay-Delta Branch Fish Salvage Monitoring (http://www.delta.dfg.ca.gov/Data/Salvage/); and ESA, 2007

Figure 4.3-2
2004 Seasonal (Daily) Distribution of Juvenile Chinook Salmon in CVP and SWP Fish Salvage Operations

Factors Affecting Chinook Salmon Populations

The environmental and biological factors that affect the abundance, mortality, and population dynamics of chinook salmon within the Bay-Delta estuary and Central Valley include, but are not limited to the following:

- Loss of access to historical spawning and juvenile rearing habitat within the upper reaches of the Central Valley rivers caused by major dams and reservoirs that act as migration barriers
- River water temperatures affect incubating eggs, holding adults, and growth and survival of juvenile salmon
- Juveniles are vulnerable to entrainment (i.e., the pulling of fish along with current into water diversion facilities) at a large number of unscreened water diversions along the Sacramento and San Joaquin Rivers and in the Delta
- Salvage mortality (defined as the fraction of fish that do not survive fish salvage) at the SWP and CVP export facilities
- Changes in habitat quality, including availability for spawning and juvenile rearing
- Exposure to contaminants
- Predation mortality by Sacramento pike minnow, striped bass, largemouth bass, and other predators
- Competition and interactions with hatchery-produced chinook salmon and steelhead
- Recreational and commercial fishing of subadult and adult chinook salmon
- Ocean survival is affected by climatic and oceanographic conditions
- Adults are vulnerable to predation mortality by marine mammals

In recent years, a number of changes have been made to improve the survival and habitat conditions for chinook salmon. For about the past 15 years, modifications have been made to operations at a number of Central Valley reservoirs, such as Shasta and Keswick, Folsom and Nimbus, Oroville, Camanche, and other dams and reservoirs in response to FESA protections for listed salmonids, Federal Energy Regulatory Commission permits and settlements, SWRCB water right permits, and as part of the CVP Improvement Act, for instream flow and temperature management. Modifications have been made to RBDD gate operations to increase the seasonal period when the dam gates are open to improve the migration and survival of listed salmonids and other fish.

Several large, previously unscreened water diversions on the Sacramento River, such as the Reclamation District (RD) 108 Wilkins Slough Pumping Plant, Princeton Pumping Plant, Glenn Colusa Irrigation District diversion, Sutter Mutual Water Company Tisdale Pumping Plant, and others have been equipped with positive-barrier fish screens. These screens include perforated metal plates, meshes, or other physical devices designed to prevent fish from being entrained into intake facilities while minimizing the stress and injury that can occur when fish are impinged on the screen or are subjected to changes in water velocity caused by the diversion.

Changes have been made in ocean salmon fishing regulations, particularly beginning in 2007 when the coastal ocean commercial and recreational harvest was banned in the San Francisco Bay area. Modifications to SWP and CVP export facility operations have also been made to improve the survival of juvenile chinook salmon during migration through the Delta. Modifications to SWP and CVP export operations in recent years have largely focused on reducing mortality to listed fish such as delta smelt, winter run and spring run chinook salmon, steelhead, and other fish in response to SWRCB Water Rights Decision D-1641 (D-1641), the Vernalis Adaptive Management Plan (VAMP), the CVP Improvement Act, FESA requirements of the USFWS and NMFS OCAP BOs, and federal court order.

These and other changes in management actions, in combination with favorable hydrologic and oceanographic conditions in recent years, are thought to have contributed to increasing abundance of adults returning to the upper Sacramento River since the mid-1990s. However, while chinook salmon have shown increasing abundance over the last decade, recent reports show a sharp decline in the chinook salmon population abundance in recent years. Although the causes for the decline in salmon abundance are not fully understood at this time, changes in ocean conditions are thought to be the primary reason (NMFS, 2008).

Regulatory Listing Status

The listing status of chinook salmon varies among runs. Winter-run chinook salmon are listed as an endangered species under both CESA and FESA; spring-run chinook salmon are listed as a threatened species under both CESA and FESA; and fall-run and late fall-run are not listed,[1] although both fall-run and late-fall-run chinook salmon are California species of special concern and federal species of concern. Critical habitat has been designated for winter- and spring-run chinook salmon, but neither designation includes the south Delta. Fall-run and late-fall-run are included in this environmental analysis because they support important commercial and recreational fisheries and the project alternatives would be within the area of the south Delta identified as EFH for Pacific salmon.

Central Valley Steelhead

Steelhead are the anadromous form of rainbow trout (*O. mykiss*); adults spawn in fresh water and the juveniles migrate to the Pacific Ocean, where they reside for several years before returning to the river system. Rainbow trout that spend their entire life in fresh water and do not migrate to the ocean are known as resident rainbow trout.

Life History of Central Valley Steelhead

Adult steelhead typically migrate through the Delta to upstream spawning areas during the fall and winter months (although the actual seasonal timing of adult steelhead migration may vary among years, the primary period of adult migration appears to be about November through March). A portion of the adult steelhead survive spawning and migrate back downstream (primarily in February-May) to spawn in subsequent years.

[1] In 1998, NMFS proposed that Central Valley fall-run and late-fall-run chinook salmon be listed under FESA as a threatened Evolutionarily Significant Unit (ESU) of the species. Based on further analysis and public comment, NMFS decided that fall-run and late-fall-run chinook salmon did not warrant listing, but should remain a species of concern for further analysis and evaluation.

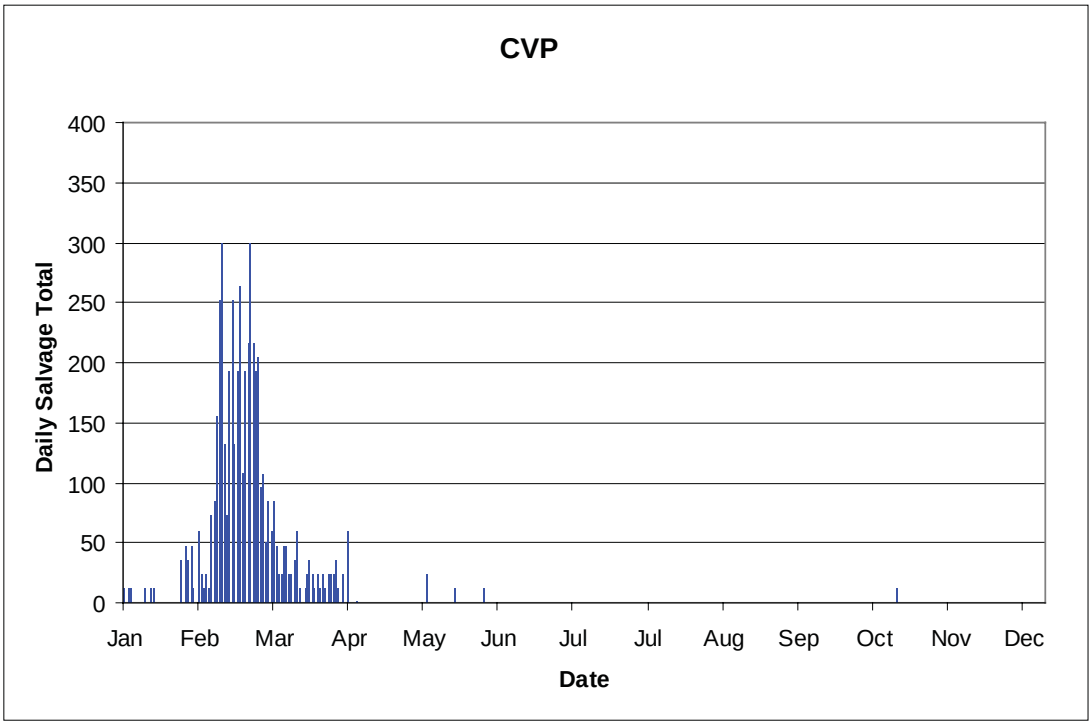
Steelhead spawn in areas characterized by clean gravels, cold water temperatures, and moderately high water velocities. Spawning typically occurs during the winter and spring (December through April), with the majority of spawning activity occurring between January and March. Although the actual geographic distribution of adult steelhead spawning is difficult to assess, adult returns occur on the American, Feather, mainstem Sacramento, Mokelumne, and Cosumnes rivers, as well as a number of smaller watersheds. Low numbers of adult steelhead may also migrate upstream into San Joaquin River tributaries. Instream flow releases and availability of cold water throughout the year from existing dams and reservoirs, in addition to access to suitable spawning and rearing habitat within tributaries, and physical habitat conditions such as spawning gravel and instream cover, have been identified as important factors affecting Central Valley steelhead.

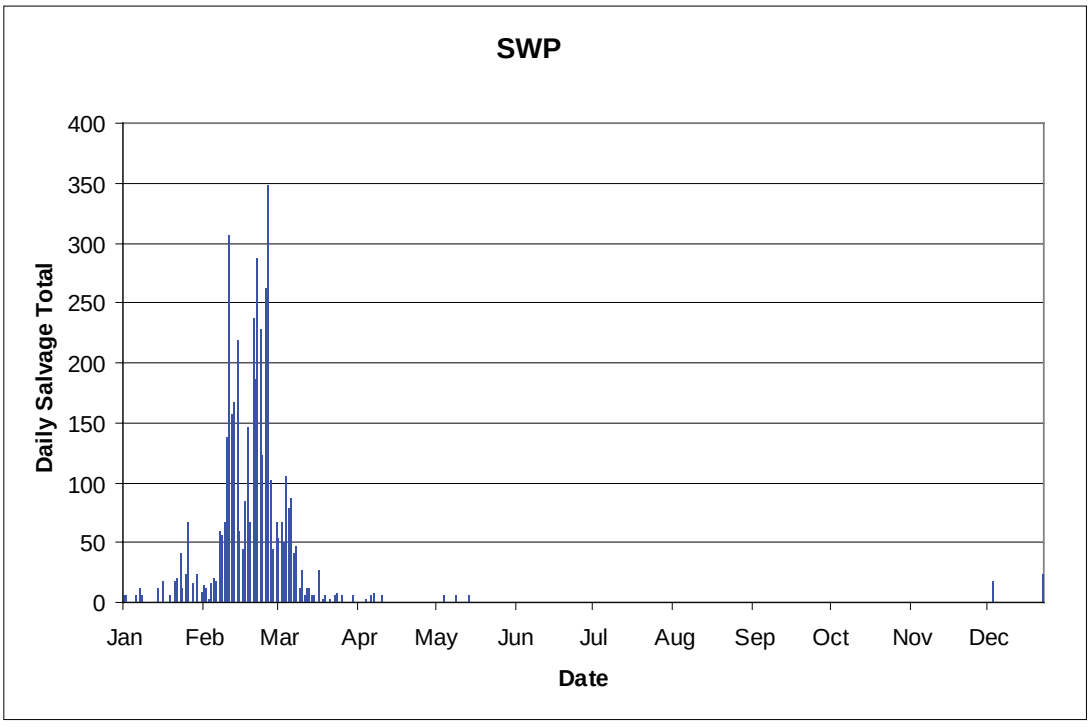
Young steelhead rear in fresh water for 1 to 3 years before migrating to the ocean. Downstream migration of steelhead smolts typically occurs during the late winter and early spring (January through May), as reflected in the seasonal occurrence in CVP and SWP fish salvage (**Figure 4.3-3**). Although the occurrence of juvenile steelhead observed in SWP and CVP fish salvage operations may vary in response to changes in export rates, the general seasonal distribution of steelhead in the fish salvage operations is consistent with observations on the seasonal migration of juvenile steelhead observed in other fishery monitoring programs conducted within the Delta (e.g., USFWS beach seine surveys, Chipps Island trawling). The seasonal timing of juvenile steelhead occurrence in the SWP and CVP salvage (Figure 4.3-3) is considered to be representative of the seasonal period when juvenile steelhead would be present in the south Delta in the vicinity of the Old River, Rock Slough, and AIP intake structures; the new Delta Intake structure; and the SWP and CVP south Delta export facilities. The seasonal timing of downstream migration of steelhead smolts can vary in response to a variety of environmental and physiological factors, including changes in water temperature, stream flow, and increased water turbidity resulting from storm water runoff.

Historically, Central Valley steelhead migrated upstream into the upper reaches of streams and rivers for spawning and juvenile rearing. The construction of dams and other structures on Central Valley rivers created impassable barriers to upstream migration that substantially reduced access to historical spawning grounds, and reduced the overall geographic distribution of steelhead.

Although quantitative estimates of the number of adult steelhead returning to Central Valley streams are not available, anecdotal information and fish counts indicate that population abundance is low. Steelhead distribution is currently restricted to the mainstem Sacramento River downstream of Keswick Dam, the Feather River downstream of Oroville Dam, the American River downstream of Nimbus Dam, the Mokelumne River downstream of Camanche Dam, and a number of smaller tributaries to the Sacramento River system, the Delta, and San Francisco Bay.

Steelhead may also inhabit San Joaquin River tributaries in low abundance. The only consistent data available on steelhead numbers in the San Joaquin River basin come from Spring Kodiak Trawl (SKT) samples collected by CDFG on the lower San Joaquin River at Mossdale. These data indicate a decline in steelhead abundance over the past several decades. The Central Valley steelhead population is composed of both naturally spawning steelhead and steelhead produced in hatcheries.





SOURCE: DFG, 2005; Central Valley Bay-Delta Branch Fish Salvage Monitoring (http://www.delta.dfg.ca.gov/Data/Salvage/); and ESA, 2007

Figure 4.3-3
2004 Seasonal (Daily) Distribution of Juvenile Steelhead in CVP and SWP Fish Salvage Operations

Detailed, long-term, quantitative fishery survey information are not available on the abundance of steelhead inhabiting various Central Valley rivers as spawning and juvenile rearing habitat, or migrating through the Delta. Steelhead, unlike chinook salmon, do not necessarily die after spawning. Therefore, carcass surveys do not provide reliable information on trends in adult steelhead abundance. Adult steelhead spawn during the winter and early spring months, typically when river and stream flows are high and turbidity is high, thereby making visual observations of spawning adults and redds difficult. During rearing in the upstream tributary habitat identification of juvenile anadromous steelhead from resident rainbow trout is difficult and unreliable. In addition, juvenile steelhead migrating downstream through the Delta are typically larger than juvenile salmon, have good swimming performance capability, and have the ability to avoid capture by the conventional fishery sampling methods (e.g., seines and trawls).

The best estimates of trends in abundance of adult steelhead, therefore, come from returns to hatcheries or observations and fish counts at fish ladders such as that operated at the RBDD on the upper Sacramento River. Changes in operations of the RBDD in recent years have reduced the reliability in estimating trends in adult steelhead abundance. The information that is available from these sources (see McEwan, 2001 for a summary of information on trends in adult steelhead abundance at the RBDD) are consistent in showing a substantial decline in abundance of adult steelhead returning the Central Valley rivers each year to spawn.

Although the majority of adult steelhead migrate upstream within the mainstem Sacramento River, some adult steelhead migrate through the central Delta into the Mokelumne and Cosumnes rivers and through the south Delta into the San Joaquin River system. Therefore, adult steelhead would be present seasonally within the vicinity of the Old River, Rock Slough and AIP intake structures, the new Delta Intake structure, and the SWP and CVP south Delta export facilities. Adult steelhead would potentially be expected to occur in the south Delta during the late fall and winter (about November through March). Juvenile steelhead migrate from the upstream spawning and rearing areas through the Delta, Suisun Bay, and San Francisco Bay, including the channels next to the Old River, Rock Slough and AIP intake structures, the new Delta Intake structure, and the SWP and CVP south Delta export facilities during the winter and early spring (primarily January through May).

Steelhead do not spawn within the Delta; however, juvenile steelhead forage within the south and central Delta during emigration and hence would be present within the vicinity of the Old River, Rock Slough and AIP intake structures, the new Delta Intake structure, and the SWP and CVP south Delta export facilities during the late winter and early spring migration period.

Factors Affecting Central Valley Steelhead Populations

Factors affecting steelhead abundance are similar to those described above for chinook salmon and include, but are not limited to:

- Loss of access to historical spawning and juvenile rearing habitat within the upper reaches of the Central Valley rivers caused by major dams and reservoirs acting as migration barriers
- Water temperatures in rivers and creeks, especially in summer and fall, affecting the growth and survival of juvenile steelhead

- Juveniles' vulnerability to entrainment at a large number of unscreened water diversions along the Sacramento and San Joaquin rivers and in the Delta
- Salvage mortality at the SWP and CVP export facilities
- Changes in habitat quality, including availability for spawning and juvenile rearing
- Exposure to contaminants
- Predation mortality by Sacramento pikeminnow, striped bass, largemouth bass, and other predators
- Passage barriers and impediments to migration
- Changes in land use practices
- Competition and interactions with hatchery-produced chinook salmon and steelhead
- Ocean survival affected by climatic and oceanographic conditions
- Adult vulnerability to predation mortality by marine mammals

Unlike chinook salmon, steelhead populations are not vulnerable to recreational and commercial fishing within the ocean, although hatchery-produced steelhead support a small inland recreational fishery.

In recent years, a number of changes have been made to improve the survival and habitat conditions for steelhead. Several large, previously unscreened water diversions on the upper Sacramento River (e.g., RD 108 Wilkins Slough Pumping Plant, Glenn Colusa Irrigation District diversion, Sutter Mutual Water Company Tisdale Pumping Plant, and others) have been equipped with positive-barrier fish screens. Modifications to fish passage facilities at locations such as the Woodbridge Irrigation District dam on the Mokelumne River, RBDD on the Sacramento River, and M&T Ranch on Butte Creek, have also been made to improve migration and access to spawning and juvenile rearing habitat. These measures have increased the ability of steelhead to migrate upstream as well as allow juveniles to migrate downstream.

Regulatory Listing Status

Central Valley steelhead are listed as a threatened Distinct Population Segment (DPS) under FESA. Steelhead are not listed for protection under CESA. Critical habitat for Central Valley steelhead was designated in 2005 and became effective in January 2006. The critical habitat designation for this DPS includes the project area.

Delta Smelt

Delta smelt are endemic to the Sacramento–San Joaquin Delta estuary and inhabit the freshwater portions of the Delta, lower reaches of the Sacramento and San Joaquin rivers, and the low-salinity portions of Suisun Bay. Delta smelt experienced a general decline in population abundance over the past several decades leading to their listing as a threatened species under both FESA and CESA. Delta smelt, in addition to several other pelagic species, recently experienced a substantial decline

in population abundance, otherwise known as the POD, as described earlier. The substantial declines in delta smelt abundance indices in recent years, as well as declines in other pelagic fish species, have led to widespread concern regarding the pelagic fish community of the Bay-Delta estuary. A number of recent and ongoing analyses have focused on identifying the factors potentially influencing the status and abundance of delta smelt and other pelagic fish species within the estuary. **Figure 4.3-4** indicates the timing of ongoing CDFG Delta fish surveys that collect delta smelt.

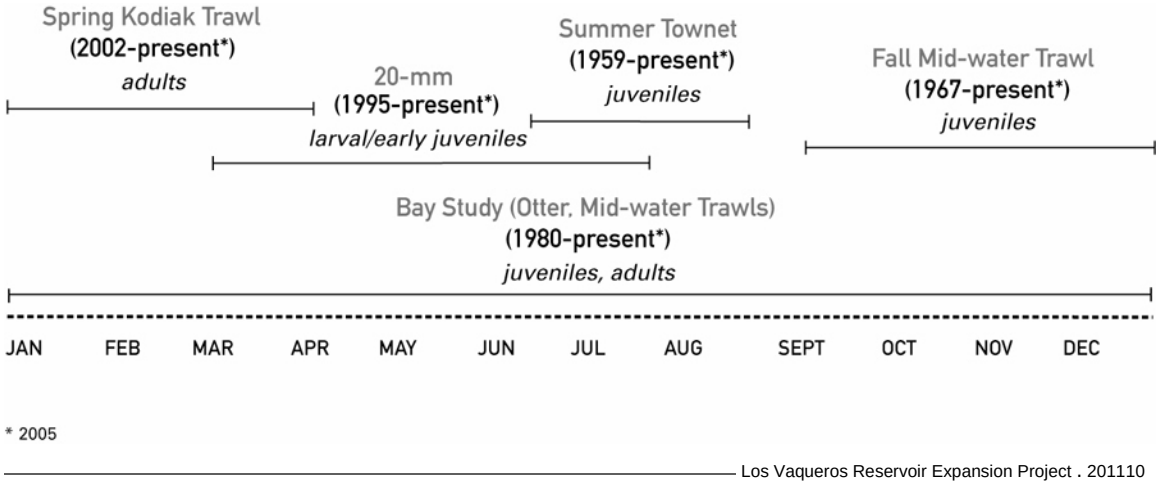
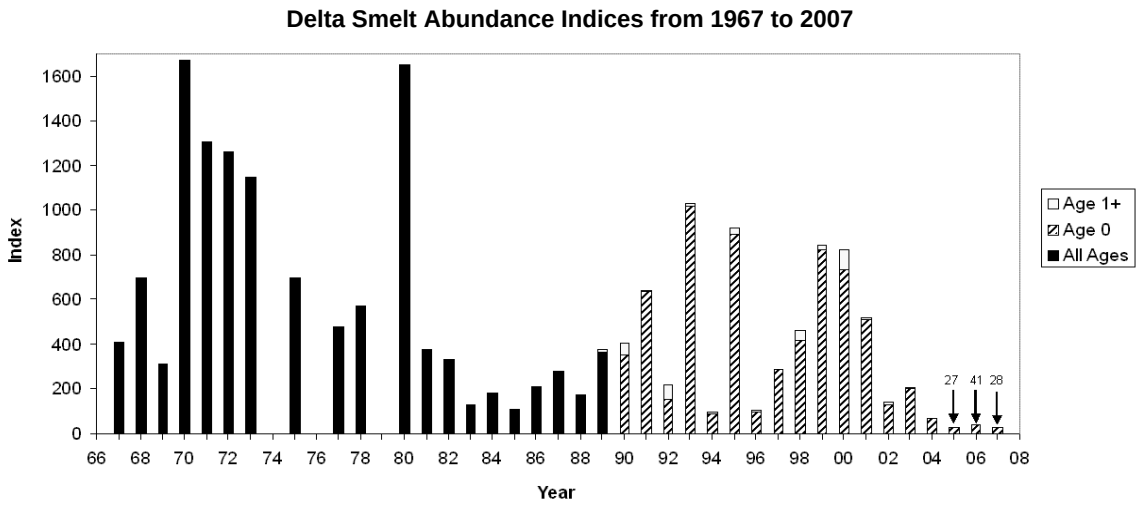


Figure 4.3-4
Time Periods of CDFG Delta Fish Surveys

The FMWT and SKT provide indices of pre-spawning adult delta smelt abundance during late fall and winter. The 20-millimeter (mm) Delta Smelt Survey and Summer Townet Survey provide information on juvenile abundance during spring and summer. Indices of delta smelt abundance have varied substantially among years (**Figure 4.3-5**). Abundance indices were highest from 1970 to 1973, followed by a general decline in abundance extending through the mid-1980s (with the exception of 1980). Abundance was variable, but generally higher from 1991 through 2000 than it had been in the decade prior. Since 2002, abundance indices for delta smelt have been persistently low; 2004 through 2007 reflected the lowest levels on record.

The IEP continues to evaluate the available scientific information regarding the status of delta smelt and the performance of various management actions designed to improve protection, reduce mortality, and enhance habitat quality and availability for delta smelt within the estuary. Additional measures have been taken since the beginning of 2005 (e.g., 20-mm surveys, POD investigations) to assess the seasonal and geographic distribution of early lifestages of delta smelt, factors affecting population dynamics such as the magnitude of entrainment at the CVP and SWP intakes, and to monitor and provide additional information on delta smelt abundance and distribution within the Delta.



SOURCE: CDFG 2008b

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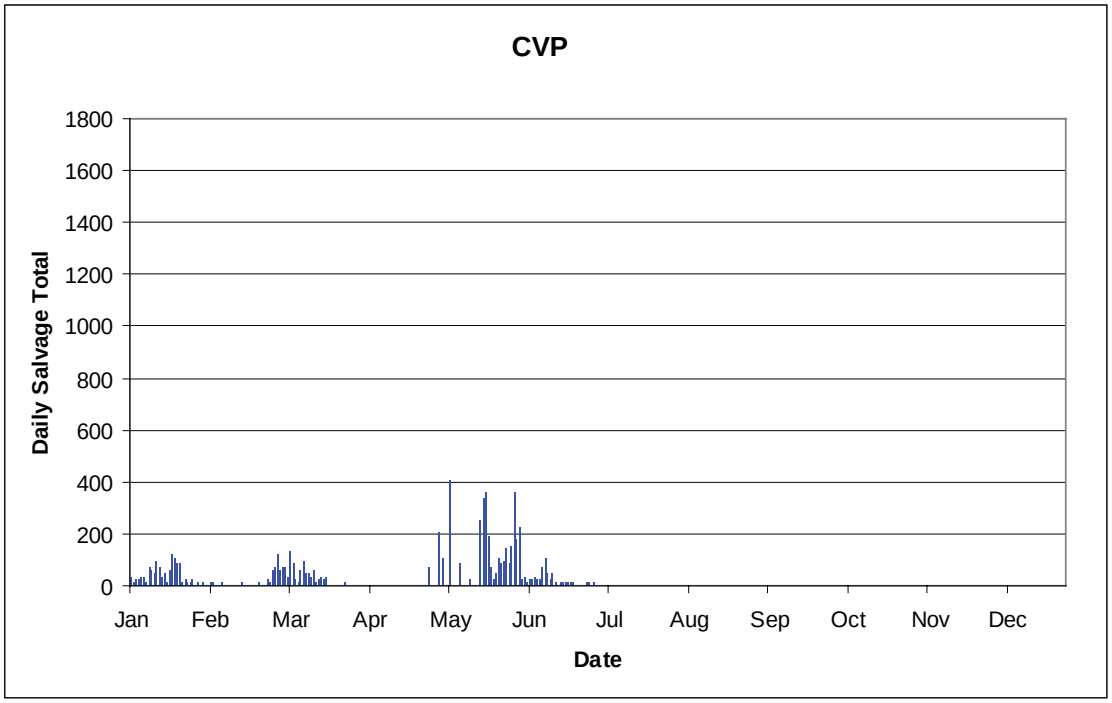
Figure 4.3-5
CDFG Fall Midwater Trawl Abundance Indices for Delta Smelt, 1967–2007

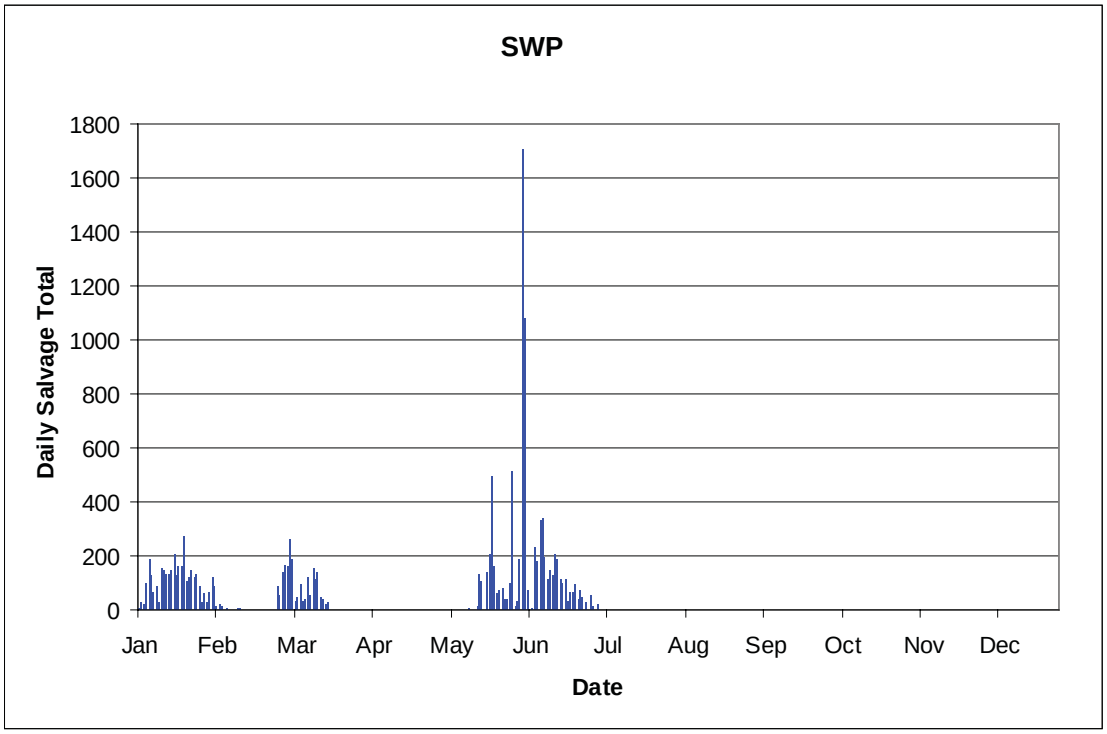
Life History of Delta Smelt

Delta smelt are a relatively small species (2 to 4 inches long) with an annual life cycle, although some individuals may live 2 years. Adult delta smelt migrate upstream into channels and sloughs of the Delta (e.g., lower Sacramento River in the vicinity of Decker Island and Rio Vista) during winter to prepare for spawning. Delta smelt live their entire life cycle within the Bay-Delta estuary. Juveniles and adults typically inhabit open waters of the Delta, including the areas in the vicinity of the Old River, Rock Slough and AIP intake structures, the new Delta Intake structure, and the SWP and CVP south Delta export facilities.

Spawning occurs between February and July; peak spawning occurs during April through mid-May (Moyle, 2002). Females deposit adhesive eggs on substrates such as gravel and sand. Eggs hatch, releasing planktonic larvae that are passively dispersed downstream by river flow. Larval and juvenile delta smelt rear within the estuary for a period of about 6 to 9 months before beginning their upstream spawning movement into freshwater areas of the lower Sacramento and San Joaquin Rivers. They also have been known to move downstream into Napa River during high flows; sometimes they do not move at all if the western end of Suisun Bay freshens; they have also been known inhabit Suisun Marsh.

Juvenile and adult delta smelt are usually most abundant within the south Delta in the vicinity of the Old River, Rock Slough and AIP intakes, the new Delta Intake, and the SWP and CVP south Delta export facilities from winter through early summer, as reflected in SWP and CVP fish salvage records (**Figure 4.3-6**). Although the occurrence of delta smelt observed in SWP and CVP fish salvage operations may vary in response to changes in export rates, the general seasonal distribution of juvenile and adult delta smelt in the fish salvage operations is consistent with observations on the seasonal migration patterns and geographic distribution of delta smelt observed in other fishery





SOURCE: DFG, 2005; Central Valley Bay-Delta Branch Fish Salvage Monitoring (http://www.delta.dfg.ca.gov/Data/Salvage/); and ESA, 2007

Figure 4.3-6
2004 Seasonal (Daily) Distribution of Juvenile and Adult Delta Smelt in CVP and SWP Fish Salvage Operations

monitoring programs conducted within the Delta (e.g., 20 mm, SKT, USFWS beach seine surveys, Chipps Island trawling). The seasonal timing of delta smelt occurrence in the SWP and CVP salvage (Figure 4.3-6) is considered to be representative of the seasonal period when delta smelt would be present in the south Delta in the vicinity of the Old River, Rock Slough and AIP intake structures, the new Delta Intake structure, and the SWP and CVP south Delta export facilities.

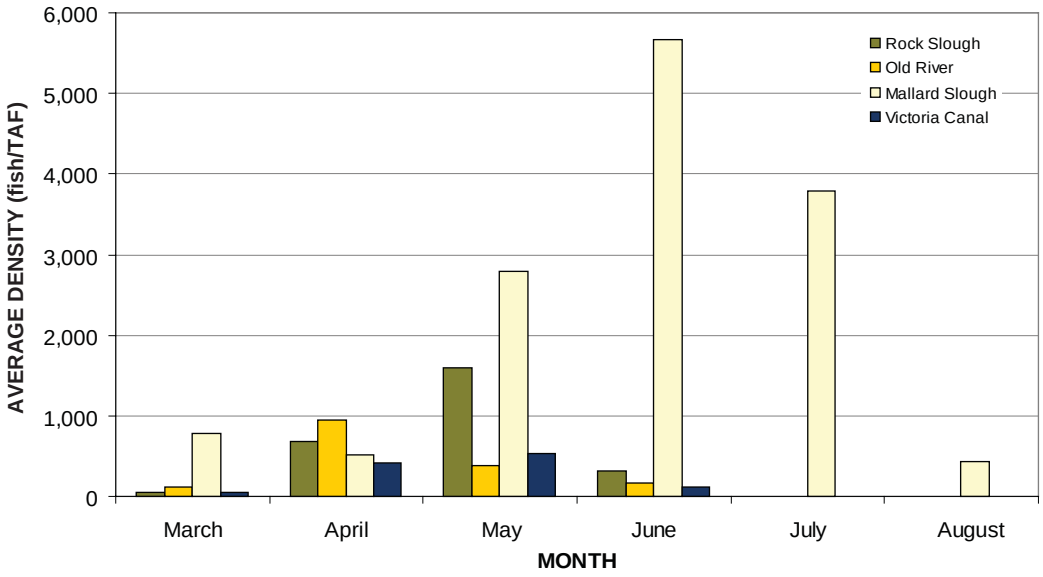
Juvenile and adult delta smelt do not typically inhabit the south Delta during summer, when water temperatures exceed about 77 degrees Fahrenheit, and high water clarity tends to keep them out during the fall (Nobriga et al., 2008; Feyrer et al., 2007). Adult delta smelt spawn within the Delta during late winter and spring, and larvae occur within the Delta during spring (**Figure 4.3-7**). As a result of their life history and geographic distribution, delta smelt may occur seasonally within the vicinity of the Old River, Rock Slough, and AIP intake structures, the new Delta Intake structure, and the SWP and CVP south Delta export facilities as larvae, juveniles, and adult life stages.

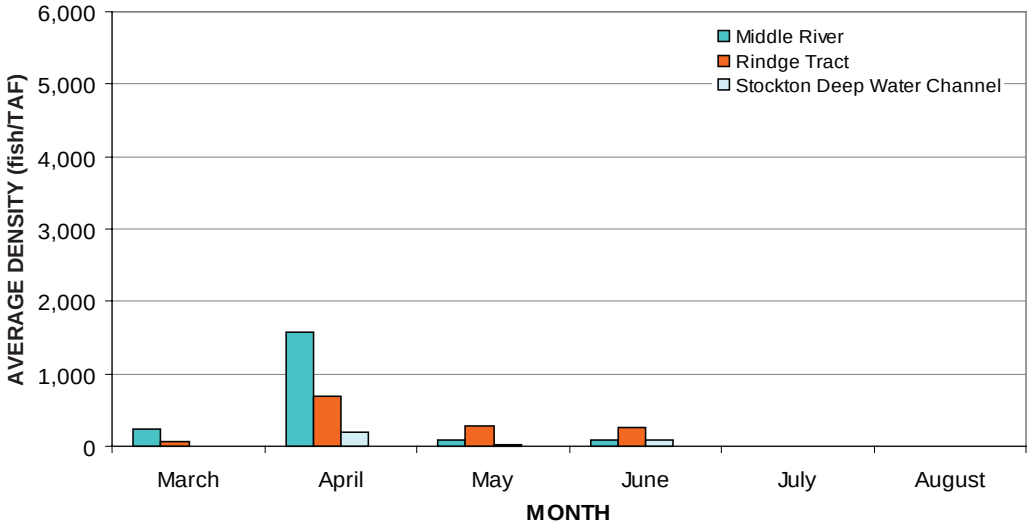
Modifications to SWP and CVP export facility operations have been made over the past decade to improve the survival of delta smelt and other fish species. Modifications to SWP and CVP export operations in recent years have largely focused on reducing mortality to listed fish such as delta smelt, winter run and spring run chinook salmon, steelhead, and other fish in response to SWRCB D-1641, VAMP, CVP Improvement Act, FESA requirements of the USFWS and NMFS OCAP BOs, and federal court order.

Factors Affecting Delta Smelt Populations

A variety of environmental and biological factors affect the abundance of delta smelt within the estuary (Moyle, 2002). These factors include, but are not limited to:

- Changes in the seasonal timing and magnitude of freshwater inflow to the Delta and outflow from the Delta
- Entrainment of larval, juvenile, and adult delta smelt into a large number of unscreened water diversions (primary agricultural) throughout the Delta (CBD, TBI and NRDC, 2006)
- Entrainment and salvage mortality at the CVP and SWP water export facilities
- Predation by striped bass, largemouth bass, and a number of other fish species inhabiting the estuary has also been identified as a source of mortality for delta smelt
- Exposure to toxic substances resulting in direct or indirect effects
- Variation in the quality and availability of low-salinity habitat within the Delta and Suisun Bay, in response to seasonal and interannual variability in hydrologic conditions within the Delta
- Reduced food (prey) availability thought to be the result of reduced primary production due, in part, to a reduction in seasonally-inundated wetlands, competition for food resources with non-native fish and macroinvertebrates (e.g., filter feeding by the non-native Asian overbite clam Corbula), and competition among native and non-native zooplankton species





SOURCE: DFG, 2005 (http://www.delta.dfg.ca.gov/Data/20mm/); and ESA, 2007

Figure 4.3-7
1995-2005 DFG 20mm Larval Smelt Survey
Average Densities in the South Delta near
CCWD Intakes and the Vicinity

Regulatory Listing Status

Delta smelt is listed as a threatened species under ~~both CESA and~~ FESA and listed as endangered under CESA. In March 2006, a petition seeking to relist delta smelt as an endangered species was submitted to the USFWS. On July 10, 2008 USFWS announced in a 90-day finding that consideration for reclassification of delta smelt was warranted and, after an information collection stage, a status review would be initiated. On March 25, 2009, USFWS initiated a 5-year status review of 58 species, including the delta smelt. ~~The proposal to elevate the listing status remains under review and USFWS has, as yet, not acted on the petition.~~ Critical habitat for delta smelt has been designated by USFWS within the Sacramento–San Joaquin River system, including the project area.

In June 2007, the California Fish and Game Commission accepted a petition to uplist delta smelt from threatened to endangered status under CESA. On March 4, 2009, the California Fish and Game Commission elevated the status of delta smelt to endangered under CESA. ~~This action is currently under review.~~

North American Green Sturgeon

Green sturgeon is a large, bottom-dwelling, anadromous fish that is widely distributed along the Pacific coast of North America. North American green sturgeon is the most broadly distributed, wide ranging, and marine-oriented species of the sturgeon family; however, they are not very abundant in comparison to white sturgeon. San Francisco Bay, San Pablo Bay, Suisun Bay, the Delta, and the Sacramento River support the southernmost reproducing population of green sturgeon.

Life History of Green Sturgeon

Habitat requirements of green sturgeon are poorly understood, but spawning and larval ecologies are probably similar to those of white sturgeon. Indirect evidence indicates that green sturgeon spawn mainly in the upper reaches of Sacramento River (e.g., Colusa to Keswick Dam). They are slow growing and late maturing, spawning every 3 to 5 years between March and July. Adult fish spawn in fresh water and then return to estuarine or marine environments. Preferred spawning habitat occurs in large rivers that contain large cobble in deep and cool pools with turbulent water (CDFG, 2002; Moyle, 2002; Adams et al., 2002). Larval and juvenile green sturgeon may rear for up to 2 years in fresh water and then migrate to an estuarine environment, primarily during summer and fall. They remain near estuaries at first, but may migrate considerable distances as they grow larger (SWRCB, 1999).

Both adult and juvenile North American green sturgeon are known to occur in the lower reaches of the San Joaquin River and in the south Delta. Juveniles have been captured in the vicinity of Santa Clara Shoals and Brannan Island State Recreation Area, and in the channels of the south Delta (NMFS, 2006). The occurrence of green sturgeon in fishery sampling and CVP/SWP fish salvage is extremely low. As a result, very little information is available on the habitat requirements, geographic distribution, or seasonal distribution of various life history stages of green sturgeon within the estuary. However, adults and juveniles have the potential to occur within the project area throughout the year.

Factors Affecting Green Sturgeon Populations

A variety of environmental and biological factors affect the abundance of green sturgeon within the estuary:

- Spawning habitat made inaccessible or altered by dams
- Destruction of riparian and stream channel habitat used for spawning
- The introduction of invasive benthic organisms such as the overbite clams and Chinese mitten crab have altered the benthic invertebrate communities
- The introduction of non-native invasive plant species such as water hyacinth and Brazilian waterweed have altered habitat by raising temperatures, reducing turbidity and dissolved oxygen, and inhibiting access to shallow water habitat (CDFG, 2002)
- Reduced rearing habitat due to historical reclamation of wetland and islands that has degraded the availability of suitable in- and off-channel rearing habitat (Sweeny et al., 2004)
- Increased water temperatures (Myrick and Cech, 2004; Allen et al., 2006a, b)
- Predation by native and non-native fish, including prickly sculpin, striped bass, and largemouth bass
- Harvest in the recreational sport fisheries and poaching (illegal harvest)

The abundance of green sturgeon is apparently reduced throughout its range. The CDFG estimated the abundance of adult green sturgeon inhabiting the Bay-Delta estuary ranged from about 500 to 1000 fish between 1967 and 1991 (EPIC, CDB, and WaterKeepers, 2001). EPIC et al. (2001) reported that the abundance of legal-size green sturgeon in 1998 was estimated to be 418 fish. While population estimates are not precise, the population is so small that a collapse could occur, but such a collapse would be difficult to detect due to the limited occurrence in conventional fishery sampling programs (SWRCB, 1999).

Regulatory Listing Status

The southern DPS of North American green sturgeon is listed as threatened under FESA and is a California species of special concern. Critical habitat for green sturgeon has not been designated.

Longfin Smelt

Longfin smelt is a small, planktivorous fish species found in several Pacific coast estuaries from San Francisco Bay to Prince William Sound, Alaska.

Life History of Longfin Smelt

Longfin smelt can tolerate a broad range of salinity concentrations, ranging from fresh water to seawater (TBI et al., 2007). Spawning is believed to occur in the lower reaches of the Sacramento River (downstream of Rio Vista). Spawning is also thought to occur in the eastern portion of Suisun Bay and larger sloughs within Suisun Marsh. Historically, spawning probably occurred in the lower San Joaquin Rivers (TBI, 2007). Spawning may take place as early as November and may extend into June. The majority of spawning occurs between January and March (TBI et al., 2007). Adult

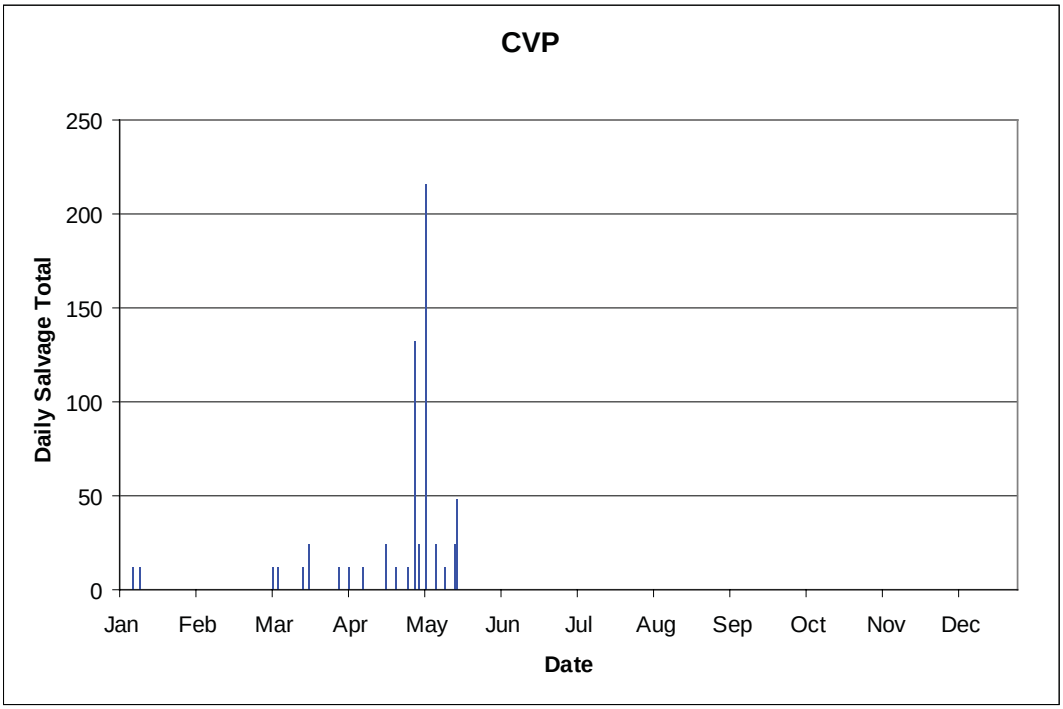
longfin smelt are found mainly in Suisun, San Pablo, and San Francisco Bays, although their distribution is shifted upstream into the western Delta in years of low outflow (Baxter, 1999; Moyle, 2002). The seasonal occurrence of longfin smelt in CVP and SWP salvage operations (**Figure 4.3-8**) is considered to be representative of the seasonal periods when juvenile and adult longfin smelt would be in the vicinity of the Old River, Rock Slough and AIP intake structures and the new Delta Intake structure.

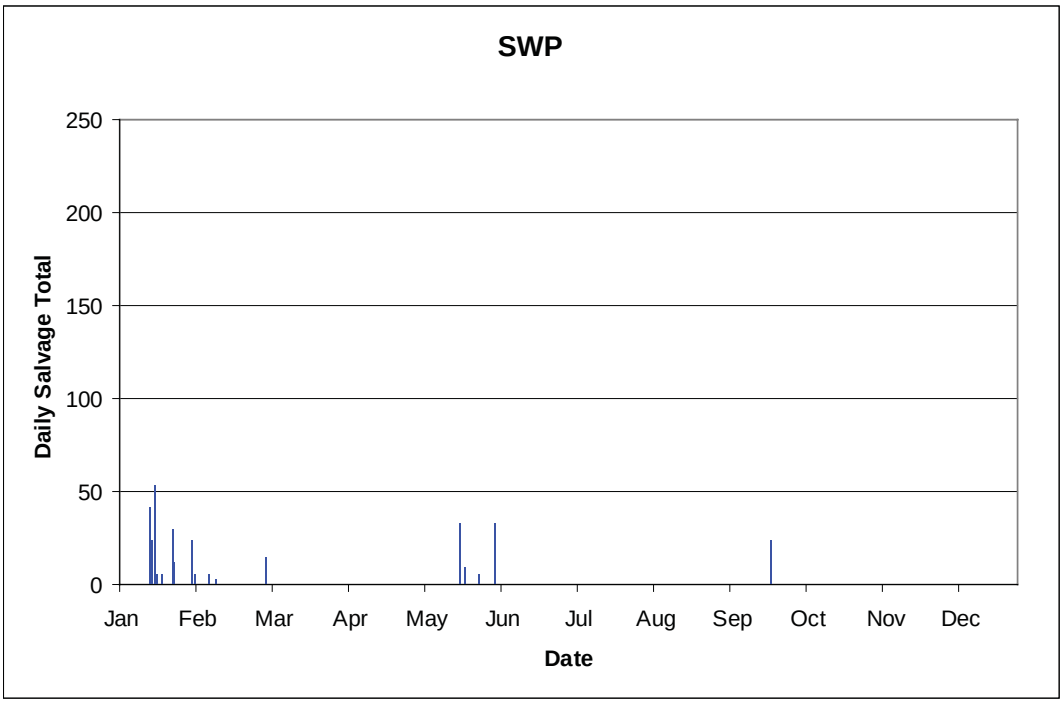
Like delta smelt, longfin smelt spawn adhesive eggs in river channels of the eastern estuary, and after hatching their larvae are carried downstream (planktonic drift) to nursery areas by freshwater outflow. In contrast to delta smelt, longfin smelt juveniles and adults are broadly distributed and inhabit the more saline regions of the Bay-Delta estuary and nearshore coastal waters. During non-spawning periods longfin smelt are most often concentrated in Suisun, San Pablo, and North San Francisco Bay (Baxter, 1999; Moyle, 2002). The easternmost catch of longfin smelt in FMWT samples has been at Medford Island in the central Delta. A measurable portion of the longfin smelt population consistently survives into a second year. During the second year of life, the adult longfin smelt inhabit San Francisco Bay and occasionally have been found in nearshore ocean surveys (Rosenfield and Baxter, 2007). Therefore, longfin smelt are often considered anadromous (SWRCB, 1999).

Factors Affecting Longfin Smelt Populations

Longfin smelt were once one of the most common fish in the Delta. Their abundance has fluctuated widely in the past, but, since 1982, abundance has declined significantly, reaching its lowest levels during drought years. Longfin abundance indices, although variable, show a general pattern of declining abundance between 1967 and 2007. Longfin smelt are among the POD species showing a substantial decline in abundance in recent years. The causes of decline are likely multiple and synergistic (Armor et al., 2006), including:

- Reduction in Delta outflows during the late winter and spring
- Entrainment losses to water diversions
- Reduced spawning and rearing habitat
- Reduced food (prey) availability thought to be the result of reduced primary production due, in part, to a reduction in seasonally-inundated wetlands, competition for food resources with non-native fish and macroinvertebrates (e.g., filter feeding by the non-native Asian overbite clam Corbula), and competition among native and non-native zooplankton species
- Climatic variation
- Exposure to toxic substances, however no known direct link exists between chemical concentration and larval mortality (Resources Agency, 2007)
- Predation, and introduced species (SWRCB, 1999)





SOURCE: DFG, 2005; Central Valley Bay-Delta Branch Fish Salvage Monitoring (http://www.delta.dfg.ca.gov/Data/Salvage/); and ESA, 2007

Figure 4.3-8
2004 Seasonal (Daily) Distribution of Longfin Smelt in CVP and SWP Fish Salvage Operations

Regulatory Listing Status

Longfin smelt is ~~a federal species of concern and~~ a CESA ~~candidate~~ threatened species. In August 2007, USFWS was petitioned to list longfin smelt as endangered. On May 6, 2008, USFWS found that the listing may be warranted and initiated a status review to determine if listing this species is in fact warranted. On April 9, 2009, the USFWS determined that the Bay-Delta population did not meet the legal criteria for protection as a species subpopulation under the FESA. The USFWS simultaneously announced that it is seeking additional information for a broader assessment of the longfin smelt that could lead to future action, although no decision can be made before reviewing any new information.

On February 7, 2008 the California Fish and Game Commission accepted a petition to list longfin smelt under CESA. Following ~~, thus initiating a~~ the 1-year status review period, the California Fish and Game Commission listed the status of longfin smelt as threatened under the CESA on June 26, 2009.~~after which the Commission will determine if listing is warranted. Under CESA, candidate species have the same level of protections against take as listed species until a final ruling is made regarding listing the species.~~

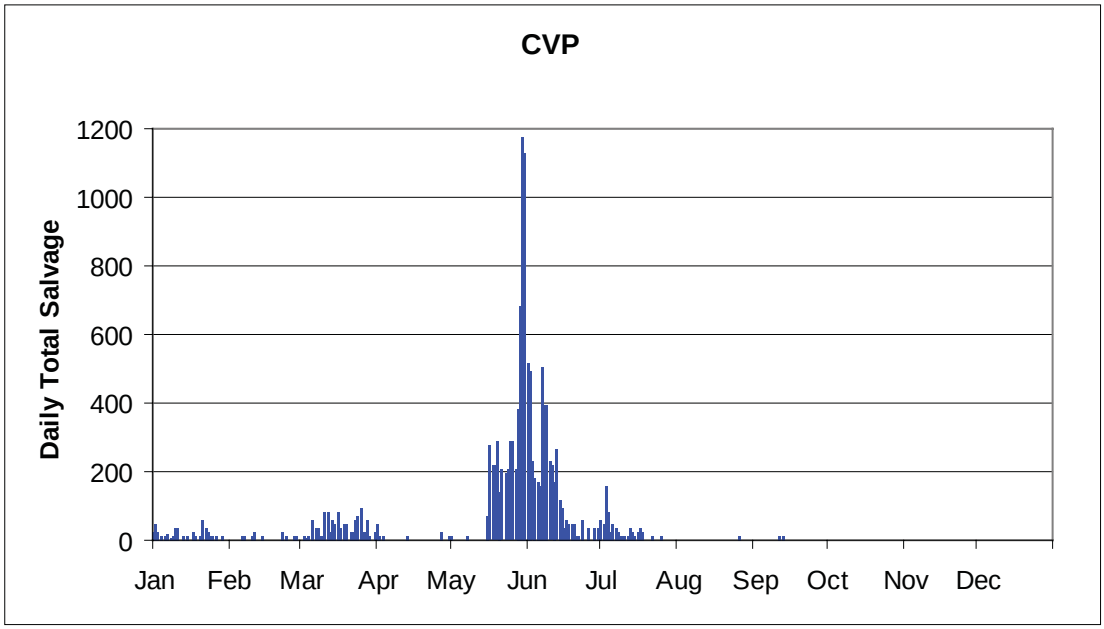
Given the current petitions and biological reviews of the status of the species under ~~both~~ FESA ~~and CESA~~ longfin smelt may become a federally ~~and/or state~~ listed species by the time any of the project alternatives is implemented.

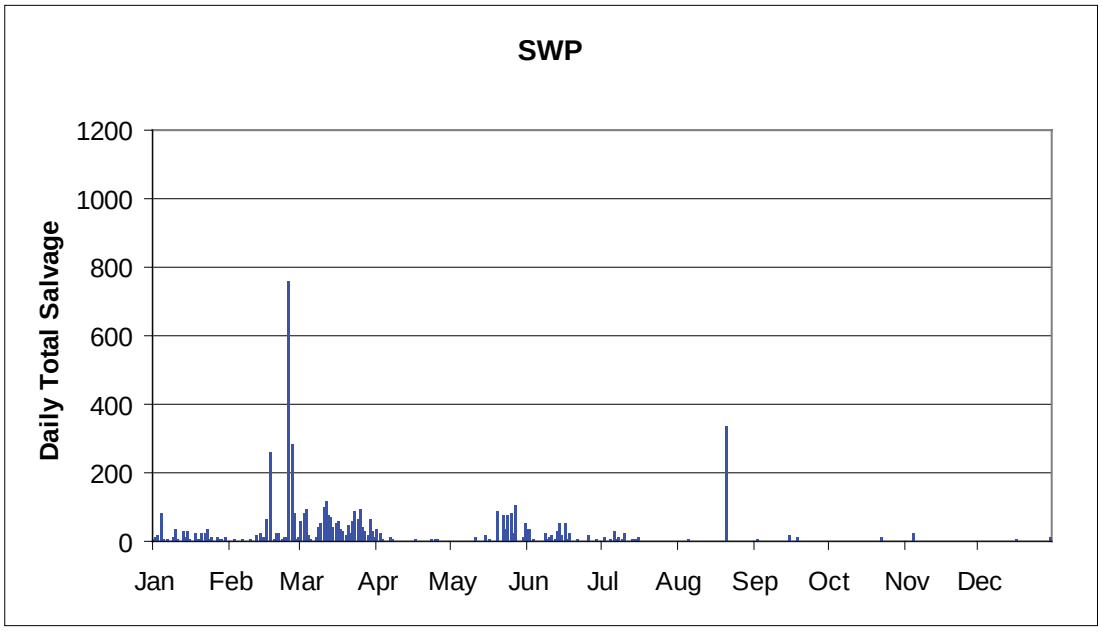
Sacramento Splittail

Sacramento splittail is a large minnow endemic to the Bay-Delta estuary. Splittail are well adapted for living in estuarine waters with fluctuating salinity conditions. Adults and sub-adults have an unusually high tolerance for saline waters up to 18 parts per thousand, for a member of the minnow family. The species is relatively long-lived (5 to 7 years), and matures at the end of the first year (males) or third year (females). As is typical of a fish species evolved in a highly variable riverine system, juvenile abundance fluctuates annually depending on spawning success.

Life History of Sacramento Splittail

Spawning, which seems to be triggered by increasing water temperatures and day length, occurs from February through July in the Delta, upstream tributaries, Napa Marsh, Napa and Petaluma Rivers, Suisun Bay and Marsh, and the Sutter and Yolo bypasses (Baxter et al., 1996; Meng and Moyle, 1995; Sommer et al., 1997). Spawning, egg incubation, and juvenile rearing occur primarily in seasonally inundated floodplains on submerged vegetation. Juvenile splittail may occur in shallow and open waters of the Delta and Suisun Bay, but are most abundant in the northern and western Delta (Sommer et al., 2001). Adults migrate upstream to spawn during high flows that inundate floodplain spawning habitat. This habitat consists of vegetation temporarily submerged by flooding of riparian and upland habitats. The seasonal occurrence of juvenile splittail in CVP and SWP fish salvage (**Figure 4.3-9**) is representative of the periods when juvenile splittail would potentially inhabit the region of the south Delta in the vicinity of the Old River, Rock Slough and AIP intake structures and the new Delta Intake structure. Observations on the seasonal occurrence of juvenile splittail at the SWP and CVP fish salvage facilities are consistent with results of fishery surveys conducted throughout the estuary (e.g., USFWS beach seine survey).





SOURCE: DFG, 2005; Central Valley Bay-Delta Branch Fish Salvage Monitoring (http://www.delta.dfg.ca.gov/Data/Salvage/); and ESA, 2007

Figure 4.3-9
2004 Seasonal (Daily) Distribution of Juvenile and Subadult Splittail in CVP and SWP Fish Salvage Operations

Young-of-the-year splittail abundance appears to fluctuate widely from year to year. Young splittail abundance declined substantially during the 1987 to 1992 drought (Baxter et al., 1996). In recent years, indices of juvenile splittail abundance have continued to fluctuate substantially among years (Sommer et al., 1997). In contrast to young splittail, adult abundance showed no obvious decline during the 1987 to 1992 drought (Sommer et al., 1997). The species' long lifespan and multiple year classes moderate adult population variation.

Factors Affecting Sacramento Splittail Populations

Once found throughout low-elevation lakes and rivers of the Central Valley from Redding to Fresno, this native species now occurs in the lower reaches of the Sacramento and San Joaquin Rivers and tributaries, Suisun and Napa Marshes, the Sutter and Yolo bypasses, and the tributaries of north San Pablo Bay. Environmental factors affecting splittail abundance include, but are not limited to:

- Dams, diversions, levee construction and reclamation, and agricultural development have eliminated or altered much of the lowland floodplain habitat that provides spawning and rearing habitat
- Changes in the seasonal timing and magnitude of freshwater inflow to the Delta and outflow from the Delta
- Entrainment of larval and juvenile splittail into a large number of unscreened water diversions (primary agricultural) throughout the Delta
- Entrainment and salvage mortality at the CVP and SWP water export facilities
- The introduction of non-native invasive plant species such as water hyacinth and Brazilian waterweed have altered habitat by raising temperatures, reducing turbidity and dissolved oxygen, and inhibiting access to shallow water habitat (CDFG, 2002)
- Predation by striped bass, largemouth bass, and a number of other fish species inhabiting the estuary has also been identified as a source of mortality for splittail
- Exposure to toxic substances resulting in direct or indirect affects
- Variation in the quality and availability of low-salinity habitat within the Delta and Suisun Bay, in response to seasonal and interannual variability in hydrologic conditions within the Delta Reduced food (prey) availability thought to be the result of reduced primary production due, in part, to a reduction in seasonally-inundated wetlands, competition for food resources with non-native fish and macroinvertebrates (e.g., filter feeding by the non-native Asian overbite clam Corbula), and competition among native and non-native zooplankton species
- Harvest of adult splittail by recreational anglers (SWRCB, 1999)

Regulatory Listing Status

Sacramento splittail have no federal listing status. Splittail were listed as a threatened species under the FESA in 1999 and were delisted in 2003. Splittail are designated as California species of special concern.

River Lamprey

River lamprey is an anadromous species widely distributed along the Pacific coast from Northern California to Alaska.

Life History of River lamprey

River lamprey has been captured mostly in the upper portion of the Sacramento–San Joaquin estuary and its tributaries. Adults migrate from the ocean upstream into fresh water in fall and spawn during winter or spring in small tributary streams. The lifespan of river lamprey is about 6 or 7 years (Moyle, 2002). River lamprey ammocoetes (larvae) are morphologically similar to those of the Pacific lamprey. This similarity, coupled with their overlapping seasonal and geographic distributions, makes positive identification of ammocoetes very difficult. The ammocoetes, transforming adults, and newly transformed adults have been collected in plankton nets in Suisun Bay, Montezuma Slough, and Delta sloughs (CDFG unpublished data). The presence of river lamprey in collections made above dams, such as on upper Sonoma Creek, indicates that some river lamprey may spend their entire life in fresh water.

Factors Affecting River Lamprey Populations

River lamprey has become uncommon in California, and it is likely that the populations are declining because the Sacramento, San Joaquin, and Russian Rivers and their tributaries have been severely altered by dams, diversions, pollution, land use changes, and other factors. Two tributary streams where spawning has been recorded in the past (Sonoma and Cache Creeks) are both severely altered by channelization, urbanization, and other problems (Moyle, 2002).

Regulatory Listing Status

River lamprey is a federal species of concern and a California species of special concern.

Hardhead

Hardhead is typically found in undisturbed areas of larger middle- and low-elevation streams between the Pit River in the north and Kern River in the south and is widely distributed in streams of the Sacramento–San Joaquin drainage (Moyle, 2002).

Life History of Hardhead

Hardhead is a bottom feeder that forages for benthic invertebrates and aquatic plant material as well as drifting insects and algae. Hardhead mature after their second year and presumably spawn from May through June in Central Valley streams, although the spawning season is thought to extend into August in the foothill streams of the Sacramento–San Joaquin drainage (University of California Cooperative Extension, 2003). Occurrences of hardhead in the project area are rare, with only one specimen captured between 1976 and 2005 during USFWS beach seine surveys in Old River (USFWS, 2005).

Factors Affecting Hardhead Populations

For their long-term survival, hardhead require large to medium sized, cool to warm-water streams with natural flow regimes. Because such streams are increasingly dammed and diverted—thus eliminating habitat, isolating upstream areas, or creating temperature and flow regimes unsuitable for hardhead—populations are declining or disappearing gradually throughout the species' range.

Regulatory Listing Status

Hardhead is a California species of special concern.

Pacific Smelt

Pacific smelt (*Thaleichyhys pacificus*), also commonly referred to as eulachon or candlefish, is a small (8–12 inch), planktivorous (feeding on zooplankton) fish species endemic to the northeast Pacific (northern California to Alaska). Pacific smelt are an anadromous species which spend the majority of their life in coastal marine waters but return to spawn primarily in the lower freshwater reaches of large rivers. In that portion of their range south of the US-Canadian border (Southern DPS proposed by Cowlitz Indian Tribe, 2007) the largest population spawns in the Columbia River and several of its major tributaries. Within California Pacific smelt have been reported to occur in several larger rivers including Humboldt Bay, Mad River, Redwood Creek, Russian River, and the Sacramento River (Cowlitz Indian Tribe, 2007; Moyle, 2002).

Life History of Pacific Smelt

Pacific smelt are an anadromous species within a life history similar to that of Pacific salmon. Pacific smelt spawn in freshwater near the upper extent of saltwater intrusion into a river. The smelt spawn over coarse sand or gravel substrate and typically adults die after spawning. Spawning typically occurs during the winter or early spring (December-May peaking in February-March; Moyle, 2002). Eggs are fertilized in the water column and the fertilized eggs slowly drift downstream and sink to the bottom where they adhere to the substrate. After hatching the larval smelt are planktonic drifting downstream into the estuary and nearshore coastal waters where they rear.

Pacific smelt typically spend 3 to 5 years in the marine environment (with a range from 2 to up to 9 years) before migrating upstream to spawn. Larval Pacific smelt imprint on the chemical olfactory signature of their natal river as juveniles, which allows adults to return to the natal stream to spawn.

Pacific smelt are preyed on by a variety of marine fish, birds, and marine mammals. Pacific smelt support both commercial and recreational fisheries in the Columbia River and further north. Commercial catch of Pacific smelt has declined substantially in recent years in the Columbia River basin, which is consistent with declines in other fishery surveys. Pacific smelt have not been reported in CDFG otter trawl and FMWT surveys or USFWS beach seine surveys conducted in the central or southern Delta. Other populations in California such as those inhabiting the Lower Klamath River, Mad River, and Redwood Creek have been extirpated (Cowlitz Indian Tribe, 2007).

Factors Affecting Pacific Smelt Populations

Factors that have been identified as affecting population abundance of Pacific smelt within the southern DPS described by the Cowlitz Indian Tribe (2007) include:

- Ocean rearing conditions and reduced productivity that result in reduced food availability (zooplankton abundance) associated with changes in ocean water temperatures and current patterns (e.g., El Nino events, Pacific Decadal Oscillation, upwelling)
- Climatic variation
- Modification of freshwater spawning habitat by dams, diversions, changes in hydrology, loss of gravel substrate and accumulation of fine sediments, increased water temperatures, and land use changes
- Exposure to pollutants
- Commercial and recreational harvest
- Predation mortality

Regulatory Listing Status

A petition to list Pacific smelt for protection under FESA was filed with NMFS in July 1999 to list the Columbia River smelt population. NMFS found in November 1999 that the listing petition failed to present substantial scientific information that the action was warranted. A second petition was filed with NMFS in November 2007 proposing that the population south of the Canadian border be listed as a DPS and receive protection under FESA. NMFS found that the petition was warranted and in March 2008 initiated a status review to determine whether the species or DPS warrants FESA listing. The status review is ongoing and no action has been taken on the federal listing decision. Pacific smelt is a California Species of Special Concern.

Northern Anchovy

Northern anchovy range from Cape San Lucas, Baja California to Queen Charlotte Island, British Columbia. Northern anchovy are one of the most prolific fish, in terms of numbers and biomass, along the northeastern coastal waters of the Pacific Ocean. There are three subpopulations, the northern subpopulation occurs in the estuary. This species can be the most abundant species in San Francisco Bay, constituting 85 percent of all fish. An individual anchovy can spawn two to three times a year. Post-larvae swim near the surface and are most abundant in San Francisco Bay and San Pablo Bay. As the salt wedge moves upstream within the estuary in the summer, anchovy larvae can be found in Suisun Bay and the western Delta. The juveniles use inshore bays and estuaries as their nursery ground, while adults are typically found in offshore waters. Given the typical salinity gradient in the Delta, it is highly unlikely that northern anchovy would be found in the vicinity of the Old River, Rock Slough and AIP intake structures, the new Delta Intake structure, or the SWP and CVP south Delta export facilities.

Northern anchovy is managed under the *Coastal Pelagic Species Fishery Management Plan*. EFH for this species has been designated within the project area.

Pacific Sardine

The Pacific sardine is a schooling pelagic species distributed from northern Mexico to southeastern Alaska. Each year, beginning in their second summer, sardines migrate northwards early in summer

and travel south again in fall. They form large schools (up to 10 million individuals) and are often associated with anchovy. Main spawning areas are off the coast of Southern California. Like northern anchovy, there are three stocks of Pacific sardine, of which the northern stock enters the estuary. Given the typical salinity gradient in the Delta, it is highly unlikely that Pacific sardine would be found in the vicinity of the Old River, Rock Slough and AIP intake structures, the new Delta Intake structure, or the SWP and CVP south Delta export facilities.

Pacific sardine is managed under the *Coastal Pelagic Species Fishery Management Plan*. EFH for this species has been designated within the project area.

Starry Flounder

Starry flounder occur on the Pacific coast from Santa Barbara to Alaska. The species is found over sand, mud, and gravel bottoms in coastal ocean waters, bays, sloughs, and occasionally fresh water. Males spawn at the end of their second year and females in their third year. The spawning season extends from November through February, with the greatest activity in September-March (Moyle, 2002). Starry flounder is one of the most numerous fish in San Francisco Bay, but are relatively uncommon in the Delta. They may occur in the vicinity of the Old River, Rock Slough and AIP intake structures, the new Delta Intake structure, and the SWP and CVP south Delta export facilities.

Starry flounder is managed under the *Pacific Groundfish Fishery Management Plan*. EFH for this species has been designated within the project area.

Recreational Fisheries

The Delta supports regionally important recreational fisheries for a variety of resident and migratory fish. Recreationally important fish species harvested within the Delta include:

- **Chinook Salmon.** Fall run chinook salmon (previously described) support a recreational fishery within the Delta during the fall (October to December) when adult salmon are migrating from the ocean through the Delta into the upstream rivers to spawn. A ban on recreational fishing for chinook salmon was imposed in 2007 in response to the low numbers of returning adults.

- **Central Valley Steelhead.** Steelhead (previously described) support an inland recreational fishery for hatchery-produced steelhead within upstream rivers. No recreational fishing for steelhead occurs in the Delta.

- **Striped Bass.** Striped bass are a large anadromous non-native species introduced into the Delta in the late 1800s to support commercial and recreational fisheries. Commercial fishing for striped bass is no longer allowed; however, the species supports one of the largest recreational fisheries within the Delta. Striped bass begin spawning in the spring when the water temperature reaches 60°F, with most spawning occurring at temperatures between 61°F and 69°F, the spawning period usually extends from April to mid-June. Striped bass spawn in open fresh water, especially the Delta and lower San Joaquin River between the Antioch Bridge and the mouth of Middle River, and other channels in this vicinity. Another important spawning area is the Sacramento River between Sacramento and Princeton. About

one-half to two-thirds of the eggs are spawned in the Sacramento River and the remainder are spawned in the Delta. Female striped bass usually spawn for the first time in their fourth or fifth year, when they are 21 to 25 inches long. Some males mature when they are 2 years old and only about 11 inches long. Most males are mature at age three and nearly all females at age five (CDFG, 2008a).

Adult striped bass abundance has decreased over the past several decades, from about 1.7 million in the early 1970s to about 1 million in the late 1970s and 1980s, then to about 625,000 in 1992 (CDFG, 2008b). CDFG has hypothesized that this trend can be largely explained by the detrimental effect on young bass production of increasing water exports and decreasing freshwater flow. Distribution of adult bass, based on tag recaptures by anglers, has changed substantially. Striped bass no longer make extensive use of San Francisco Bay and instead spend a greater part of the year in the Delta and other upstream areas. Summer use of nearby ocean waters may have increased also in recent years. Total mortality of adult striped bass has increased over the past decade due to an increase in natural mortality, while angling mortality has declined. Variations in adult abundance are correlated with the combination of the 38 mm young-of-the-year index and losses to water exports after the 38 mm index is set. The 38 mm index and subsequent export losses are both dependent on export rates and outflow, so that adult abundance is affected by exports and outflow throughout the year (CDFG, 2008b).

- **White Sturgeon.** White sturgeon are a popular recreationally harvested species, with the primary fishery downstream of the Delta in Suisun and San Pablo bays. Habitat requirements of white sturgeon are not well understood, but spawning and larval ecologies are probably similar to those of green sturgeon (previously described). White sturgeon are characterized by a large body size, large head and mouth, and long cylindrical body. The white sturgeon is a slow growing, late maturing anadromous fish. White sturgeon spawn in large rivers in the spring and summer months and remain in fresh water while young. Older juveniles and adults are commonly found in rivers, estuaries, and marine environments.

  Anadromous white sturgeon most commonly move into large rivers in the early spring, and spawn in May through June. Spawning usually takes place in rivers having a swift current with a rocky bottom, near rapids. White sturgeon can spawn multiple times during their life, and apparently spawn every 4 to 11 years as they grow and mature. Females can produce from 100,000 to several million eggs each. Older white sturgeon produce more eggs with longer intervals between spawns. Adults apparently broadcast spawn in the water column and the fertilized eggs sink and attach to the bottom where egg incubation takes place. Research shows that eggs can hatch in 4 days to 2 weeks, depending on water temperature. It has been estimated that white sturgeon reach maturity in 5 to 11 years.

  Because of their life history, geographic distribution, and large size, white sturgeon have a lower vulnerability to entrainment into water diversions than many of the other fish inhabiting the Delta. Seasonal hydrology within the rivers and estuary has been identified as factor affecting habitat conditions for white sturgeon.

- **Catfish.** A variety of species of catfish inhabit the Delta and are harvested in the local recreational fisheries. These species include black, brown, yellow, white, and channel catfish. These catfish (also referred to as bullhead) were primarily introduced into the Delta during the late 1800s from eastern watershed to support local recreational fisheries (Moyle, 2002). White catfish are among the more common species and are the most important catfish species harvested by recreational anglers within the Delta (before 1953 white catfish supported a commercial fishery within the Delta; Moyle, 2002).

Catfish typically inhabit areas characterized by lower water velocities (e.g., sluggish channels, sloughs, and backwaters) where turbidity is high and waters are relatively warm. Catfish inhabit areas of the Delta where salinity is low, because most species have a low salinity tolerance. Catfish feed on a variety of organisms including shrimp and other macroinvertebrates, clams, worms, and small fish. As a result of their life history and size, catfish are generally less vulnerable to entrainment at water diversions than many other fish. Hydrologic conditions within the Delta influence the geographic distribution of catfish, primarily through regional variation in salinity.

- **Largemouth (Black) Bass.** Over the past decade the Delta has become known as a world-class fishery for largemouth bass. Both northern and Florida strain largemouth bass have been introduced into the Delta (northern strain in the late 1800s and Florida strain in the 1960s) to support recreational fisheries. Largemouth bass typically inhabit areas of the Delta having relatively shallow water with associated emergent vegetation, submerged vegetation, or other cover and structures. Largemouth bass are abundant in habitat along major channels, sloughs, and backwaters with salinities less than about 3 parts per thousand (Moyle, 2002). Largemouth bass are a major predatory fish within the Delta. Juvenile and adult largemouth bass forage aggressively on crayfish, fish, and other organisms such as frogs. Largemouth spawn in the spring (April-June) in nests that are guarded by the adult until the fry emerge and begin feeding.

  Within the Delta there has been a growing popularity for largemouth bass recreational angling tournaments. Tournaments are held year-round with prizes awarded based on weight of individual bass and total weight of up to five bass. Tournament anglers are required to maintain the bass alive, which are then released back into the Delta after completing the weigh-in. The number of bass anglers, the number of tournaments, and the size of individual bass have all been increasing in recent years. Several of the recreational tournaments held recently in the Delta have been televised nationally (e.g., Bass Masters Invitational). As a result of their life history and size, largemouth bass are generally less vulnerable to entrainment at water diversions than many other fish. Hydrologic conditions within the Delta influence the geographic distribution of catfish, primarily through regional variation in salinity.

- **Other Popular Sportfish.** The Bay-Delta estuary supports a number of other fish species that are harvested by recreational anglers. The majority of these species, such as Pacific halibut, surfperch, flounder and sole, inhabit the more saline regions of the estuary including San Pablo and San Francisco bays. As a result of the low salinities that occur year-round in the south Delta these species are rare or absent in the vicinity of the Old River, Rock Slough and AIP intake structures, the new Delta Intake structure, and the SWP and CVP south Delta export facilities.

Recreational fishing in the Delta includes shore, small-craft, and charter-boat fishing. A brief description of these fisheries is provided below.

Shore Fishing

Shore fishing is conducted throughout the Delta, including along many of the levees bordering the river channels. Shore anglers primarily target species such as striped bass, catfish, and sturgeon. Anglers fish from levees and several public and private access locations.

Small-Boat Fishing

Recreational angling from small boats (e.g., 12 to 40 feet) is common throughout the Delta. The majority of angling occurs on weekends from April through October or November. There are public boat launches and a number of marinas within the Delta in the general vicinity of Old River. Several hundred small boats may launch at the marinas in the area on a weekend day, depending on the time of year and the weather, to fish within the Delta channels. Although small-boat angling occurs throughout the year, peak months for recreational fishing are April, May, and June, when target species are striped bass, largemouth bass, and catfish. Many of the recreational anglers fishing within the central Delta participate in local bass tournaments.

Charter-Boat Fishing

As many as 50 commercial party boats operate out of the Bay-Delta ports, many of which are small six-passenger boats that operate seasonally. Many party boats are focused on salmon, rockfish, sanddab, Dungeness crab, and occasionally albacore tuna fishing outside the Golden Gate. Commercial party boats also target halibut, striped bass, and sturgeon in San Francisco Bay, Suisun Bay, and the Delta. Anglers on small charter boats fish within the central Delta, targeting species such as striped bass and sturgeon. Although party boats fish within the estuary throughout the year, the peak months for fishing are April, May, and June, when striped bass are most abundant.

4.3.2 Environmental Consequences

The impact analysis focuses on the Delta fishery and aquatic resources that could be present in the project area. Potential impacts to other project area aquatic habitats such as Kellogg Creek, Brushy Creek, and several unnamed drainages, as well as Los Vaqueros Reservoir, are covered under Section 4.5, Local Hydrology, Drainage, and Groundwater (Vol. 1), and Section 4.6, Biological Resources (Vol. 2). Potential impacts on recreational fishing during construction of an expanded Los Vaqueros Reservoir are discussed in Section 4.15, Recreation (Vol. 2).

Methodology

An impact assessment of fisheries and aquatic resources was performed to evaluate the potential effects of the project alternatives. The effects were based on consideration of:

- Construction activities at the new Delta Intake site and the surrounding area expected to be disturbed
- Existing habitat conditions in the project area in the south Delta
- Known or presumed occurrence of special-status species near the Old River Intake, Rock Slough and AIP Intakes, the new Delta Intake and the SWP and CVP export facilities
- The results of hydrologic and particle tracking modeling combined with biological information such as the efficiency of positive barrier fish screens at project intakes, and the historical distribution and density of important fish species, to evaluate changes in regional habitat conditions within the Delta in response to changes in hydrodynamics and changes in fish entrainment potential associated with the project alternatives

Additional information regarding the data, assumptions, and methods used to evaluate potential effects of operational alternatives for the Los Vaqueros Reservoir Expansion project is presented in Appendix C7 (Vol. 4).

The potential construction- and operation-related effects are discussed with regards to the Delta fishery resources as a whole. However, some species-specific effects are discussed separately where appropriate. Information on the seasonal timing of occurrence of various resident and migratory fish in the project area is also used to assess the potential for adverse impacts on various fish species.

The fish species identified as potentially occurring in the project area have different life histories, habitat requirements, and differing abilities to avoid or withstand potentially adverse conditions. Results of biological monitoring and experimental investigations have shown that certain fish species, such as delta smelt, are more sensitive than other species to changes in environmental conditions that may arise as a result of intake structure construction (e.g., exposure to suspended sediments) and operations (e.g., increased vulnerability of larvae to entrainment, changes in hydrodynamics that affect habitat conditions, etc.). Relative to delta smelt, juvenile chinook salmon have greater tolerance to suspended sediments, are more likely to be excluded due to their larger size at small-mesh screens, and are better able to avoid impingement on a fish screen due to stronger swimming performance. Other resident fish species within the project area such as striped bass, largemouth bass, and catfish also have substantially greater tolerance to changes in various conditions when compared to more sensitive species. To be most protective of the fishery, the assessment of potential for adverse impacts and the development of avoidance and mitigation measures, where necessary, has been based on information for the species determined to have the highest level of sensitivity to potential changes in conditions caused by the project.

The impact analysis presented discusses both: (1) potential short-term impacts associated with construction activities, and (2) potential long-term impacts associated with facility operations. The issues and considerations involved in evaluation of the long-term operational impacts are described in more detail below. The analysis evaluates the potential direct, indirect, and cumulative impacts on fisheries and aquatic resources resulting from implementation of the project. Cumulative impacts are embodied in the analysis of hydrologic modeling of future conditions, which assesses the overall impacts of the project alternatives in light of projected 2030 levels of demand, and planned changes or additions to water resources infrastructure (as discussed in Vol. 1, Section 4.1), and therefore are included in analyses conducted for future conditions.

Operational Considerations for Potential Long-Term Impacts

The operational considerations for the evaluation of potential long-term impacts are changes in the seasonal timing and magnitude of water diversions from the Delta under all alternatives and the addition of a new diversion location with the new Delta Intake under Alternatives 1 and 2. These changes may affect aquatic species directly through changes in entrainment and/or impingement, or indirectly through changes in hydrologic conditions and aquatic habitat.

The evaluation of potential fishery and aquatic resource impacts due to project operations is based, in part, on the hydrologic modeling results describing water diversion operations over a

range of environmental and hydrologic conditions (see Appendix C (Vol. 4) for details on the modeling methodology and results). Hydrologic modeling results provide the foundation for assessing effects of diversion operations on fish species and their habitat within the Bay-Delta estuary. The assessment relies on a comparative analysis of operational and environmental conditions within the estuary under without project conditions and with the project alternatives (including both 2005 and 2030 levels of development). Modeling output that was evaluated as part of the fisheries analysis includes:

- Water export operations at the SWP Banks Pumping Plant and CVP Jones Pumping Plant, as well as diversions at the Rock Slough ~~Intake~~, Old River and AIP Intakes, and new Delta Intake
- Hydrologic conditions in the Delta, such as total Delta inflow and outflow, flows within Old and Middle Rivers, flows within the lower San Joaquin River (Qwest), and the location of the 2 parts per thousand salinity isohaline also known as X2
- The effects of hydrologic conditions and intake operations on larval and planktonic assemblages as reflected by particle tracking model (PTM) simulations

An overview of the tools used to measure the indirect and direct effects of project operations is provided in the discussion below. A more detailed presentation of the individual metrics and their biological significance is provided under the discussion of each potential impact.

Indirect Effects Assessment

Indirect effects of project operations on hydrologic and aquatic habitat conditions were examined during specific times of the year when sensitive fish species and their vulnerable life stages have been shown to be present within the Delta. Potential effects on fish populations were measured using a number of different parameters that have been shown to be, or are thought to be, significant factors that affect habitat conditions and the reproduction of various fish and macroinvertebrate species inhabiting the Bay-Delta estuary. These include habitat parameters such as the location of X2, flow factors such as net Delta outflow and net flow on the lower San Joaquin River, salinity in the interior Delta (described in Vol. 4, Chapter 5, Section 5.3, Updates to Section 4.2, Delta Hydrology and Water Quality), river flows upstream of the Delta, and circulation within the Delta.

The model tools used in this assessment included the statewide operations model (CalSim II), the Delta hydrodynamic model (DSM2), and a particle tracking model (PTM). CalSim II and DSM2 are discussed in Vol. 4, Chapter 5, Section 5.3, Updates to Section 4.2, Delta Hydrology and Water Quality, and in Appendix C2 and Appendix C3 (Vol. 4). The particle tracking model is discussed in Appendix C7 (Vol. 4). Consideration in the analysis was also given to changes in Delta habitat conditions reflecting a range of hydrologic conditions (e.g., wet or dry water years) within the Central Valley.

Additional information on the parameters used to assess indirect effects and a summary of the results is presented under Impact 4.3.6, with additional details presented in Appendix C7 (Vol. 4).

Direct Effects Assessment

The assessment of direct effects involved a determination of changes in potential entrainment and impingement of various fish species at Delta intakes. ~~Three~~Two analyses were performed. The analyses were complementary as each analysis alone had its own distinct assumptions and limitations. The analyses and methods are summarized below with additional details in Appendix C7 (Vol. 4).

The first analytical method estimated fish entrainment potential by using historical field survey data for ~~a number of~~ fish species monitored in the vicinity of the Rock Slough ~~Intake~~, Old River and AIP intakes, the new Delta Intake, and the CVP and SWP export facilities. Indices of potential fish entrainment for each month of the year were developed by multiplying the average monthly fish density near an intake (fish per acre-foot) by the volume of water diverted at each intake location for that month (acre-foot per month). Average fish densities are based on fishery monitoring conducted between 1995 and 2007, as described below and in Appendix C7 (Vol. 4). Monthly pumping volumes are determined through CalSim II modeling for each alternative being evaluated.

The second method used the same PTM tool described under the indirect effects assessment, simulating a release of particles at various locations within the Delta that are either known to represent important fish habitat or important hydrologic locations. For the assessment of direct effects of entrainment, particles were tracked and counted when they entered Delta water intakes (e.g., the Rock Slough Intake, Old River and AIP Intakes, and new Delta Intake, the SWP or CVP export facilities, or agricultural intakes). Because the particles simulated in the model are neutrally buoyant (and therefore have no swimming behavior or other independent movement), results of these analyses are most relevant to the planktonic early larval stages of various organisms such as larval delta smelt that do not move independently in the water column. The particles are not considered to reflect the movement or entrainment of juvenile or adult fish, such as chinook salmon, steelhead, or sturgeon within the Delta. Additionally, PTM does not account for the efficiency of various fish screens. Consideration of these limitations is applied post-simulation during interpretation of the PTM results with respect to the entrainment risk for various fish species and lifestages included in the analysis.

~~A third method involves comparison of net flows in Old and Middle River. Limits on net flow in Old and Middle River are being used as a control mechanism in the interim order by Judge Wanger in *NRDC v. Kempthorne* to reduce the potential for entrainment of delta smelt at the CVP and SWP export facilities. Two approaches were used to evaluate effects on net flow Old and Middle rivers. One approach was to calculate the value of net Old and Middle river flows based on hydrologic and hydrodynamic modeling; this analysis is presented as part of the indirect effects assessment discussed above. The other approach uses a flow index that has been correlated to pre-spawning adult delta smelt salvage at the CVP and SWP export facilities in the southern Delta during the winter months. This method is similar to the measured value of Old and Middle River net flow; however, because this method correlates diversions at the export facilities with salvage at the export facilities, it is a direct method to examine potential entrainment.~~

These analytical methods were used to evaluate the benefits and impacts of the Los Vaqueros Reservoir Expansion Project on Delta fisheries under a range of project operations. Each of the methods used for evaluating fishery effects provides useful information, but each method also has limitations; the

~~suite of~~ methods were used together to develop a comprehensive understanding of project impacts and benefits. The analyses universally show that the project (Alternatives 1, 2 and 4) has no adverse impacts on fish, and provides a range of benefits for fish, including changing the timing of water diversions, improvement in flow conditions, temperature, or other benefits that contribute to restoration of aquatic ecosystems and native fish and wildlife. The actual level of benefits achieved would ultimately depend on the project alternative selected and its final permits, including federal and state endangered species act permits, and any other requirements under state or federal law.

A third method of analysis was used in the Draft EIS/EIR to assess direct effects of potential entrainment by calculating a flow index based on a correlation between diversions at the CVP and SWP export facilities in the south Delta with fish salvage at these facilities, based on a relationship presented in *NRDC v. Kempthorne* to address the effects of OMR net flow. This method was not used in the Final EIS/EIR analysis, because the calculation of OMR net flow in the Final EIS/EIR analysis has been updated to reflect the terms of the OCAP BOs. This update allows direct analysis of OMR net flow within the CalSim II model according to the terms of the OCAP BOs, and makes the third method of analysis for direct entrainment unnecessary.

Additional information on the~~se three~~ two methods used to assess direct effects of potential entrainment is presented under Impact 4.3.7, with additional details presented in Appendix C7 (Vol. 4).

Significance Criteria

The California Environmental Quality Act Guidelines, Section 15065, and Appendix G, the Council on Environmental Quality definition of "significant" (40 CFR 1508.27) and professional judgment indicate that the project alternatives would result in a significant impact on Delta fisheries and aquatic resources if it would do any of the following:

- Directly or indirectly reduce the growth, survival, reproductive success, or recovery of individuals of species listed or proposed for listing as threatened or endangered under CESA or FESA
- Directly or indirectly reduce the growth, survival, or reproductive success of substantial portions of candidate species populations, federal species of concern, state species of special concern, or regionally important commercial or game species
- Reduce the quality or quantity of important or unique habitat for fish species or their prey that would adversely affect the ability of the species to successfully reproduce and maintain self-sustaining populations
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites
- Conflict with the provisions of an adopted HCP, NCCP, or other approved local, regional, or state HCP.

The last criterion is not applicable here because, as discussed in Section 4.3.1 (Vol. 1), fish species are not covered in the East Contra Costa County HCP/NCCP and the CALFED Multi-Species

Conservation Strategy (MSCS) and related BOs and NCCPA determination are programmatic documents that do not provide coverage for the Los Vaqueros Reservoir Expansion Project or any specific CALFED actions. Rather, the MSCS provides the basis for preparing an Action Specific Implementation Plan that could be used to comply with federal and state Endangered Species Acts and the NCCPA.

Impact Summary

Table 4.3-4 provides a summary of the impact analysis for issues related to fisheries and aquatic resources based on actions and alternatives described in Chapter 3.

TABLE 4.3-4 (REVISED)*
SUMMARY OF IMPACTS – DELTA FISHERIES AND AQUATIC RESOURCES

Impact	Project Alternatives			
	Alternative 1	**Alternative 2**	**Alternative 3**	**Alternative 4**
4.3.1: In-channel construction activities associated with the new Delta Intake structure would increase short-term localized suspended sediment, turbidity, and possibly contaminant concentrations within Old River, which would increase exposure of various life stages and species of fish to temporarily degraded water quality conditions.	LSM	LSM	NI	NI
4.3.2: Underwater sound-pressure levels generated during cofferdam installation for the new Delta Intake could result in behavioral avoidance or migration delays for special-status fish species.	LSM	LSM	NI	NI
4.3.3: Dewatering of the cofferdam for the new Delta Intake could result in stranding of fish.	LSM	LSM	NI	NI
4.3.4: The new Delta Intake structure and associated fish screens in Old River would physically exclude fish from a small area of existing aquatic habitat and modify existing aquatic habitat.	LSM	LSM	NI	NI
4.3.5: The new Delta Intake structure and associated fish screens in Old River would modify hydraulic conditions next to the intake structure, but would not disorient special-status fish or attract predatory fish.	LS	LS	NI	NI
4.3.6: Operation of the project alternatives would not result in changes to Delta hydrologic conditions that affect Delta fish populations or quality and quantity of aquatic habitat within the Sacramento-San Joaquin River system, including the Delta.	LS	LS	~~LS~~NA	LS
4.3.7: Operation of the new screened intake, or changes to diversions at existing intakes, could affect direct entrainment or impingement of fish	B	B	~~SU~~NA	LS
4.3.8: Fish screen maintenance activities would not significantly increase fish entrainment at the new Delta Intake or the expanded Old River Intake.	LS	LS	LS	NI
4.3.9: The project alternatives, when combined with other planned projects or projects under construction in the area, could cumulatively contribute to substantial adverse impacts to Delta fisheries and aquatic resources.	LSM	LSM	~~SU~~NA	LS

* Results presented in this table have been updated based on analysis for the Final EIS/EIR.

SU = Significant and Unavoidable
LSM = Less-than-Significant Impact with Mitigation
LS = Less-than-Significant Impact
NI = No Impact
B = Beneficial
NA = Potential for operational impacts of Alternative 3 are not analyzed in Final EIS/EIR analysis.

Impact Analysis

No Project/No Action Alternative

Under the No Project/No Action Alternative, no new facilities would be constructed and no existing facilities would be modified. CCWD operations in the near-term would be unchanged. To maintain supply reliability to its customers over time, CCWD would implement actions identified in its Future Water Supply Plan, including acquisition of water transfers as needed to provide reliable dry-year water supply. No increase in entrainment would occur at the CCWD intakes in the near term. However, under future levels of CCWD demand, there would be an expected increase in direct losses from these intakes.

CVP and SWP facilities and operations would not change in the near-term. CVP and SWP operations would be expected to change in the future in response to changes in future levels of demand, and also because of changes in infrastructure, as discussed in Section 4.1 (Vol. 1); however the modeling studies indicate very little change in operations under Future Without Project conditions compared to existing conditions. In the No Project/No Action alternative, CVP and SWP exports from the Delta continue to be made through their existing export facilities.

Impact 4.3.1: In-channel construction activities associated with the new Delta Intake structure would increase short-term localized suspended sediment, turbidity, and possibly contaminant concentrations within Old River, which would increase exposure of various life stages and species of fish to temporarily degraded water quality conditions. (Less than Significant with Mitigation for Alternatives 1 and 2; No Impact for Alternatives 3 and 4)

Alternative 1

New Delta intake In-Channel Construction Activities

Under Alternative 1, a new Delta Intake would be constructed on Old River, south of the existing Old River Intake and Pumping Station. The new Delta Intake would include a trapezoidal concrete water intake structure with state-of-the-art positive barrier fish screens. An inlet channel and wet well would be downstream from the intake structure that would include louvered baffles or other structures to fine-tune velocity distribution through the intake screen. The intake structure would also include a pumping plant, water conveyance pipelines, and other infrastructure. An earthen setback levee would be installed to provide protection during construction of the intake and maintain continuity of the road system along the dike after construction. This setback levee would be a permanent structure and would be designed to contain Old River should the existing levee fail beside the intake structure.

Geotechnical conditions at the intake site show that the intake facility would need to be supported on a foundation system such as driven concrete, steel piles, or stone columns. Preliminary analysis indicates that piles would be founded at an elevation of about -50 feet relative to mean sea level (msl) and spaced about 15 feet apart on a square grid. In addition to the piles, soil densification would likely be required beneath the intake structure and setback levee to reduce the liquefaction potential of the soil and to improve its lateral strength during seismic events. Preloading of the soils beneath the levee may also be required to reduce long-term settlement of the levee.

Most of the in-channel construction activities associated with the new Delta Intake would be conducted in a dewatered cofferdam and would be isolated from Old River. A cofferdam would be installed in Old River to isolate the work area from the water and provide a means to conduct construction work in a dewatered environment. After installation of the cofferdam, the water in the cofferdam enclosure would be treated (as necessary) and discharged back to Old River, and the remaining intake construction work would be conducted in the dewatered construction area.

Excavation would be required in Old River, in the immediate vicinity of the new Delta Intake in an area of about 2,400 square feet. The need for excavation as part of site preparations before intake construction would be determined during final design based on the results of field bathymetry and geotechnical survey data. Excavated materials at the cofferdam site would be transferred to the designated containment or disposal areas on the land side of the levee. An earthen dike or siltation fences would enclose the containment area(s). Retention of the excavated materials would promote settling of the suspended sediments. Any excess water (desilted supernatant) would be returned back into Old River.

Benefits of Cofferdam

The use of a cofferdam would substantially reduce or avoid potential construction-related adverse impacts on water quality and fishery habitat. The use of a cofferdam during construction of the new Delta Intake and positive barrier fish screen to isolate the construction site and activities from the adjacent aquatic habitats is an important element of the project design that avoids and minimizes potentially significant adverse impacts to aquatic species and habitats within the Delta.

Use of a cofferdam to isolate intake construction activity from aquatic habitat within the adjacent waters has proven in other similar projects (e.g., RD 108 Wilkins Slough fish screen, RD 108 Poundstone fish screen and pumping plant, Sutter Mutual Water Company Tisdale fish screen, and others) to be an effective method for minimizing and avoiding fishery impacts. For example, suspended sediment concentrations within the river are reduced during site excavation, the risk of chemical spills entering the river is reduced, and the potential exposure of fish to underwater sounds during pile driving and foundation supports are reduced by the containment within the cofferdam. In addition, construction of a fish screen and intake structure within a cofferdam improves the fit and finish of the intake (e.g., better alignment of screen panels within the intake, smoother intake surfaces, improved screen seals) that serve to improve the performance of the intake in protecting fish during operations.

Potential Water Quality Impacts to Fish of In-Channel Construction

Installation of the cofferdam and excavation as part of site preparation would result in temporary localized increases in turbidity and suspended sediment concentrations. A substantial body of scientific information exists regarding the response of juvenile and adult chinook salmon, steelhead, and other fish and macroinvertebrates to elevated suspended sediment concentrations and turbidity (Hanson et al., 2004). For example, reduced feeding activity was reported for adult chinook salmon exposed to suspended sediment concentrations of 25 milligrams per liter (mg/L) over a 4-hour exposure period (Phillips, 1970). A 50 percent mortality for juvenile chinook salmon was observed after a 36-hour exposure to volcanic ash at a concentration of 9,400 mg/L, however no mortality or

apparent adverse affects was observed on adult chinook salmon after a 24-hour exposure to volcanic ash at a suspended sediment concentration in excess of 39,000 mg/L (Newcombe and Flagg, 1983).

The extensive body of information available with respect to suspended sediment and turbidity effects on various life stages of chinook salmon and many other fish and macroinvertebrate species was used to determine potential impacts on aquatic species inhabiting Old River and other areas within the estuary. The potential for adverse effects resulting from suspended sediment and/or turbidity depends on the magnitude of the concentration of sediments, the duration of exposure, the type of material, the species and life stage of the organism, and other factors (Hanson et al., 2004).

Based on the construction of cofferdams at other intake structures, the increase in exposure to suspended sediment concentrations is expected to be below levels reported in the literature to cause adverse effects. The potentially adverse effects would be temporary and localized, and limited to those occurring during installation of the cofferdam.

The area temporarily affected by sedimentation and turbidity caused by installation or removal of the cofferdam is expected to be about 500 feet wide and 500 feet long, varying in size and shape depending on tidal conditions and flow within the Old River channel. It has been conservatively assumed that construction activities could affect habitat up to 1,000 feet upstream or downstream of the new intake site on Old River. These effects would occur intermittently during the estimated 60-day period at the beginning of construction and during the specified work window, when construction activity could disturb sediments and increase turbidity during construction.

The in-water construction activity associated with site preparation and installation of the cofferdam would occur during the summer and early fall (August 1 through November 30). That timing is consistent with the seasonal work window identified by USFWS, NMFS, and CDFG for reducing the potential for significant adverse impacts to sensitive fishery resources within the Delta.

Gasoline, oil, grease, concrete, and a variety of other chemicals and substances would be used during construction of the project alternatives. Construction activities could result in a chemical spill that could have adverse effects on Delta fisheries and aquatic resources. In the event of such a spill, the use of a cofferdam would help to contain these types of substances during construction, thus reducing the potential risk of exposing species to these materials. Hazardous Materials Mitigation Measure 4.13-2 involves best management practices to keep hazardous materials from accidental release.

Fish Species Potentially Affected by Cofferdam Installation

The assessment of potential construction-related impacts resulting from suspended sediment exposure during cofferdam installation has been based on the following:

- Results of fishery monitoring by CDFG within the Delta;
- Results of SWP and CVP export salvage monitoring showing the seasonal occurrence of various fish species and lifestages within the south Delta in the vicinity of the cofferdam and intake structure during the August 1 to November 30 in-river work window;

- Information on the expected sensitivity of various fish to exposure to suspended sediments (Hanson et al., 2004) associated with cofferdam installation, and
- The localized and intermittent effects of cofferdam installation.

Results of the assessment are summarized below.

Sacramento River winter-run chinook salmon. Adult winter-run chinook salmon migrate upstream through the Delta during the winter and spring months (late November to June) and therefore would not be expected to occur in the project area during the work window. Juvenile winter-run salmon inhabit upstream rearing areas within the Sacramento River and typically migrate downstream through the Delta during the late winter and early spring (November to May). Although a potential exists for juvenile winter-run salmon to be in the Delta in November, these juveniles occur primarily in the Sacramento River and are not concentrated in the south Delta in the vicinity of the project site.

Central Valley spring-run chinook salmon. Adult spring-run salmon migrate upstream through the Delta during the late winter and spring months (March to July) and therefore would not be expected to occur in the project area during the work window. Juvenile spring-run salmon inhabit upstream rearing areas within the rivers and typically migrate downstream through the Delta during the late winter and early spring, but may occur in the Delta in low numbers beginning as early as mid-October. These juveniles occur primarily in the Sacramento River and are not concentrated in the south Delta in the vicinity of the project site.

Central Valley fall/late fall-run chinook salmon. Adult fall-run chinook salmon returning to the San Joaquin River system migrate upstream through the Delta during the fall (primarily September to December). These adult fall-run salmon would potentially occur in the vicinity of the project alternatives during the work window. Late fall-run adult salmon migrate upstream starting around November, and would potentially occur in the Delta during the later part of the work window, however, the late fall-run salmon migrate upstream into the Sacramento River and would not be expected to be abundant in the south Delta in the vicinity of the project area. Results of studies have shown that adult salmon have a high tolerance, especially for short duration, to elevated concentrations of suspended sediments. Juvenile fall-run and late fall-run salmon inhabit upstream rearing areas within the rivers and typically migrate downstream through the Delta during the late winter and spring; some late fall-run juveniles may migrate downstream as early as November.

Central Valley steelhead. Adult steelhead migrate upstream through the Delta during the late fall and winter months. Juvenile steelhead inhabit upstream rearing areas within the rivers and typically migrate downstream through the Delta during the late winter and early spring (January to May).

Delta smelt. Juvenile and pre-spawning adult delta smelt inhabit Suisun Bay and areas of the western Delta during the summer months where water temperatures are suitable. Water temperatures in the south Delta in the project area are within the range considered to be highly

stressful and unsuitable for delta smelt during the summer. Delta smelt migrate into the interior Delta and upstream into the rivers beginning in the fall. Although delta smelt are widely distributed geographically during the fall, the potential exists that individuals would occur in the project area during the later part of the work window. The broad distribution of delta smelt in the fall, their tolerance to a wide range of suspended sediment concentrations that occur naturally within the Delta, and the localized and intermittent effects of cofferdam installation reduce the potential impact of cofferdam installation to less than significant.

North American green sturgeon. Juvenile and adult sturgeon may occur in the project area during the construction window. Sturgeon are widely dispersed throughout the Bay-Delta estuary during the summer and fall and are not concentrated in the project area. Sturgeon are tolerant of exposure to high levels of suspended sediments.

Longfin smelt. Longfin smelt inhabit more marine waters within San Francisco Bay and near-shore coastal habitat during the summer and fall and would not be expected to be affected by construction of the intake.

Sacramento splittail. Juvenile and adult splittail may occur in the project area during the construction window. Habitat conditions in Old River are generally poor for splittail given the high velocities, deep water, and lack of emergent vegetation. Splittail are expected to have a high tolerance to suspended sediments based on information for similar species and their natural habitat conditions.

River lamprey. Juvenile lamprey inhabit riverine areas upstream of the Delta during the summer and fall and would not be expected to occur in the project area. Adult lamprey migrate into freshwater in the fall (Moyle, 2002) and would potentially occur in the project area during the work window. No specific information was found regarding the tolerance of adult lamprey to suspended sediment concentrations; however, based on their life history and exposure to elevated suspended sediments within the rivers and Delta, it is expected that tolerance would be high.

Hardhead. Hardhead inhabit low velocity freshwater habitat upstream of the Delta and would not be expected to occur in the project vicinity during the summer and fall.

Pacific smelt. Pacific smelt inhabit marine coastal waters during the summer and fall and would not be expected to occur or be affected by construction of the intake.

Northern anchovy. Northern anchovy inhabit more marine waters within San Francisco Bay and near-shore coastal habitat during the summer and fall and would not be expected to be affected by construction of the intake.

Pacific sardine. Pacific sardine inhabit more marine waters within San Francisco Bay and near-shore coastal habitat during the summer and fall and would not be expected to be affected by construction of the intake.

Starry flounder. Starry flounder inhabit more marine waters within San Francisco Bay and near-shore coastal habitat during the summer and fall. Starry flounder are expected to have high tolerance to suspended sediments based on tolerance for similar flatfish.

Striped bass. Juvenile and adult striped bass may occur in the project area during the construction window. Striped bass are widely dispersed throughout the Bay-Delta estuary during the summer and fall and are not concentrated in the project area. Striped bass are tolerant of exposure to high levels of suspended sediments.

White sturgeon. Juvenile and adult white sturgeon may occur in the project area during the construction window. White sturgeon are widely dispersed throughout the Bay-Delta estuary during the summer and fall and are not concentrated in the project area. Sturgeon are tolerant of exposure to high levels of suspended sediments.

Catfish. Juvenile and adult catfish may occur in the project area during the construction window. Habitat conditions in Old River are generally poor for catfish given the river's high velocities. Catfish are tolerant of exposure to high levels of suspended sediments.

Largemouth bass. Juvenile and adult largemouth bass may occur in the project area during the construction window. Habitat conditions in Old River are generally poor for bass given the high velocities, deep water, and lack of emergent vegetation. Bass are tolerant of exposure to high levels of suspended sediments.

Other sportfish. Sportfish such as halibut, perch, flounder and sole inhabit more marine waters within San Francisco Bay and would not be expected to be affected by construction of the intake.

Alternative 1 Summary

Implementation of the cofferdam during construction would prevent extended exposure of fish in the river to the potentially adverse effects of excavation and intake construction. The potentially adverse effects would be temporary and localized, and limited to those occurring during installation of the cofferdam.

Based on monitoring during construction of other cofferdams, the increase in exposure to suspended sediment concentrations is expected to be below levels reported in the literature to cause adverse effects. Thus, the seasonal in-channel construction window and cofferdam that are part of Alternative 1 are likely to prevent any significant impact from sedimentation or turbidity to special-status or regionally important game fish species from Delta water quality effects caused by construction. Because, however, of the residual risk that would remain from sedimentation and turbidity, or from the possibility of a chemical spill that could escape the containment area, this impact would be significant without concurrent implementation of Mitigation Measure 4.3.1 described below.

Alternative 2

Potential water quality impacts on Delta fisheries and aquatic resources resulting from in-channel construction activities associated with the new Delta Intake under Alternative 2 would occur to the same extent as those discussed for Alternative 1. With implementation of Mitigation Measure 4.3.1 described below, the impact would be less than significant.

Alternative 3

Expanded Old River Intake and Pump Station

Under Alternative 3, the existing Old River Intake would be expanded to 320 cubic feet per second (cfs); the Old River intake structure would not need to be changed to allow for the capacity increase. Additional fish screens would be installed in existing bays, the existing automated fish screen cleaning system would be modified to accommodate the new screens, and additional baffles or screen panels would be installed if needed to achieve uniform velocities throughout the intake structure. All of the intake construction activities would occur within the existing footprint of the facility and no in-channel construction activities would be required at the Old River Intake and Pump Station to expand the capacity to 320 cfs. This is because the concrete structure for the additional intake capacity is already in place, and the expansion of the intake structure would involve replacement of existing solid plates with additional screens, which can be done from the existing facility without working in the river channel. Thus, no impacts to Delta fish species would occur due to construction.

Alternative 4

Under Alternative 4, no new Delta intake would be constructed and the existing Old River Intake would not be expanded. This alternative would not involve any in-channel construction activities. Thus, no impacts to fisheries resources and aquatic habitat from in-channel construction activities would occur under Alternative 4.

Mitigation Measures

Implementation of Hazardous Materials Mitigation Measure 4.13.2: This mitigation measure involves implementation of best management practices to keep hazardous materials from accidental release. See Section 4.13 (Vol. 2) for description of this measure.

Implementation of Hydrology Mitigation Measures 4.5.1a: This mitigation measure specifies preparation and implementation of a storm water pollution prevention plan. See Section 4.5 (Vol. 1) for description of this measure.

Measure 4.3.1: To minimize sediment, turbidity, and contaminants in Old River during construction of the new Delta Intake (primarily excavation and cofferdam installation), CCWD or its contractors will obtain and comply with RWQCB Section 401 water quality certification, CDFG streambed alteration agreement, USACE Clean Water Act Section 404 permit, as needed, and adhere to the following requirements:

- Monitor periods of construction activity and coordinate with the contractor to identify periods when localized increases in turbidity may occur.

- Install a silt curtain to reduce the dissipation of suspended sediments during dredging and cofferdam installation.

- Ensure that cofferdam(s) installation occurs during the designated construction window of August 1 through November 30 to avoid the potential risk of adverse impacts on chinook salmon, steelhead, delta smelt, and other aquatic species which are more abundant in the area during fall, winter, and spring. This construction window may be shifted through consultation with USFWS, NMFS, and CDFG if the best available fish survey data indicate that a different construction window for cofferdam installation will avoid or minimize effects on special-status species.

- Minimize substrate disturbance during construction activities.

- Ensure project construction activities will not cause significant turbidity increases in surface waters, as follows:

    - Where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTU), increases will not exceed 1 NTU.
    - Where natural turbidity is between 5 and 50 NTU, increases will not exceed 20 percent.
    - Where natural turbidity is between 50 and 100 NTU, increase will not exceed 10 NTU.
    - Where natural turbidity is greater than 100 NTU, increases will not exceed 10 percent.

    These limits will be eased during in-water working periods to allow a turbidity increase of 15 NTU over background turbidity as measured in surface waters 300 feet downstream from the working area. In determining compliance with the above limits, appropriate averaging periods may be applied, provided that Delta fisheries and aquatic resources would be fully protected.

- Ensure project construction activities will not cause settleable matter to exceed 0.1 milliliters per liter in surface waters, as measured in surface waters 300 feet downstream from the project.

- In the event that project construction activities create a visible plume in surface waters, initiate monitoring of turbidity levels at the discharge site and 300 feet downstream, taking grab samples for analysis of NTU levels twice per day during the work period while the visible plume persists.

- Notify the RWQCB, CDFG, USFWS, and NMFS if the above criteria for turbidity are exceeded.

- Notify the RWQCB, CDFG, USFWS, and NMFS of any spill of petroleum products, oil/grease, or other organic or earthen materials.

- If the required permits from RWQCB, CDFG, USFWS or NMFS include conditions equivalent to any mitigation measure set forth above, substitute the permit condition for the equivalent mitigation measure.

The updates to the modeling analysis of potential operational impacts of the project alternatives did not require re-analyzing Impact 4.3.1. The conclusions regarding this potential impact have not changed from those presented in the Draft EIS/EIR.

Impact Significance after Mitigation: Less than Significant.

Impact 4.3.2: Underwater sound-pressure levels generated during cofferdam installation for the new Delta Intake could result in behavioral avoidance or migration delays for special-status fish species. (Less than Significant with Mitigation for Alternative 1 and 2; No Impact for Alternatives 3 and 4)

Alternative 1

Installation of the cofferdam for construction of the new Delta Intake would be performed using a vibration hammer, a percussion hammer, or both, depending on substrate conditions. Observations during construction of the Bay Bridge and other projects within the Bay-Delta estuary that involve pile driving have shown adverse effects, including fish kills, resulting from pile driving when underwater sound pressure levels are high. Information obtained from the scientific literature and through field observations at other construction sites within the Bay-Delta estuary indicates that exposure of fish species to underwater sound-pressure levels exceeding about 180 decibels (dB) may result in sublethal or lethal effects. Exposure of fish to underwater sound-pressure levels exceeding about 160 dB may result in behavioral avoidance or migration delays.

Cofferdam installation using percussion hammers and, to a lesser degree, vibrational hammers create underwater sound pressure levels that may adversely affect fish species. Fish may be injured or killed by the impact sounds generated by percussive pile driving. Their hearing may also be affected or their behavior altered such that it constitutes harassment or harm. The specific effects of underwater sound pressures on fish depend on a wide range of factors including the type of hammer, fish species, environmental setting, and many other factors (Popper et al., 2006).

The loss of hearing sensitivity may adversely affect a salmonid's ability to orient itself (due to vestibular damage), detect predators, locate prey, or sense their acoustic environment (NMFS, 2006). Fish also may exhibit noise-induced avoidance behavior that causes them to move into less-suitable habitat. During cofferdam installation activities for the new Delta intake component of the project alternatives, this may result in salmonids fleeing the project area. Likewise, chronic noise exposure can reduce their ability to detect piscine predators, either by reducing the sensitivity of the auditory response in the exposed salmonid or by masking the noise of an approaching predator. Disruption of the exposed salmonid's ability to maintain position or swim with the school may enhance its potential as a target for predators. Non-salmonid special-status species, including delta smelt, are likely affected in similar manners.

Because Old River serves as a migration corridor for juvenile and adult chinook salmon migrating to and from San Joaquin River tributaries, and also serves as seasonal habitat for delta smelt and other resident and migratory fish, underwater sound pressures generated during cofferdam installation

could adversely affect special-status fish species. Winter-run chinook salmon, spring-run salmon, fall-run and late fall-run salmon, steelhead, green sturgeon, longfin smelt, splittail, and lamprey are most abundant in the south Delta in the vicinity of the project alternatives during the late fall, winter, and spring. Limiting pile driving and installation of the cofferdam to the summer and early fall would reduce and avoid potential impacts to these special-status species.

Many of the other special-status species and recreationally important species, such as hardhead, Pacific smelt, northern anchovy, Pacific sardine, starry flounder, halibut, perch, flounder, and sole occur rarely in the Delta (habitats for these species are either upstream or downstream of the Delta) and would not be expected to significantly impacted by project construction. Several of the species supporting recreational angling, such as striped bass, catfish, and largemouth bass are present, but widely distributed, in the Delta throughout the year.

Limiting the seasonal period of in-water construction activity such as installation of the cofferdam to the summer and early fall (August 1 through November 30) serves to reduce the potential for adverse impacts to sensitive fish species such as juvenile chinook salmon, steelhead, delta smelt and longfin smelt, resulting from exposure to underwater sound pressure levels. Many other fish species are resident within the south Delta year-round and would potentially be adversely impacted by elevated underwater sound pressure levels from cofferdam installation. This would be a significant impact without concurrent implementation of mitigation measure 4.3.2, described below.

Alternative 2

The potential impact on Delta fisheries and aquatic resources resulting from underwater sound pressures from cofferdam installation for the new Delta Intake under Alternative 2 would be the same as that discussed for Alternative 1. This would be a significant impact without concurrent implementation of mitigation measure 4.3.2, described below.

Alternative 3

Alternative 3 entails installation of new fish screens into existing bays at the Old River Intake, but does not require in-channel work, or the associated installation of a cofferdam. Thus, no underwater sound pressure impacts to fisheries resources would occur under Alternative 3.

Alternative 4

Under Alternative 4, no new Delta intake would be constructed on Old River and the existing Old River Intake and Pump Station capacity would not be expanded. There would be no in-channel construction activities. Thus, no underwater sound pressure impacts to fisheries resources would occur.

Mitigation Measures

> **Measure 4.3.2:** As discussed in Mitigation Measure 4.3.1, construction of the cofferdam for the new Delta Intake will be limited to the seasonal period between August 1 and November 30. This measure will also help avoid potential impacts to special-status fish species due to underwater sound pressure levels generated during coffer dam installation.

To further reduce and avoid impacts to resident fish present in the south Delta in the immediate vicinity, the cofferdam would be installed using a vibration hammer that minimizes underwater sound pressure levels.

If it is determined that a higher intensity percussion hammer would be required for installing the cofferdam, underwater sound pressure level monitoring would be performed by an acoustic expert to document sound pressure levels during cofferdam construction. Limiting construction related underwater sound pressure levels during cofferdam installation to less than 160 dB would reduce potential fishery impacts to a less-than-significant level. If monitoring indicates higher sound pressure levels than 160 dB, in-water construction activity would be suspended and avoidance of potential adverse effects would be achieved by consulting with USFWS, NMFS, and CDFG to determine and implement the appropriate actions, which would include one or more of the following:

- Surveying Old River at the intake site to determine fish presence before installation, and modifying the work window accordingly;
- Use of an air bubble curtain to deflect and absorb sound pressure;
- Use of lower intensity underwater sounds to repel fish from the immediate construction area before use of a high-pressure hammer;
- Limiting the duration and frequency of high-pressure underwater sound levels during cofferdam installation.

The updates to the modeling analysis of potential operational impacts of the project alternatives did not require re-analyzing Impact 4.3.2. The conclusions regarding this potential impact have not changed from those presented in the Draft EIS/EIR.

Impact Significance after Mitigation: Less than Significant.

Impact 4.3.3: Dewatering of the cofferdam for the new Delta Intake could result in stranding of fish. (Less than Significant with Mitigation for Alternatives 1 and 2; No Impact for Alternatives 3 and 4)

Alternative 1

Dewatering of the cofferdam for intake and fish screen construction activities at the new Delta Intake has the potential to strand fish and macroinvertebrates during the dewatering process. As water is lowered from the pool behind the cofferdam, the trapped fish and macroinvertebrates have no opportunity to escape. Without mitigation measures, all aquatic fish and most macroinvertebrates would be stranded and fish mortality would be 100 percent. This would be a significant impact without concurrent implementation of Mitigation Measure 4.3.3, described below.

Alternative 2

Potential impacts on Delta fisheries and aquatic resources resulting from stranding during cofferdam dewatering under Alternative 2 would be the same as those described for Alternative 1. This would be a significant impact without concurrent implementation of Mitigation Measure 4.3.3, described below.

Alternative 3

Alternative 3 entails installation of new fish screens into existing bays at the Old River Intake, but does not require in-channel work, or the associated installation of a cofferdam. Thus, no stranding impacts to fisheries resources would occur under Alternative 3.

Alternative 4

Under Alternative 4, no new Delta Intake would be constructed and the existing Old River Intake capacity would not be expanded. There would be no in-channel construction activities and no stranding impacts to fishery resources.

Mitigation Measures

Measure 4.3.3: As discussed in Mitigation Measure 4.3.1, construction of the cofferdam for the new Delta Intake will be limited to the seasonal period between August 1 and November 30. This measure will also help avoid potential impacts to special-status fish species due to coffer dam dewatering.

Additionally, CCWD will implement a fish rescue plan acceptable to CDFG, USFWS, and NMFS. CCWD shall ensure that a qualified fishery biologist designs and conducts the fish rescue and relocation effort to collect fish (all species) from the area behind the cofferdam. The fish rescue would be implemented during the dewatering of the area behind the cofferdam for the new Delta Intake and would involve capturing and relocating the fish to suitable habitat within Old River. To ensure compliance, a fisheries biologist shall be present onsite during initial dewatering activities.

CCWD shall monitor progress of installation of the cofferdam and the schedule for dewatering. CCWD shall coordinate the dewatering schedule with the construction contractor and fishery biologist to allow for the fish rescue to occur before completely closing the cofferdam, and again during dewatering when water is about 2 feet deep at the shallowest point within the cofferdam. USFWS, NMFS, and CDFG shall be notified at least 48 hours before the fish rescue. Information on the species and sizes of fish collected in the rescue and estimates of survival just before release would be recorded during the time of the fish rescue and provided in a letter report to be submitted within 30 days after the fish rescue to USFWS, NMFS, and CDFG.

The updates to the modeling analysis of potential operational impacts of the project alternatives did not require re-analyzing Impact 4.3.3. The conclusions regarding this potential impact have not changed from those presented in the Draft EIS/EIR.

Impact Significance after Mitigation: Less than Significant.

Impact 4.3.4: The new Delta Intake structure and associated fish screens in Old River would physically exclude fish from a small area of existing aquatic habitat and modify existing aquatic habitat. (Less than Significant with Mitigation for Alternatives 1 and 2; No Impact for Alternatives 3 and 4)

Alternative 1

New Delta intake

The new Delta Intake, including associated fish screens and pumping plant, would be constructed along the existing levee on Old River. This project component would permanently exclude fish from a small area of existing open water and emergent wetland habitat and would modify existing substrate habitat.

Lost habitat. Aquatic habitat at the intake site is characterized as highly disturbed, degraded, and not unique. Nevertheless, habitat in the vicinity of the intake location is used by resident fish and macroinvertebrates for spawning, juvenile rearing, migration, foraging, and adult holding. Adult and juvenile chinook salmon and steelhead use the area as a migratory corridor and juvenile rearing area during downstream migration. Delta smelt, longfin smelt, and sturgeon are known to occur in the area. Resident fish species, such as striped bass, catfish, and largemouth bass, inhabit the area year-round. Depending on final site selection, up to about 0.2 acre of emergent wetland and open water habitat may be lost as a result of project implementation.

Altered habitat. The habitat within Old River at the new Delta intake site is characterized by riprap-stabilized levees and silt and sand substrate. Tules and other emergent vegetation associated with shallow water habitat occur in the general area.

To stabilize local channel banks, riprap would be installed along the existing levee for a distance of up to 500 feet upstream and downstream of the new intake. Assuming that riprap would extend vertically from +8 feet msl (100-year flood elevation) to about -25 feet msl (presumed channel bottom), a combined total of up to 0.74 acre of riprap will placed along the sides of the intake. Additionally, assuming that the intake sill elevation will be at -12.5 feet msl and the length of the intake will be about 180 feet, a total of up to 0.05 acre of riprap will be placed along the channel bank and bottom below the intake. The total area of riprap would be up to 0.79 acre. Because much of this riprap would be replacement of existing riprap which currently lines both levees along Old River, the new riprap would not significantly change aquatic habitat conditions.

The loss of aquatic habitat described above would be a significant impact without concurrent implementation of Biological Resources Mitigation Measure 4.6.2b.

Alternative 2

Potential impacts on Delta fisheries and aquatic resources resulting from aquatic habitat loss under Alternative 2 would be the same as those discussed for Alternative 1 and would be significant without concurrent implementation of Biological Resources Mitigation Measure 4.6.2b. Potential impacts on Delta fisheries and aquatic resources resulting from alteration of existing aquatic

habitat under Alternative 2 would be the same as those discussed for Alternative 1 and would be less than significant.

Alternative 3

Expanded Old River Intake and Pump Station

Under Alternative 3, the Old River Intake and Pump Station capacity would be expanded to 320 cfs by installing additional screens into existing, vacant bays. Because this expansion work would not involve any in-channel construction activities, no aquatic habitat loss or modification would occur. No new Delta intake would be constructed under Alternative 3. Thus, no aquatic habitat loss or modification would occur under Alternative 3.

Alternative 4

Under Alternative 4, no new Delta intake would be constructed and the existing Old River Intake and Pump Station capacity would not be expanded. There would be no in-channel construction activities. Thus, no aquatic habitat loss or modification would occur under Alternative 4.

Mitigation Measures

> **Implementation of Biological Resources Mitigation Measure 4.6.2b:** This mitigation measure provides for compensatory mitigation for the permanent impacts to habitat. See Section 4.6 (Vol. 2) for description of this measure.
>
> The updates to the modeling analysis of potential operational impacts of the project alternatives did not require re-analyzing Impact 4.3.4. The conclusions regarding this potential impact have not changed from those presented in the Draft EIS/EIR.
>
> **Impact Significance after Mitigation:** Less than Significant.

Impact 4.3.5: The new Delta Intake structure and associated fish screens in Old River would modify hydraulic conditions next to the intake structure, but would not disorient special-status fish or attract predatory fish. (Less than Significant for Alternatives 1 and 2; No Impact for Alternatives 3 and 4)

Alternative 1

The new Delta Intake structure would contribute to localized changes in hydraulic conditions (e.g., water velocities, water depths, and water circulation periods) within Old River in the immediate vicinity of the intake structure. These changes in current patterns could affect localized movement patterns for fish and macroinvertebrates within the area. Concern has also been expressed that physical structures, such as an intake and fish screen as well as riprap bank stabilization within the Delta, would attract predatory fish and increase the vulnerability of prey (e.g., juvenile chinook salmon, steelhead, delta and longfin smelt, splittail, and other fish), to predation mortality.

The new Delta Intake structure and fish screens would be designed and oriented in the channel to reduce the effect of the structure on local turbulence and to minimize changes in local hydrodynamic current patterns within Old River. The dominant flow and current patterns in Old River reflect the combined result of tidal flows and pumping at the SWP and CVP export facilities.

The fish screen would be positioned so that the river flow would primarily be oriented parallel to the fish screen surface, resulting in relatively large sweeping (parallel to screen) velocities as compared to approach velocities (perpendicular to screen). Results of field velocity measurements at other similarly positioned intake structures and fish screens (e.g., RD108 Wilkins Slough Pumping Plant) have shown that the effect of through-screen pumping on local hydrodynamics, as indicated by measurable approach velocities, extends less than 1 foot from the screen surface. Old River in the vicinity of the new Delta Intake is about 300 to 500 feet wide, so the modified hydraulic conditions would extend about 0.3 percent of the width of Old River at this location.

Based on observations at other intake locations with similar structures to the new Delta Intake, it would be expected that local effects of the structure on turbulence and current patterns would be limited to only the area of the channel in the immediate vicinity of the structure (e.g., less than 100 feet upstream and downstream of the structure). As part of designing the intake structure, simulation modeling and analyses would be performed of local hydrodynamic conditions in the area of the intake and the ability of the intake to maintain a uniform approach velocity of 0.2 fps or less. The intake design and support information would be made available for review by state and federal agency engineers during the design process to identify any potential changes or refinements to the design and hydraulic performance of the intake.

After intake construction, approach and sweeping velocities would be measured and the intake baffles or other similar structure adjusted to ensure uniformity of approach velocities and compliance with the CDFG and NMFS design criteria. Experience and observations at other intake structures with similar design criteria indicate that the new Delta Intake would not significantly influence hydrodynamic conditions within Old River or adversely affect fish behavior or migration. The intake structures would not affect the channel cross-section and would not create a physical barrier or impediment to migration.

Physical structures such as water intakes and diversion facilities may attract various species of fish to the area. A number of predatory fish species, such as striped bass and largemouth bass, are attracted to water intake facilities, where they prey on juvenile fish. Experience and observations of fish predation at other water diversion and intake sites within the Sacramento River and Delta (e.g., RBDD, Clifton Court forebay, Woodbridge Irrigation District dam) have shown that increased vulnerability of fish such as juvenile chinook salmon and steelhead to predation is typically related to physical structures that create turbulence and disorient fish.

The risk of attracting predatory fish species to the new Delta intake structure, or the potential risk of increased predation mortality for fish migrating through or inhabiting the south Delta, would be minimized by designing the intake and fish screen to avoid areas where predatory fish would congregate (e.g., avoid structural elements of the intake that create turbulence and structures that provide cover and hiding/ambush locations for predators). In addition, the intake and fish screen

would not include collection or bypasses/fish return systems that have been found to attract predators and increase the concentrations of prey fish and their vulnerability to predation. The distribution of predatory fish inhabiting the area right next to the intake structure could change as a result of project implementation, but an increase in the overall abundance of predatory fish inhabiting Old River in the vicinity of the new Delta Intake is not expected.

As described in Impact 4.3.4 above, the new Delta Intake would require replacement of a small amount of existing silt/sand substrate with riprap to stabilize local channel banks just upstream and downstream of the intake structure. The existing channel banks, along the reach of Old River where the new Delta Intake would be sited, are currently lined by riprap, both upstream and downstream of the site. As part of intake construction, existing riprap would be removed from the site and replaced after the intake construction is complete to ensure that the local levees are stable and protected from scour and erosion by high tidal water velocities that occur in the channel.

Results of fishery surveys conducted by CDFG within the Delta have shown that predatory fish, such as striped bass, are frequently associated with riprap channel banks. No studies have been conducted within the Delta to quantify the effects of riprap on predation mortality for special-status fish. Fishery studies conducted in the Pacific Northwest (e.g., Knudsen and Diley, 1987; Peters et al., 1998) have found both positive and negative effects of riprap on the distribution and occurrence of juvenile salmonids. Because riprap is currently present and used to stabilize channel levees within Old River, and the new Delta Intake would replace existing riprap with new riprap, the addition of a small extent of riprap would not be expected to significantly affect the vulnerability of special-status species to predation within Old River or their ability to avoid predators, when compared to without project conditions.

These considerations indicate that incremental changes in localized hydraulics and aquatic habitat characteristics, including predator attraction, would be minor. Thus, this impact would be less than significant.

Alternative 2

Potential impacts on Delta fisheries and aquatic resources resulting from changes in hydraulic conditions under Alternative 2 would be the same as those discussed for Alternative 1. This impact would be less than significant.

Alternative 3

Under Alternative 3, no physical in-channel alterations would be required to expand the existing intake capacity at the Old River Intake and Pump Station to 320 cfs, because the capacity enlargement entails replacement of existing solid plates in existing intake bays with new screens. This replacement would not change the existing channel geometry. No new Delta intake would be constructed for this alternative. Thus, potential impacts on Delta fisheries and aquatic resources resulting from changes in hydraulic conditions would not occur.

Alternative 4

Under Alternative 4, the Old River Intake and Pump Station would not be expanded and no new Delta intake would be constructed. Thus, potential impacts on Delta fisheries and aquatic resources resulting from changes in hydraulic conditions next to the intake structure would not occur.

The updates to the modeling analysis of potential operational impacts of the project alternatives did not require re-analyzing Impact 4.3.5. The conclusions regarding this potential impact have not changed from those presented in the Draft EIS/EIR.

Mitigation: None required.

Impact 4.3.6: Operation of the project alternatives would not result in changes to Delta hydrologic conditions that affect Delta fish populations or quality and quantity of aquatic habitat within the Sacramento-San Joaquin River system, including the Delta. (Less than Significant for Alternatives 1, 2 and 4)

The project alternatives would alter the location and timing of water diversions from the Delta. The following analysis addresses the potential for these changes to adversely or beneficially affect Delta fish populations or the quality and quantity of aquatic habitat within the Bay-Delta estuary. As described in the description of updated modeling performed for the Final EIS/EIR in the updated Section 4.2 (Vol. 4, Chapter 5, Section 5.3), the operation of the CVP and SWP systems under the OCAP BOs has now been simulated for this analysis. Operation of the project alternatives was also modified in response to the inclusion of the OCAP BOs; these modifications are also described in the updated Section 4.2 (Vol. 4, Chapter 5, Section 5.3).

Effects on fish populations were analyzed using a number of different parameters that have been shown to be, or are thought to be, significant factors that affect habitat conditions and the reproduction of various fish and macroinvertebrate species inhabiting the Bay-Delta estuary. These habitat parameters are grouped into the following three categories:

- Measures of flows upstream of the Delta, including total Delta inflow, Sacramento River flow at Freeport, and San Joaquin River flow at Vernalis;
- Regulatory standards that are currently required by SWRCB D-1641 for fish and wildlife beneficial use, including net Delta outflow, the location of X2, and the Export-to-Inflow (E/I) ratio;
- Measures of Delta circulation, including particle tracking analysis, net flow on the lower San Joaquin River (Qwest), and net flow in Old and Middle rivers.

The assessment relies on a comparative analysis of operational and resulting environmental conditions within the estuary between without project conditions and each of the project alternatives. The changes in these parameters for each alternative are obtained from the hydrologic modeling results, which describe water diversion operations over a range of environmental and hydrologic conditions (see Appendix C (Vol. 4) for a detailed presentation of the modeling

methodology and results). Hydrologic modeling results provide the technical foundation for assessing adverse effects of project diversions and CVP and SWP export operations on fish species and their habitat within the Bay-Delta estuary.

As described in Section 4.2 and Appendix C-3, moderate and severe fishery restrictions were simulated, in an attempt to bracket the range of background conditions that might occur, and evaluate the environmental effects of the project alternatives under this range of conditions. Additionally, cComparisons were performed for both the 2005 level of development and the 2030 level of development. For the 2005 level of development, the project alternatives are compared to the Existing Condition. For the 2030 level of development, the project alternatives are compared to the Future Without Project condition.

Changes to each of the parameters were evaluated on a monthly basis. For the purpose of evaluating the potential effect of each project alternative, the incremental changes for each alternative are averaged by water year type, resulting in a long-term monthly average for each water year type (e.g., long-term average incremental change in January of wet water years). Results of this analysis are discussed below. Summary tables are presented below that show long-term monthly average (e.g., long-term average incremental change in January for all years); the monthly average values by water year type that were the basis for the analysis are presented in Appendix C7 (Vol. 4).

Effects of changes to upstream tributary river flows

Delta Inflow. Changes in Delta inflow could be caused by the operation of the project alternatives, if the alternatives would influence the timing of releases from upstream reservoirs, including but not limited to Shasta, Oroville, and Folsom. Changes in Delta inflow could affect hydrologic conditions within Delta channels, hydraulic residence times, salinity gradients, and the transport and movement of various lifestages of fish, invertebrates, phytoplankton, and nutrients into and through the Delta. Delta inflow serves as a surrogate metric for a variety of habitat conditions within the Delta that directly or indirectly affect fish and other aquatic resources.

Long-term average changes to Delta inflows under 2005 level of development are shown in **Table 4.3-5** with additional averages by water year presented in Appendix C7 (Vol. 4). For purposes of evaluating the potential effect of changes in Delta inflow on fishery habitat within the Bay-Delta, and considering the accuracy and inherent noise within the hydrologic model, changes in the average monthly simulated flows that were within 5 percent (+ or -) of the Existing Condition would not be expected to result in a detectable effect on habitat quality or availability or affect the transport mechanisms provided by Delta inflow, which may influence resident or migratory fish or the zooplankton and phytoplankton that they rely on for a food resource.

Results of the analysis showed that Delta inflow under 2005 level of development was slightly lower in a number of comparisons between without project conditions and the project alternatives and slightly higher in a number of comparisons. However, the changes in Delta inflow attributable to the project are generally less than 1 percent, and none are larger than 5 percent. Typically only a change that reduced average monthly Delta inflow would be considered to have a potentially adverse effect on fishery resources. Based on results of this analysis it was concluded that the

TABLE 4.3-5 (REVISED)*
LONG-TERM MONTHLY AVERAGE OF DELTA INFLOW UNDER 2005 LEVEL OF DEVELOPMENT

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Existing Condition		14,747	18,597	32,636	47,195	58,182	49,100	33,193	27,131	21,719	22,461	18,111	19,072
Percent Change from Existing Condition	Alt 1	0.0%	-0.2%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	0.3%	0.0%	-0.1%	-0.1%
	Alt 2	0.0%	-0.2%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	0.3%	-0.1%	-0.1%	-0.1%
	Alt 4	0.0%	-0.1%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	0.2%	0.0%	-0.1%	0.0%

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

% = percent
Alt = alternative
cfs = cubic foot (feet) per second

project alternatives would result in a less than significant incremental effect on fishery habitat as a consequence of changes in Delta inflow under 2005 level of development.

Long-term average changes to Delta inflows under 2030 level of development are shown in **Table 4.3-6** with additional averages by water year presented in Appendix C7 (Vol. 4). Similar to the 2005 level of development, Delta inflows under 2030 level of development were observed to be slightly lower under many of the project alternatives operations as well as slightly higher than Future Without Project conditions depending on month and water year type. None of the comparisons between the Future Without Project and operations under the project alternatives exceeded 5 percent.

TABLE 4.3-6 (REVISED)*
LONG-TERM MONTHLY AVERAGE OF DELTA INFLOW UNDER 2030 LEVEL OF DEVELOPMENT

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Future Without Project		14,650	18,851	32,765	47,421	58,078	49,685	34,427	27,073	21,825	22,365	18,160	19,014
Percent Change from Future Without Project	Alt 1	0.1%	0.0%	-0.1%	0.0%	0.1%	0.1%	-0.1%	0.1%	0.1%	-0.1%	-0.2%	-0.1%
	Alt 2	0.2%	0.0%	-0.1%	0.0%	0.1%	0.1%	-0.1%	0.0%	0.1%	-0.1%	-0.2%	-0.1%
	Alt 4	0.1%	0.0%	-0.1%	0.0%	0.1%	0.0%	-0.1%	0.0%	0.1%	0.0%	-0.2%	0.0%

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

% = percent
Alt = alternative
cfs = cubic foot (feet) per second

The results of this comparison indicate that each of the project alternatives would have a less than significant incremental effect on fishery habitat and hydrologic transport processes within the Delta and Suisun Bay.

Sacramento River Flow. Flow within the Sacramento River has been identified as an important factor affecting the survival of emigrating juvenile chinook salmon, and as important to the downstream transport of planktonic fish eggs and larvae such as delta and longfin smelt, striped bass and shad. Sacramento River flows have also been identified as important for seasonal floodplain inundation that has been shown to be important habitat for successful spawning and larval rearing by

species such as Sacramento splittail and as seasonal foraging habitat for juvenile chinook salmon and steelhead (Sommer et al., 2001). Sacramento River flows are also important in the transport of organic material and nutrients from the upper regions of the watershed downstream into the Delta. A reduction in Sacramento River flow as a result of operation of the project alternatives, depending on the season and magnitude of change, could adversely affect habitat conditions for both resident and migratory fish species. An increase in river flow is generally considered to be beneficial for aquatic resources within the normal range of typical project operations and flood control. Very large changes in river flow could also affect sediment erosion, scour, deposition, suspended and bedload transport, and other geomorphic processes within the river and watershed.

Results of the comparative analysis of Sacramento River flow, by month and water year type, under both 2005 and 2030 levels of development are provided in Appendix C7 (Vol. 4) with long-term monthly averages shown in **Table 4.3-7** and **Table 4.3-8,** respectively. Results of these analyses show a variable response in Sacramento River flow with the operations of the project alternatives resulting in both increases and decreases in river flow compared to without project conditions, depending on month and water year. Changes in estimates of SWP and CVP operations in the CalSim II studies for project alternatives result in changes in flow on the Sacramento River, but changes attributable to the operation of project alternatives are less than 5 percent, and are generally less than 1 percent.

TABLE 4.3-7 (REVISED)*
LONG-TERM MONTHLY AVERAGE OF SACRAMENTO RIVER INFLOW TO THE DELTA UNDER 2005 LEVEL OF DEVELOPMENT

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Existing Condition		11,691	15,199	26,085	32,870	38,988	33,566	23,345	19,211	16,465	19,131	15,813	16,487
Percent Change from Existing Condition	Alt 1	0.0%	-0.2%	-0.1%	0.1%	0.0%	0.0%	-0.1%	0.0%	0.4%	0.0%	-0.1%	-0.1%
	Alt 2	0.0%	-0.2%	-0.1%	0.1%	0.0%	0.0%	-0.1%	0.1%	0.3%	-0.2%	-0.1%	-0.1%
	Alt 4	0.0%	-0.1%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.1%	0.3%	0.0%	-0.1%	0.0%

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

% = percent
Alt = alternative
cfs = cubic foot (feet) per second

TABLE 4.3-8 (REVISED)*
LONG-TERM MONTHLY AVERAGE OF SACRAMENTO RIVER INFLOW TO THE DELTA UNDER 2030 LEVEL OF DEVELOPMENT

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Future Without Project		11,526	15,255	26,165	33,094	39,068	33,694	23,423	19,057	16,454	19,018	15,845	16,386
Percent Change from Future Without Project	Alt 1	0.2%	0.0%	-0.1%	0.0%	0.2%	0.1%	-0.1%	0.1%	0.2%	-0.1%	-0.3%	-0.1%
	Alt 2	0.2%	0.0%	-0.1%	0.0%	0.2%	0.1%	-0.1%	0.0%	0.2%	-0.1%	-0.2%	-0.1%
	Alt 4	0.2%	0.0%	-0.1%	0.0%	0.1%	0.1%	-0.1%	0.1%	0.2%	0.0%	-0.2%	0.1%

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

% = percent
Alt = alternative
cfs = cubic foot (feet) per second

Based on these results, it was concluded that the incremental effect of the project alternatives on fishery habitat and transport mechanisms within the lower Sacramento River and Delta would be less than significant.

San Joaquin River Flow at Vernalis. Flow within the San Joaquin River has been identified as an important habitat parameter because it is known to affect:

- the survival of juvenile chinook salmon migrating downstream from the tributaries through the mainstem San Joaquin River and Delta;
- downstream transport of planktonic fish eggs and larvae such as striped bass;
- seasonal floodplain inundation that is considered to be important habitat for successful spawning and larval rearing by species such as Sacramento splittail and as seasonal foraging habitat for juvenile chinook salmon;
- transport of organic material and nutrients from the upper regions of the watershed downstream into the Delta.

A reduction in San Joaquin River flow as a result of operations of the project alternatives, depending on the season and magnitude of change, could adversely affect habitat conditions for both resident and migratory fish species. An increase in river flow is generally considered to be beneficial for aquatic resources within the normal range of typical project operations and flood control. Very large changes in river flow could also affect sediment erosion, scour, deposition, suspended and bedload transport, and other geomorphic processes within the San Joaquin River and watershed.

Results of the comparative analysis of San Joaquin River flow, by month and year type under 2005 and 2030 level of development, are provided in Appendix C7 (Vol. 4) with long-term monthly averages presented in **Table 4.3-9** and **Table 4.3-10**. Results of these analyses show that the project alternatives would have little effect on seasonal flows as compared with existing conditions within the San Joaquin River (percent change remains below 0.05 percent). Similarly, modeling results showed that the project alternatives would have little effect on flows or fishery habitat as compared with Future Without Project conditions.

TABLE 4.3-9 (REVISED)*
LONG-TERM MONTHLY AVERAGE OF SAN JOAQUIN RIVER AT VERNALIS UNDER 2005 LEVEL OF DEVELOPMENT

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Existing Condition		2,815	2,484	3,246	4,704	6,285	6,547	6,399	6,418	4,601	3,194	2,052	2,299
Percent Change from Existing Condition	Alt 1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Alt 2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Alt 4	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

% = percent
Alt = alternative
cfs = cubic foot (feet) per second

TABLE 4.3-10 (REVISED)*
LONG-TERM MONTHLY AVERAGE OF SAN JOAQUIN RIVER AT VERNALIS UNDER 2030 LEVEL OF DEVELOPMENT

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Future Without Project		2,899	2,675	3,280	4,701	6,094	6,968	7,529	6,514	4,716	3,209	2,072	2,342
Percent Change from Future Without Project	Alt 1	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Alt 2	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Alt 4	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

% = percent
Alt = alternative
cfs = cubic foot (feet) per second

These results indicate that the project alternatives would have a less than significant incremental effect on fishery habitat or transport mechanisms within the lower San Joaquin River and Delta under either current or future conditions.

Effects of changes to net Delta outflow, the location of X2, and the Export-to-Inflow Ratio

Delta outflow. Seasonal variations in Delta outflow influence the transport of planktonic organisms, such as zooplankton, fish eggs and larvae, through the Delta and into Suisun and San Francisco bays. Flows from February through June play an especially important role in determining the reproductive success and survival of many estuarine species including salmon, striped bass, American shad, delta smelt, longfin smelt, splittail, and others (Stevens and Miller, 1983; Stevens et al., 1985; Meng and Herbold, 1994; Meng and Moyle, 1995). Delta outflow also has a significant influence on the geographic location of the low salinity zone within the estuary. One important indicator that is used to assess estuarine habitat conditions is the location of the salinity condition that is commonly referred to as the X2 location (defined as the 2 parts per thousand salinity isohaline). Results of fishery monitoring over a number of years within the estuary have shown that the survival and abundance of the juvenile lifestages of a number of fish and macroinvertebrate species typically increases when Delta outflows are high and the X2 location is within Suisun Bay during the late winter and spring. A reduction in Delta outflow or an easterly movement of the X2 location during the winter and spring (February through June) is used as one indicator of a project's potential negative effects on estuarine habitat conditions.

Long-term average results of the comparison of net Delta outflow under 2005 level of development with and without each of the project alternatives are shown for reference in **Table 4.3-11**; the monthly average values by water year type that were the basis for the analysis are presented in Appendix C7 (Vol. 4). For purposes of evaluating the potential effect of changes in Delta outflow on fishery habitat within the Bay-Delta estuary, and considering the accuracy and inherent "noise" within the hydrologic model, changes in the average monthly flows modeled under project alternatives that were within 5 percent (+ or -) of the Existing Condition would not be expected to result in a detectable effect on habitat quality or availability, or affect the transport mechanisms provided by

TABLE 4.3-11 (REVISED)*
LONG-TERM MONTHLY AVERAGE OF DELTA OUTFLOW UNDER 2005 LEVEL OF DEVELOPMENT

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Existing Condition		7,102	11,178	23,773	41,723	51,806	42,136	29,869	22,576	12,616	7,850	5,810	8,224
Percent Change from Existing Condition	Alt 1	-0.4%	-0.6%	0.1%	-0.2%	-0.1%	0.4%	-0.6%	-0.2%	0.1%	-0.6%	-0.1%	-0.2%
	Alt 2	-0.4%	-0.8%	0.1%	-0.2%	-0.1%	0.3%	-0.6%	-0.2%	0.0%	-0.5%	-0.2%	-0.2%
	Alt 4	-0.3%	-0.3%	0.1%	-0.2%	0.0%	0.2%	-0.5%	-0.1%	0.1%	-0.2%	0.0%	0.0%

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

% = percent
Alt = alternative
cfs = cubic foot (feet) per second

net Delta outflow, which may influence resident or migratory fish or the zooplankton and phytoplankton that they rely on for a food resource. In general, changes were found to be far smaller than 5 percent, as shown in Table 4.3-11 and in the results presented in Appendix C7 (Vol. 4).

As shown in Appendix C7 (Vol. 4), Delta outflow under 2005 level of development varied in years of different water year type, reflecting variation in Central Valley hydrology under both the Existing Condition and each of the project alternatives. Variation attributable to the project between the Existing Condition and each of the project alternatives is generally less than 1 percent, and did not exceed 5 percent for Alternatives 1, 2, and 4 for any water year type.

~~As shown in Appendix C-7, analysis of Alternative 3 indicates a long-term average monthly reduction in Delta outflow of about 6 percent in critical water years in February under the 2005 level of development with moderate fishery restrictions; average February Delta outflow for critical water years in the Existing Condition is 14,890 cfs and is reduced about 900 cfs in Alternative 3. However, upon closer examination, this reduction was found to be due to an anomaly in one month when the model reduced Delta outflow in Alternative 3 by about 7,500 cfs from the Existing Condition. This particular instance represents an artifact of the model tools used in these analyses, and is not representative of the effects of the project alternative (see discussion of step functions in CalSim II in Section 4.2 for more information on this type of artifact).~~ Results of this analysis indicate that all of the project alternatives would result in less than significant incremental effects on fishery habitat as a consequence of changes in Delta outflow under the 2005 level of development.

Long-term average net Delta outflow under 2030 level of development with and without each of the project alternatives is shown for reference in **Table 4.3-12**; the monthly average values by water year type that were the basis for the analysis are presented in Appendix C7 (Vol. 4). As discussed in the 2005 level of development above, Delta outflows under many of the project alternatives were observed to be both slightly lower and slightly higher compared to the Future Without Project conditions depending on month and water year type. The long-term monthly average percent change of net Delta outflow between the alternatives and the Future Without Project is generally less than 1 percent, and never exceeds 5 percent for Alternatives 1, 2 and 4 for any water year type.

TABLE 4.3-12 (REVISED)*
LONG-TERM MONTHLY AVERAGE OF DELTA OUTFLOW UNDER 2030 LEVEL OF DEVELOPMENT

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Future Without Project		7,142	11,334	23,912	41,921	51,793	42,484	30,921	22,479	12,549	7,917	5,847	8,199
Percent Change from Future Without Project	Alt 1	0.0%	-0.6%	-0.1%	-0.1%	0.2%	0.5%	-0.9%	-0.3%	0.3%	-0.5%	-0.5%	0.1%
	Alt 2	0.0%	-0.7%	0.0%	-0.1%	0.2%	0.4%	-0.9%	-0.3%	0.2%	-0.6%	-0.5%	0.0%
	Alt 4	0.1%	0.1%	-0.4%	0.0%	0.1%	0.3%	-0.8%	-0.3%	0.3%	-0.2%	-0.4%	0.2%

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

% = percent
Alt = alternative
cfs = cubic foot (feet) per second

~~Alternative 2 indicates an average reduction in Delta outflow of about 5 percent in above normal water years in November under 2030 level of development with severe fishery restrictions; average November Delta outflow for above normal water years in the Future Without Project is 9,919 cfs and is reduced about 330 cfs in Alternative 2. This reduction in above normal water years in November would not have a significant impact on fishery habitat.~~

~~As shown in Appendix C-7, Alternative 3 indicates an average reduction in Delta outflow of about 10 percent in critical water years in December under 2030 level of development with severe fishery restrictions; average December Delta outflow for critical water years in the Future Without Project is 5,661 cfs and is reduced about 580 cfs in Alternative 3. However, this reduction was found to be due to an anomaly in one month when the model reduced Delta outflow in Alternative 3 by about 6,200 cfs from the Future Without Project. This instance is an artifact of the model tools used in these analyses, and is not representative of the effects of the project alternative (see discussion of step functions in CalSim II in Section 4.2 for more information on this type of artifact).~~

The results of this comparison show that all of the project alternatives would have a less than significant incremental effect on fishery habitat and hydrologic transport processes within the Bay-Delta estuary.

Low Salinity Habitat and Location of X2. Salinity is an important factor affecting habitat quality and availability for fish and macroinvertebrates inhabiting the Delta and Suisun Bay. All estuarine species have optimal salinity ranges, and their survival may be affected by the amount of habitat available within the species' optimal salinity range. Because the location of the salinity field in the Delta and Suisun Bay is largely controlled by freshwater outflows, the level of outflow may determine the surface area of optimal salinity habitat that is available to a species (Hieb and Baxter, 1993; Unger, 1994).

The transition area between saline waters within San Francisco Bay and fresh water within the rivers, frequently referred to as the low salinity zone, is within Suisun Bay and the western Delta. The low salinity zone has also been associated with the entrapment zone, a region of the estuary characterized by higher levels of particulates, higher abundances of several types of organisms, and a turbidity maximum. It is commonly associated with the specific position of X2, the 2 parts

per thousand isohaline, but actually occurs over a broader range of salinities (Kimmerer, 1992). Originally, the primary mechanism responsible for this region was thought to be gravitational circulation, a circulation pattern formed when freshwater flows seaward over a dense, landward-flowing marine tidal current. However, recent studies have shown that gravitational circulation does not occur in the entrapment zone in all years, nor is it always associated with X2 (Burau et al., 1998). Lateral circulation within the Delta and Suisun Bay or chemical flocculation may play a role in the formation of the turbidity maximum of the entrapment zone.

Although recent evidence indicates that the location of X2 and the entrapment zone are not as closely related as previously believed (Burau et al., 1995), X2 continues to be used as an index of the location of the area of increased biological productivity. Historically, X2 has varied between San Pablo Bay (River kilometer [km] 50), measured upstream from the Golden Gate Bridge) during periods of high Delta outflow and Rio Vista (River km 100) during periods of very low Delta outflow. ~~In recent years, X2 has typically been between about Honker Bay and Sherman Island (River km 70 to River km 85).~~ The location of X2 is managed, in part, by Delta inflow and releases from upstream reservoirs during the February through May period each year as required by the SWRCB D-1641. X2 location is controlled directly by the volume of Delta outflow, although changes in X2 location lag behind changes in outflow. Minor modifications in outflow do not greatly alter X2.

Jassby et al. (1995) observed that when X2 is in the vicinity of Suisun Bay, several estuarine organisms tend to show increased abundance. However, it is not certain that X2 has a direct effect on any of the species. The observed correlations may result from a close relationship between X2 and other factors that affect these species. Studies and analyses are continuing to better define and understand the relationships between X2/Delta outflow and the production and survival (abundance) of various species of fish and macroinvertebrates inhabiting the Delta and Suisun Bay.

For purposes of evaluating changes in habitat quantity and quality for estuarine species, a significance criterion of an upstream change in X2 location within 1 km of the without project condition was considered to be less than significant. The 1 km X2 criterion used in this analysis was derived from the criterion applied to the environmental analysis of the Environmental Water Account (Reclamation and DWR, 2003). The criterion was applied to a comparison of hydrologic model results between the without project condition and each of the project alternatives, using a long-term monthly average by water year type.

Long-term average changes in X2 position are shown in **Table 4.3-13** and **Table 4.3-14**. Changes in X2 position averaged by water year type, shown in Appendix C7 (Vol. 4), never exceed 0.35~~75~~ km with both variable upstream and downstream movement of the X2 location depending on month and water year type. These results are consistent with model results for Delta outflow, described above, that also showed a less than significant change. Results of these analyses show that the impacts of changes in hydrologic conditions affecting X2 location under ~~each of the project a~~Alternatives 1, 2 and 4 would be less than significant.

Export-to-Inflow Ratio. The E/I ratio, which is the percentage of Delta inflow exported from the Sacramento and San Joaquin river systems and the Delta by SWP and CVP facilities in the south Delta, provides an indicator of several key ecological processes, including: (1) migration and transport

TABLE 4.3-13 (REVISED)*
LONG-TERM MONTHLY AVERAGE OF X2 LOCATION UNDER 2005 LEVEL OF DEVELOPMENT

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Existing Condition		84	85	82	75	67	61	62	64	68	75	81	85
Change from Existing Condition	Alt 1	0.0	0.0	0.1	0.0	0.0	0.0	-0.1	0.1	0.0	0.0	0.0	0.0
	Alt 2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
	Alt 4	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

Alt = alternative
km = kilometer
X2 = 2 parts per thousand salinity isohaline

TABLE 4.3-14 (REVISED)*
LONG-TERM MONTHLY AVERAGE OF X2 LOCATION UNDER 2030 LEVEL OF DEVELOPMENT

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Future Without Project		84	84	82	75	67	61	61	64	68	75	81	85
Change from Future Without Project	Alt 1	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	0.1	0.1	0.0	0.0	0.0
	Alt 2	0.0	0.0	0.1	0.0	0.0	-0.1	-0.1	0.1	0.1	0.0	0.0	0.0
	Alt 4	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	0.1	0.1	0.0	0.0	0.0

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

Alt = alternative
km = kilometer
X2 = 2 parts per thousand salinity isohaline

of various lifestages of resident and anadromous fishes using the Delta; (2) salinity levels at various locations within the Delta as measured by the locations of X2; and (3) the risk of direct and indirect fish losses resulting from export operations. Although no specific biological relationships have been developed regarding the abundance of various fish and macroinvertebrate species and the E/I ratio, the ratio is used in SWRCB D-1641 as one of the bases for regulating the rate of freshwater exports from the Delta. The E/I ratio reflects the balance between freshwater inflows to the Delta and the corresponding percentage of inflows that can be exported through the SWP and CVP diversion facilities. The maximum allowable E/I ratio varies with the season of the year; the E/I ratio is limited to 35 percent during the February-June period when juvenile fish are most vulnerable to losses resulting from diversions and increases to 65 percent during the remainder of the year. The E/I ratio represents a tool for reducing the effects of diversion operations from the SWP and CVP on resident and migratory fish inhabiting the estuary. If the E/I ratio is close to the regulatory limit, then additional increase in the E/I ratio, indicating greater exports from the Delta relative to the inflow of freshwater from the tributary rivers, would generally be interpreted as an increase in the potential risk of adverse effects on fishery resources and their habitat resulting from entrainment and salvage at the SWP and CVP export facilities.

As discussed in Chapter 3, Alternatives 1 and 2 shift a portion of the South Bay water agencies' Delta diversions to the expanded Los Vaqueros system, which provides improved fish screening,

a No-Diversion Period, and multiple intake locations to better protect Delta fish. For the purpose of the E/I ratio analysis, this shifted water supply is still counted as exports, such that the E/I ratio is not changed simply by shifting the diversions to the expanded Los Vaqueros system.

Results for the E/I ratio under 2005 level of development and 2030 level of development are presented in **Table 4.3-15** and **Table 4.3-16**, respectively. As shown, between January and June the E/I ratio is substantially less than the regulatory limit for this parameter. This is due to the fishery restrictions assumed in these analyses, which reduce exports but do not reduce inflow when surplus water is available in the Delta. Changes in E/I ratio ~~under all~~ project ~~a~~Alternatives 1, 2 and 4 are not substantial and would likely not result in a significant reduction in the quality or quantity of aquatic habitat within the estuary, or the risk of entrainment and salvage mortality at the water export facilities.

TABLE 4.3-15 (REVISED)*
LONG-TERM MONTHLY AVERAGE OF EXPORT TO INFLOW RATIO (%)
UNDER 2005 LEVEL OF DEVELOPMENT

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Existing Condition		45	40	39	24	19	18	7	9	23	45	50	51
Change from Existing Condition	Alt 1	0.1	0.2	-0.2	0.2	0.1	-0.2	0.0	0.0	1.0	0.1	-0.2	-0.1
	Alt 2	0.2	0.2	-0.2	0.2	0.1	-0.1	0.0	0.0	1.0	-0.1	-0.1	-0.1
	Alt 4	0.2	0.1	-0.2	0.3	0.1	0.1	0.0	0.0	0.9	-0.1	-0.3	-0.1

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

% = percent
Alt = alternative

TABLE 4.3-16 (REVISED)*
LONG-TERM MONTHLY AVERAGE OF EXPORT TO INFLOW RATIO (%)
UNDER 2030 LEVEL OF DEVELOPMENT

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Future Without Project		43	39	39	23	19	19	8	9	23	45	50	50
Change from Future Without Project	Alt 1	0.0	0.3	0.0	0.1	-0.2	-0.2	0.0	0.0	0.8	-0.1	0.0	-0.1
	Alt 2	0.1	0.4	-0.2	0.1	-0.2	-0.1	0.0	0.0	0.8	-0.1	0.0	-0.1
	Alt 4	0.0	0.0	0.2	0.1	-0.1	0.0	0.0	0.0	0.8	-0.1	0.0	-0.2

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

% = percent
Alt = alternative

Alternatives 1 and 2 reduce the E/I ratio ~~in April~~during the Los Vaqueros Reservoir no diversion period, which is implemented in March in this analysis.~~, which could potentially benefit fishery resources. This benefit~~ This could potentially benefit Delta fishery resources ~~is created~~ by providing water supply to South Bay water agencies from storage in the expanded Los Vaqueros Reservoir during the 30-day No-Diversion Period, as described in Chapter 3, and thereby reducing total Delta diversions during this period.

Effects of changes in circulation within the Delta

Particle tracking model. The particle tracking model (PTM) estimates the probability that a parcel of water starting at one location will arrive at another location in a given time frame. The PTM tool has been used to assess the potential effects of water project operations on planktonic phytoplankton (microscopic free-floating aquatic plants) and zooplankton (free-floating aquatic invertebrates) that are important as a food resource within the estuary. Because the particles simulated in the model are neutrally buoyant (and therefore have no swimming behavior or other independent movement) results of these analyses are most relevant to the planktonic early larval stages of various organisms that do not move independently in the water column. The particles are not considered to reflect movements of juvenile or adult fish within the Delta.

For this analysis, particle releases were simulated in the model at various locations within the Delta that are either known to represent important fish habitat or important hydrologic locations. Such simulated particle releases were made in each month of the 16-year Delta hydrodynamic model study period (see discussion of the DSM2 model in the updated Section 4.2 [Vol. 4, Chapter 5, Section 5.3]). After each release, particles were tracked in the simulated Delta conditions for 120 days and counted when they entered an export facility or other diversion or when they exited the geographic extent of the model by passing Martinez downstream of Suisun Bay. One limitation of PTM is that it does not allow for consideration of fish screens. The presence of positive barrier fish screens at CCWD intakes was accounted for during post-processing. A screen efficiency factor was applied and the fate of particles determined to be screened out in this manner was then assigned proportionally based on results of particle insertions near the respective intake during the same month. The percentage of particles shown by the model to remain in Suisun Bay and Marsh and within the Delta was analyzed for each geographic region. This analysis was repeated for each simulated particle release.

In general, the following considerations should be taken into account when interpreting the particle tracking analysis (a more detailed description of PTM methodology and limitations is provided in Appendix C7 [Vol. 4]):

- The measure of changes in Delta circulation patterns provided by the analysis is most relevant for passive entities such as planktonic species and larval stage fish that have no swimming behavior or otherwise independent means of movement.

- The PTM tool does not account for fish screens. Positive barrier fish screens provide proven entrainment reductions even for larval stage fish, which are hatched at sizes at the low end of the size exclusion range of the screens. One important finding of the PTM analysis was that particles that would be excluded by the screens do have the possibility of leaving the Delta, especially in the spring, so particles that are transported to the central Delta are not necessarily trapped in the Delta. Incorporating a screen efficiency factor that reduces entrainment and leaves more particles in the flow field would effectively increase the percentage of particles traveling past Chipps Island. To address the lack of fish screen efficiency accounting within the PTM tool, a post-process method was developed to determine the proportional re-entrainment at other diversions based on the results of particle insertions near the screened intakes. This method is described in Appendix C7 (Vol. 4).

- PTM has limitations regarding the dispersion of particles (Kimmerer and Nobriga, 2008), including simplistic assumed velocity profiles that do not adjust for channel geometry or bottom roughness, and the mixing of particles at channel nodes. These factors may have a significant effect on particle dispersion, particularly in the near-field (locations close to where the particles are released). Dispersion issues in the near-field are amplified in the central and south Delta due to the DSM2 channel grid, where nodes are very close together. Additionally, because agricultural diversions are simulated at almost every DSM2 node in the central and south Delta, simulated particle releases in this region are likely to contain errors in the estimation of agricultural entrainment that are due to the near-field dispersion issue.

- The open, shallow water areas of the Delta (e.g., Franks Tract and Mildred Island) are not well represented in the particle tracking analysis. The model assumes the regions are completely mixed environments, such that a particle that enters on one side of the flooded lake has the possibility of exiting on the other side of the lake in a short time period. In reality, these environments have complicated dynamics that effectively "trap" particles within the regions or can move them in ways that the model does not capture.

To illustrate changes in Delta circulation provided by the particle tracking simulation, results are shown for a select location – Chipps Island, which represents the western boundary of the Delta – for the 2030 level of development ~~with severe fishery restrictions~~, which includes the greatest incremental change due to the project alternatives. Additional results are provided in Appendix C7 (Vol. 4). **Table 4.3-17** shows the percentage of neutrally buoyant particles that are modeled to have traveled past Chipps Island 120 days after the particles originated at the specified release locations. The three leftmost numeric columns of each table show the average percentage of particles that pass Chipps Island for the without-project condition during Winter (December through February), Spring (March through June), and Fall (September through November). The remaining columns show the change from the without project condition in percentage of particles that have traveled past Chipps Island for each season.

In general, the percentage of particles passing Chipps Island tends to be greatest for particles originating in the western Delta or upstream on the Sacramento River. Particles originating in the central and southern Delta have a lower probability of passing Chipps Island, yet, in the without-project conditions ~~under severe fishery restrictions~~, about ~~45~~49 percent of the particles originating in the spring on Old River near Holland Tract do pass Chipps Island within 120 days after release.

Changes in particle fate between the alternatives under 2030 level of development and the Future Without Project conditions were assessed. In ~~all scenarios~~ Alternatives 1 and 4, small ~~decreases~~ increases and decreases in the range of 1 to 2 percent occur in particles passing Chipps Island~~, mostly in the range of 1 to 2 percent~~; this is consistent with the small change in Delta outflow discussed above and within the level of accuracy of the CalSim II model (See Section 4.2 [Vol. 4, Chapter 5, Section 5.3]) and relatively low when compared to seasonal variability.

~~The greatest reduction in the percent of particles passing Chipps Island occurs in the spring for particles originating on Old River at Holland Tract, with a maximum decrease of 4 to 5 percent occurring in the 2030 level of development under severe fisheries restrictions for Alternatives 1 and 2. To determine whether a 4 to 5 percent reduction would significantly affect Delta fisheries and other aquatic resources, the following additional information regarding particles originating~~

TABLE 4.3-17 (REVISED)*
LONG-TERM, SEASONAL AVERAGE PERCENT OF PARTICLES TRAVELING PAST CHIPPS ISLAND 120 DAYS AFTER PARTICLES ARE RELEASED AT DESIGNATED LOCATIONS 2030 LEVEL OF DEVELOPMENT

	Future Without Project			Change from Future Without Project								
				Alt 1			Alt 2			Alt 4		
Release Location	W	S	F	W	S	F	W	S	F	W	S	F
Sacramento River at Freeport	71	71	46	0	0	0	0	0	0	0	0	0
Sacramento River above Delta Cross Channel	66	72	42	0	0	0	0	0	0	0	0	0
Cache Slough at Sac Ship Channel	31	6	10	0	0	0	0	0	0	0	0	0
Sacramento River at Rio Vista	79	82	65	2	2	2	0	0	0	0	0	0
Sacramento River at Emmaton	84	87	75	0	0	0	0	0	0	0	0	1
Sacramento River at Collinsville	89	91	84	0	0	0	0	0	0	0	0	0
San Joaquin River at Jersey Island	75	83	63	0	0	0	0	0	0	0	0	0
San Joaquin River at mouth of Old River	48	66	28	0	0	0	0	0	0	0	0	0
Old River at Holland Tract	24	49	7	0	0	0	0	0	0	0	-1	0
Middle River at Empire Cut	12	28	0	0	0	0	0	0	0	0	0	0
San Joaquin River west of Rough and Ready Island	24	40	6	0	0	0	0	0	0	0	0	0
San Joaquin River at Mossdale	13	25	3	0	0	0	0	0	0	0	-1	0
Suisun Bay at Port Chicago	-1	-1	-3	0	0	0	0	0	0	0	0	0
Montezuma Slough	-1	0	4	0	0	0	0	0	0	0	0	0

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

~~on Old River at Holland Tract under the Future Without Project condition under severe fishery restrictions should be considered:~~

- ~~As indicated in Table 4.3-17, on average in the without project condition, 45 percent of particles released in the spring pass Chipps Island within 120 days. The variability around the average is characterized by the standard deviation. For the same time period, the standard deviation is 28 percent, indicating that a reduction of 4 to 5 percent in Alternatives 1 and 2 in comparison to the without project condition is a small fraction of the variability in the without project condition.~~
- ~~On average in the without project condition, 25 percent of particles originating on Old River at Holland Tract are entrained into agricultural diversions. In Alternatives 1 and 2, this increases to 30 percent – an increase of 5 percent, which corresponds to the reduction in particles passing Chipps Island. Alternatives 1 and 2 do not increase or otherwise alter agricultural diversions; the 5 percent increase in particles entrained in the agricultural diversions appears to be an artifact of the modeling, and does not directly result from the operation of the project alternatives.~~

Overall, the particle tracking results presented in Table 4.3-17 indicate no significant changes in particle behavior between the Future Without Project and each of the 2030 level of development

project alternatives ~~under severe fishery restrictions~~, with respect to their movement through the Delta. These results are representative of the particle tracking studies analyzed for the project alternatives (see Appendix C7 (Vol. 4) for additional results), and they support the conclusion that the project alternatives do not create adverse impacts related to changes in hydrologic conditions in terms of Delta circulation.

Qwest. Qwest is a measure of the net flow in the lower San Joaquin River near Sherman Island. Flows in this region are strongly tidal, and the net (i.e., tidally averaged) flow is generally less than 5 percent of the peak flow rate. For instance, flows in the San Joaquin River at Jersey Point generally vary tidally between +150,000 cfs and -150,000 cfs, while net flow is generally between +10,000 cfs and -5,000 cfs.

A condition described as "reverse flows" as measured by the Qwest parameter occurs when Delta diversions and agricultural demands in the south and central Delta exceed the inflow into the central Delta, such that net flow on the lower San Joaquin River is to the east. Inflow into the central Delta is composed of San Joaquin River inflow, Sacramento River flow through the Delta Cross Channel, Georgiana Slough, and Three Mile Slough, and flows from rivers along the eastern side of the Delta, including the Mokelumne, Co~~n~~sumnes and Calaveras rivers.

Eastward flow on the lower San Joaquin River is measured as a negative value of the Qwest parameter. This condition occurs frequently during dry years with low Delta inflows and high levels of export at the SWP and CVP facilities in the south Delta. Net reverse flows are particularly common during summer and fall when nearly all exported water is drawn across the Delta from the Sacramento River (DWR and Reclamation, 1994). The Qwest parameter has been hypothesized to be correlated with fish abundance in the Delta, such that negative values of Qwest could indicate greater potential for fish entrainment at Delta export facilities. Analysis of model and historical data to date has not conclusively shown such a relationship. However, the effects of project alternatives on Qwest is provided here for reference, and to more completely describe the project effects on the aquatic environment of the Delta.

As shown in **Table 4.3-18** and **Table 4.3-19,** modeled estimates of net reverse flow conditions on the lower San Joaquin River (i.e., negative values for Qwest) occur in the existing and future without project conditions primarily from July through ~~November~~September. In dry and critical water years, net reverse flows often extend into December and January (see Appendix C7 (Vol. 4) for monthly averages by water year type).

For Alternatives 1~~ and,~~ 2 and 4, the maximum incremental decreases in Qwest tend to occur in April and May, when Qwest values are generally positive and typically exceed 5,000 cfs. Thus, the effect of a decrease during that time is not significant. This is a result of the ~~focus of the project alternatives on use of surplus flows,~~coordination of the operation of the project alternatives with the modified operations of the CVP and SWP under the OCAP BOs, as described in Section 4.2 (Vol. 4, Chapter 5, Section 5.3)~~, which generally means that Qwest is positive when the use of the surplus flows (which cause the resultant Qwest decrease) occurs~~. The effect of the No-Diversion Period is evident in Alternatives 1~~ and,~~ 2 and 4 in ~~April~~March, when Qwest flows are consistently made more positive. During the periods when Qwest is reversed (from July through ~~November~~September), the Qwest

TABLE 4.3-18 (REVISED)*
LONG-TERM MONTHLY AVERAGE OF QWEST UNDER 2005 LEVEL OF DEVELOPMENT

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Existing Condition		310	139	452	5,850	7,993	7,001	9,030	7,479	3,201	-2,094	-2,350	-1,662
Change from Existing Condition	Alt 1	-22	-30	26	-66	-33	149	-151	-53	-33	-45	5	-4
	Alt 2	-26	-44	23	-78	-42	114	-154	-58	-41	-15	-3	-7
	Alt 4	-14	-4	18	-53	-22	67	-143	-41	-15	-14	7	1

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

Alt = alternative
cfs = cubic foot (feet) per second
QWEST = Parameter that represents the estimated net westward flow of the San Joaquin River at Jersey Point

TABLE 4.3-19 (REVISED)*
LONG-TERM MONTHLY AVERAGE OF QWEST UNDER 2030 LEVEL OF DEVELOPMENT

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Future Without Project		554	236	520	5,802	7,870	7,193	9,994	7,524	3,150	-1,937	-2,316	-1,631
Change from Future Without Project	Alt 1	2	-64	-2	-35	29	189	-234	-73	17	-32	1	18
	Alt 2	-3	-80	38	-37	22	150	-238	-82	9	-34	1	12
	Alt 4	-4	1	-39	-2	29	114	-215	-73	18	-16	3	14

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

Alt = alternative
cfs = cubic foot (feet) per second
QWEST = Parameter that represents the estimated net westward flow of the San Joaquin River at Jersey Point

decreases caused by project operations are small and would not cause significant changes in habitat. ~~The effects of Alternative 3 on Qwest are generally smaller than those of Alternatives 1 and 2. Similar to Alternatives 1 and 2, the greatest reductions in Qwest occur during times of ample Qwest flow. Alternative 4 has the smallest effects on Qwest of all the alternatives.~~ Results of these analyses show that the impacts of changes in hydrologic conditions affecting Qwest under each of the proposed project alternatives would be less than significant.

Old and Middle Rivers (OMR). The USFWS and NMFS OCAP BOs contain limits on allowable net reverse flow in Old and Middle rivers. These limits are included in the updated modeling used for this analysis, as described in Section 5.3. The reference net flow in Old and Middle Rivers is normally defined to be in the northerly direction, i.e. towards San Francisco Bay. A net reverse flow condition can occur within Old and Middle Rivers as the rate of water exported at the SWP and CVP export facilities exceeds tidal and downstream flows within the central region of the Delta. This condition would be represented by a negative value of net flow in Old and Middle rivers. There have been concerns regarding the effects of net reverse flows on fish populations and their food supply, as well as the effects of net reverse flows on delta smelt salvage (DWR and Reclamation, 1994). Net reverse flows in Old and Middle rivers, resulting from low San Joaquin River inflows and increased exports at the SWP and CVP facilities in the south Delta, have been identified as a potential cause of increased delta smelt take at the SWP and CVP fish facilities (Simi and Ruhl,

2005; Ruhl et al., 2006). Analyses of the relationship between the magnitude of net reverse flows in Old and Middle Rivers and salvage of adult delta smelt in the winter shows a substantial increase in salvage as net reverse flows exceed about -5,000 cfs (meaning the net flow is more negative than -5,000 cfs). Concerns regarding net reverse flows in Old and Middle River have also focused on planktonic egg and larval stages of striped bass, splittail, and on chinook salmon smolts, in addition to delta smelt, and while these species do not spawn to a significant extent in the southern Delta, eggs and larvae may be transported into the area. As discussed previously, these early life stages are generally entrained by the CVP and SWP export pumps, since they are too small to be effectively screened.

The most biologically sensitive period when the potential effects of net reverse flows could affect delta smelt, chinook salmon, and many other species extends from the late winter through early summer (December through June). Generally, increases in net flow during this time period may be considered beneficial while decreases to net flow indicate potential adverse effects. However, the extent of the benefit or adverse effect depends on the magnitude of the net flow. For instance, as mentioned above, salvage of delta smelt at the export facilities increases substantially as net reverse flows in Old and Middle River exceed -5,000 cfs. Therefore, an incremental decrease (relative to the without project condition) in net flow when net flow in the without project condition is near -5,000 cfs could be potentially adverse, while an incremental increase could be beneficial. On the other hand, if net flow in the without project condition is greater (meaning more northward) than -3,000 cfs, an incremental change may not have a significant effect (either beneficial or adverse).

~~Modeling for the project alternatives includes constraints on export diversions at the SWP Banks and CVP Jones pumping facilities to meet reverse flow requirements in the Old and Middle rivers that are similar to those specified in the *NRDC vs. Kempthorne* interim remedies order. Since the Common Assumptions effort has not yet developed a standard constraint equation for Old and Middle River flows, the Common Assumptions version of the CalSim II model was revised to include scenarios for moderate and severe fishery restrictions in the Delta (see Appendix C-3); net flow in Old and Middle rivers in CalSim II was estimated using the flow in the San Joaquin River at Vernalis, pumping at the SWP Banks and CVP Jones pumping facilities, and the portion of the pumping at the Los Vaqueros intakes that had been shifted from SWP and CVP facilities for the South Bay water agencies (Alternative 1 and Alternative 2). The constraints on export diversions at SWP Banks and CVP Jones pumping facilities to meet Old and Middle River flow requirements did not include the portion of pumping at the Los Vaqueros intakes that is used to meet CCWD demand and other project benefits (including Delta Supply Restoration in Alternative 1 and Dedicated Storage for Environmental Water in Alternative 2), either through direct diversion or diversion to storage.~~

To determine the effects of all project diversions, the DSM2 Delta hydrodynamics model calculates flows in Old and Middle Rivers based upon all simulated boundary flows and diversions, including all diversions at the Los Vaqueros intakes. ~~To provide context with respect to operational restrictions implemented by the *NRDC vs. Kempthorne* interim remedies order to protect delta smelt as of December 2007,~~ Old and Middle River net flow was calculated ~~using~~ from simulated tidal flows (as determined by DSM2 modeling) on Old and Middle ~~R~~rivers near the locations regulated in the OCAP BOs ~~referred to within the court documents~~. **Table 4.3-20** and **Table 4.3-21** presents a

TABLE 4.3-20*
LONG-TERM MONTHLY AVERAGE OF OLD AND MIDDLE RIVER NET FLOW USING DELTA FLOW MODEL (DSM2) UNDER 2005 LEVEL OF DEVELOPMENT

Old and Middle River Net Flow
Long-term Monthly Average of Tidally Filtered Simulated Values (cfs)
2005 Level of Development

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Existing Condition		-5,409	-5,312	-5,129	-3,288	-2,543	-623	1,110	651	-3,023	-8,672	-7,559	-6,752
Change from Existing Condition	Alt 1	-25	-70	29	-8	16	116	-79	-15	27	74	20	-64
	Alt 2	-44	-96	25	-40	2	86	-93	-42	19	73	21	-77
	Alt 4	54	-47	90	15	17	19	-23	-8	108	96	-31	-55

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

Alt = alternative
cfs = cubic foot (feet) per second

TABLE 4.3-21*
LONG-TERM MONTHLY AVERAGE OF OLD AND MIDDLE RIVER NET FLOW USING DELTA FLOW MODEL (DSM2) UNDER 2030 LEVEL OF DEVELOPMENT

Old and Middle River Net Flow
Long-term Monthly Average of Tidally Filtered Simulated Values (cfs)
2030 Level of Development

		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Future Without Project		-5,169	-5,037	-5,048	-3,142	-2,367	-461	1,402	677	-2,995	-8,643	-7,549	-6,923
Change from Future Without Project	Alt 1	-59	-67	-30	-47	-7	101	-71	-7	-1	-53	-7	-22
	Alt 2	-80	-85	-33	-53	-16	71	-86	-44	-11	-68	-8	-36
	Alt 4	-10	-2	8	6	3	0	-2	-11	-2	-19	-1	1

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

Alt = alternative
cfs = cubic foot (feet) per second

summary of the results for the 2005 and 2030 level of development, respectively, with additional results presented in Appendix C7 (Vol. 4). Incremental changes to Old and Middle River net flow are reflective of modifications in the diversions at Delta water intakes, or changes in releases from upstream reservoirs, such as Shasta, Folsom and Oroville.

Analysis of Old and Middle River net flow indicates that the project alternatives could cause small positive and negative changes in the net flow. Under terms of the OCAP BOs, operational restrictions may be imposed from December through June to meet requirements for net OMR flow. Decreases in net OMR flow during this period would have the potential to cause fish entrainment impacts; increases in net OMR flow from December to June or changes in net OMR flow outside of the December through June period are assumed to not have effects on fish entrainment. ~~The changes attributable to the project alternatives are generally very small, rarely greater than 200 cfs. This level of change to net flow is below the level that would cause direct impacts to fish in the rivers. This conclusion is supported by comparing the resulting change in velocity in Old River from a 200 cfs change in Old and Middle River flow to the maximum approach velocity of 0.2 fps that is conservatively required at screened intakes in the Delta to avoid entrainment or impingement of~~

~~delta smelt. Assuming a cross sectional area in Old River of about 10,000 square feet, a change in velocity in Old River from a change in Old River flow of 200 cfs would be conservatively estimated at 0.02 fps, or about one tenth of the velocity that is prescribed at intakes to ensure delta smelt protection.~~

Updated operations assumptions were used in this modeling analysis, including operational coordination between CCWD, Reclamation and DWR to improve overall Delta fish protection, as described in the updated Section 4.2(Vol. 4, Section 5.3). The coordination between CCWD, CVP and SWP includes shifting filling of Los Vaqueros Reservoir into April and May, when the CVP and SWP are operating the Delta such that net OMR flow is generally positive. The coordinated operation between CCWD, Reclamation and DWR also assumes that filling of Los Vaqueros Reservoir would be limited by the conditions of the Los Vaqueros Reservoir no fill period during February, March and June, when OMR net flow regulations are typically limiting CVP and SWP water exports from the Delta. Reductions in OMR net flow in December and January are small, and are concentrated in wetter years, as indicated in the tables presented in Appendix C7 (Vol. 4), which will reduce any possible effect. None of the changes in OMR net flow are large enough to result in adverse impacts on the Delta fishery or habitat.

Alternative 1

The analysis of incremental changes in flows upstream of the Delta, including total Delta inflow, Sacramento River at Freeport, and San Joaquin River at Vernalis, in Alternative 1 relative to without project conditions, indicates a less than significant effect on the Delta fishery. Similarly, the analysis of changes to parameters currently regulated by SWRCB D-1641 for fish and wildlife beneficial use, including net Delta outflow, the location of X2, and the E/I ratio, indicates a less than significant effect on the Delta fishery. Additionally, analysis of changes in Delta circulation as indicated by particle tracking analysis, Qwest, and net flow in Old and Middle rivers, indicates a less than significant effect on the Delta fishery.

Because each of the analyses performed to evaluate indirect effects of project operations indicated a less than significant impact on the Delta fishery, the facilities and operations under Alternative 1 would not result in significant changes in Delta hydrologic conditions that affect Delta fish populations or quality and quantity of aquatic habitat within the Sacramento-San Joaquin River system, including the Delta.

Alternative 2

The analysis of incremental changes in flows upstream of the Delta, including total Delta inflow, Sacramento River at Freeport, and San Joaquin River at Vernalis, in Alternative 2 relative to without project conditions, indicates a less than significant effect on the Delta fishery. Similarly, the analysis of changes to parameters currently regulated by SWRCB D-1641 for fish and wildlife beneficial use, including net Delta outflow, the location of X2, and the E/I ratio, indicates a less than significant effect on the Delta fishery. Additionally, analysis of changes in Delta circulation as indicated by particle tracking analysis, Qwest, and net flow in Old and Middle rivers, indicates a less than significant effect on the Delta fishery.

Because each of the analyses performed to evaluate indirect effects of project operations indicated a less than significant impact on the Delta fishery, the facilities and operations under Alternative 2 will would not result in significant changes in Delta hydrologic conditions that affect Delta fish populations or quality and quantity of aquatic habitat within the Sacramento-San Joaquin River system, including the Delta.

~~*Alternative 3*~~

~~The analysis of incremental changes in flows upstream of the Delta, including total Delta inflow, Sacramento River at Freeport, and San Joaquin River at Vernalis, in Alternative 3 relative to without project conditions, indicates a less than significant effect on the Delta fishery. Similarly, the analysis of changes to parameters currently regulated by SWRCB D-1641 for fish and wildlife beneficial use, including net Delta outflow, the location of X2, and the E/I ratio, indicates a less than significant effect on the Delta fishery. Additionally, analysis of changes in Delta circulation as indicated by particle tracking analysis, Qwest, and net flow in Old and Middle rivers, indicates a less than significant effect on the Delta fishery.~~

~~Because each of the analyses performed to evaluate indirect effects of project operations indicated a less than significant impact on the Delta fishery, the facilities and operations under Alternative 3 would not result in significant changes in Delta hydrologic conditions that affect Delta fish populations or quality and quantity of aquatic habitat within the Sacramento-San Joaquin River system, including the Delta.~~

Alternative 4

The analysis of incremental changes in flows upstream of the Delta, including total Delta inflow, Sacramento River at Freeport, and San Joaquin River at Vernalis, in Alternative 4 relative to without project conditions, indicates a less than significant effect on the Delta fishery. Similarly, the analysis of changes to parameters currently regulated by SWRCB D-1641 for fish and wildlife beneficial use, including net Delta outflow, the location of X2, and the E/I ratio, indicates a less than significant effect on the Delta fishery. Additionally, analysis of changes in Delta circulation as indicated by particle tracking analysis, Qwest, and net flow in Old and Middle rivers, indicates a less than significant effect on the Delta fishery.

Because each of the analyses performed to evaluate indirect effects of project operations indicated a less than significant impact on the Delta fishery, the facilities and operations under Alternative 4 would not result in significant changes in Delta hydrologic conditions that affect Delta fish populations or quality and quantity of aquatic habitat within the Sacramento-San Joaquin River system, including the Delta.

The analysis performed for the Draft EIS/EIR found no significant changes that would adversely affect Delta hydrologic conditions that in turn affect Delta fish populations or quality and quantity of aquatic habitat within the Sacramento-San Joaquin River system, including the Delta. When compared to the analysis performed for the Draft EIS/EIR, the conclusion presented above for the updated modeling analysis regarding potential impacts of Alternatives 1, 2 and 4 on Delta hydrologic conditions that affect Delta fish populations or habitat has not changed.

Mitigation: None required.

Impact 4.3.7: Operation of the new screened intake, or changes to diversions at existing intakes, could affect direct entrainment or impingement of fish. (Beneficial for Alternatives 1 and 2; ~~Significant and Unavoidable for Alternative 3;~~ Less than Significant for Alternative 4)

~~Three~~Two independent types of analyses were used to evaluate changes in the potential risk of Delta fish entrainment for each of the project alternatives, which included:

- Indices for potential entrainment based on average ~~fish~~ density of adult salmonid species near Delta water intakes
- Particle tracking analysis (using the DSM2 PTM tool) to assess potential entrainment for larval fish throughout the Delta, including an evaluation of general particle fate 120 days after release from selected locations; and a determination of a higher resolution Potential Entrainment Index (PEI) that combined particle tracking results with historical CDFG survey data for delta smelt, longfin smelt and striped bass ~~to assess potential entrainment for larval fish~~
- ~~Indirect estimates of potential entrainment based on a flow index correlated with delta smelt salvage at the export facilities~~

These analyses used the same hydrologic modeling results used in evaluation of Impact 4.3.6, which describe water diversion operations over a range of environmental and hydrologic conditions (see Appendix C (Vol. 4) for full details on the modeling methodology and results). The seasonal timing and magnitude of water diversions from the Delta may affect aquatic species directly through entrainment or impingement. Hydrologic and hydrodynamic modeling results provide the technical foundation for assessing adverse effects of diversion operations on fish species and their habitats within the Bay-Delta estuary. The assessment relies on a comparative analysis of operational and resulting environmental conditions within the estuary under without-project operations and with the project alternatives (including both 2005 and 2030 levels of development).

Each of the methods presented below has specific assumptions and limitations; therefore, ~~all~~ both methods should be examined when evaluating impacts and benefits. Central Valley steelhead and chinook salmon species, which include winter run, spring run, fall run, and late fall run salmon, were analyzed using the entrainment index method based on fish salvage data. Delta smelt, longfin smelt, and striped bass were analyzed using the particle tracking/PEI analysis, due to the availability of spatial and temporal data for the larval fish. Effects on green sturgeon were evaluated using the results of the particle fate analysis. Detailed discussion of the methodology for each analysis and comprehensive results are contained in Appendix C7 (Vol. 4). Summary tables of key parameters are provided below for discussion.

Entrainment Indices Based on Average Fish Density Near Delta Water Intakes

Fish entrainment indices were developed to estimate changes in entrainment potential based on comparisons of the location, timing, volume of modeled diversions at Delta intakes (when, where,

and how much pumping occurs) and ~~observed spatial and~~ temporal patterns of fish density observed at the salvage stations (when, where, and how many fish are present). The analysis used to produce the indices combined the use of intake diversion values based on hydrologic modeling with fish density estimates derived from ~~actual regional fishery surveys that CDFG conducted within the Delta and Suisun Bay, or~~ the results of fish salvage monitoring at the SWP and CVP export facilities. The presence and effectiveness of positive barrier fish screens was also incorporated into the analysis. As described in the updated Section 4.2 (Vol. 4, Chapter 5, Section 5.3), a positive barrier fish screen is not assumed to be operated in the Existing Conditions, but is assumed to be operated in the project alternatives for the existing level of development. The Future Without Project and all project alternatives in the future level of development were assumed to include operation of a positive barrier fish screen at the Rock Slough Intake.

The analysis produced potential entrainment indices for ~~delta smelt, longfin smelt, striped bass, and~~ Central Valley steelhead, winter-run, spring-run, fall-run, and late fall-run chinook salmon for water intakes related to the Los Vaqueros Reservoir Expansion Project, including the Old River, Rock Slough and AIP intakes, the new Delta Intake, the SWP Banks Pumping Plant and the CVP Jones Pumping Plant. Flows used in fish entrainment analyses for Alternatives 1 and 2 include CCWD direct diversions, filling of Los Vaqueros Reservoir, and Delta diversions to the South Bay Agencies, which include diversions made through Los Vaqueros facilities and diversions made at CVP and SWP Delta facilities. ~~Flows used for the fish entrainment analyses in Alternative 3 include CCWD direct diversions, filling of Los Vaqueros Reservoir, and diversions made at Jones pumping plant from July through November to convey additional environmental water supply through the Delta to San Joaquin Valley refuges.~~ Flows used for the fish entrainment analyses in Alternative 4 include CCWD diversions and filling of Los Vaqueros Reservoir.

The total diversions associated with each project alternative are used in this entrainment analysis, including diversions for CCWD and diversions at the CVP and SWP export facilities that occur in the without project conditions and in each of the project alternatives. This is done to ensure that the effects of each project alternative are analyzed, including minor changes in timing or location of diversions for CCWD. This method allows the total entrainment index calculated for each of the project alternatives to be compared with the entrainment index calculated for the without project condition. The indices are calculated for each alternative to represent the combined entrainment potential for all intakes. For a detailed description of the methods and data used to develop the entrainment indices see Appendix C7 (Vol. 4).

The index values are not intended to specifically represent the actual number of fish entrained, as they are based on average fish densities calculated from the results of many surveys. As such, these index values are used for relative comparison of the effects of project alternatives. For example, a project that reduces the entrainment index value for a species of fish relative to the without project index value (reflected in a negative entrainment index) is interpreted to be creating conditions that result in less entrainment of that species. **Table 4.3-22** presents the average percent change in fish entrainment from the without project conditions (Existing Condition for 2005 level of development and Future Without Project for the 2030 level of development) for each of the project alternatives for each of these species. For additional detail, see Appendix C7 (Vol. 4).

TABLE 4.3-22 (REVISED)
PERCENT CHANGE IN ENTRAINMENT INDEX
FROM THE WITHOUT PROJECT CONDITIONS

Alternative	Winter Run Salmon	Spring Run Salmon	Fall Run Salmon	Late Fall Run Salmon	Central Valley Steelhead
2005 Level of Development					
Alt 1	0.0%	-10%	-6.5%	-4.2%	-3.6%
Alt 2	0.0%	-10%	-6.5%	-4.2%	-3.6%
Alt 4	0.0%	-3.3%	-1.6%	0.0%	-1.2%
2030 Level of Development					
Alt 1	0.0%	-6.5%	-6.5%	-4.2%	-2.4%
Alt 2	0.0%	-6.5%	-6.5%	-4.2%	-2.4%
Alt 4	0.0%	0.0%	0.0%	0.0%	0.0%

The values presented in Table 4.3-22 indicate that a net reduction in potential fish entrainment, which represents a fishery benefit, is created in Alternatives 1~~,~~ and 2~~, and 4~~. In Alternatives 1 and 2, this benefit is largely the result of improved fish screening caused by shifting water deliveries to South Bay water agencies onto the expanded Los Vaqueros Reservoir system. For Alternative 4, the benefit is smaller, and is due mainly to an increase in the years that the No-Diversion Period would apply relative to without project conditions, because the increased storage available would reduce the number of exemptions (due to low reservoir conditions) from the No-Diversion Period that would occur, particularly in dry periods.

~~Alternative 3 actually increases the potential for fish entrainment, largely due to the increase in pumping at Los Vaqueros intakes in fish-sensitive months in this alternative which are not offset by a corresponding reduction in pumping at less efficiently screened SWP or CVP intakes, as in Alternatives 1 or 2. To reduce or avoid these impacts, the operating assumptions could be revised to limit diversions at times when Delta fish could be impacted. Any changes to the operational assumptions would require a reassessment of the benefits and potential impacts of Alternative 3.~~

Particle Tracking Analysis to Assess Potential Entrainment of Larval Fish

The PTM tool described in the analysis of Impact 4.3.6 was also used to evaluate potential entrainment for larval fish. As indicated in the discussion of Impact 4.3.6, PTM studies estimate the influence of modeled Delta hydrodynamics on neutrally buoyant particles. As such, the studies are only appropriate to represent the movement of organic material and organisms that would behave as passively drifting particles. The particles are not considered to reflect movements of juvenile or adult fish within the Delta. Entrainment of juvenile and adult fish is evaluated with the Entrainment Index method described in the previous section~~, above, and the Flow Surrogate method for delta smelt salvage, described below~~. The particle tracking analysis used to assess potential entrainment of larval fish consists of one evaluation of particle fate after 120 days, and another evaluation over a 30 day timeframe in which particle tracking results are weighted by historical survey information to take into account spatial and temporal variability of specific sensitive species.

Because the PTM tool does not account for fish screens, the results have been post-processed to incorporate the efficiency of positive barrier fish screens at the Rock Slough (except in the Existing Condition), Old River and AIP intakes and the new Delta Intake. The long term~~is~~ analysis assumes that larvae are 5 mm in length (the approximate size of delta smelt when they hatch) and do not grow during the ~~120-day~~ simulation periods, which results in a conservative application of a relatively low screen efficiency, independent of growth since release (or "hatch") in the Delta. This method determines what fraction of larvae will be excluded by the positive barrier fish screens. ~~, but does not determine t~~The ultimate fate of the ~~larvae~~particles considered ~~that are protected~~excluded by the screens is accounted for in post processing by determining the proportional re-entrainment at other diversions based on the results of particle insertions near the screened intakes. ~~, which is a limitation of the PTM tool.~~

~~The particle tracking analysis is not specific to any species, and therefore does not consider fish distribution information. The results are summarized seasonally to allow interpretation for seasonal variability of fish movement.~~ A more detailed description of PTM methodology and limitations is provided in Appendix C7 (Vol. 4).

The results of the 120 day analysis are shown in **Table 4.3-23**, which presents ~~shows~~ the percentage of neutrally buoyant particles that are potentially entrained at any of the relevant water intakes, including the Rock Slough, Old River, ~~Rock Slough~~ and AIP intakes, the new Delta Intake, the SWP Banks Pumping Plant and the CVP Jones Pumping Plant, and the combined set of agricultural intakes, within 120 days after the particles originated at the specified release locations. The three leftmost numeric columns of each table show the average percentage of particles that are potentially entrained for the without project condition during Winter (December through February), Spring (March through June), and Fall (September through November). The remaining columns indicated by each project alternative, show the change from the without project condition in percentage of particles that are potentially entrained for each season. Results from the future (2030) level of development ~~with severe fishery restrictions~~ are shown within this summary because the greatest incremental change due to the project Alternatives occurs under this set of conditions. Additional results are provided in Appendix C7 (Vol. 4).

~~In Alternatives 1 and 2, a reduction in the percentage of particles entrained generally reflects a benefit of reduced potential for fish entrainment in these alternatives. The benefits are related to the relocation of some South Bay water agencies' Delta diversions to the expanded Los Vaqueros system, which provides improved fish screening relative to the SWP and CVP facilities. The benefit for larval fish as determined by PTM is not as substantial as the reductions for individual species evaluated with the fish indices discussed above because the PTM analysis assumes all larvae hatch at 5mm in length and do not grow after hatching. Because positive barrier fish screens are less than 100% efficient for the smaller size classes (e.g., planktonic larvae less than about 15 mm), this assumption results in a conservative estimate for the number of larval fish protected by positive barrier fish screens.~~

TABLE 4.3-23 (REVISED)*
LONG-TERM, SEASONAL AVERAGE PERCENT OF PARTICLES POTENTIALLY ENTRAINED 120 DAYS AFTER PARTICLES ARE RELEASED AT DESIGNATED LOCATIONS 2030 LEVEL OF DEVELOPMENT

	Future Without Project			Change from Future Without Project								
				Alt 1			Alt 2			Alt 4		
Release Location	W	S	F	W	S	F	W	S	F	W	S	F
Sacramento River at Freeport	21	22	44	0	0	0	0	0	0	0	0	0
Sacramento River above Delta Cross Channel	27	21	52	0	0	0	0	0	0	0	0	0
Cache Slough at Sac Ship Channel	18	64	33	0	0	0	0	0	0	0	0	0
Sacramento River at Rio Vista	12	10	25	-1	-2	-1	0	0	0	0	0	0
Sacramento River at Emmaton	6	5	14	0	0	0	0	0	0	0	0	0
Sacramento River at Collinsville	2	2	5	0	0	0	0	0	0	0	0	0
San Joaquin River at Jersey Island	16	10	28	0	0	0	0	0	0	0	0	0
San Joaquin River at mouth of Old River	47	28	67	0	0	0	0	0	0	0	0	0
Old River at Holland Tract	73	47	92	0	0	0	0	0	0	0	1	0
Middle River at Empire Cut	88	71	100	0	-1	0	0	-1	0	0	1	0
San Joaquin River west of Rough and Ready Island	72	57	92	-1	-1	0	0	-1	0	-1	0	0
San Joaquin River at Mossdale	84	73	95	0	0	0	0	0	0	0	1	0
Suisun Bay at Port Chicago	0	0	1	0	0	0	0	0	0	0	0	0
Montezuma Slough	0	0	0	0	0	0	0	0	0	0	0	0

* Modeling results presented in this table have been updated based on analysis for the Final EIS/EIR.

PTM results for ~~Alternatives 3 and 4 show~~ all alternatives show no significant change from the without project condition, as all changes remain below 2 percent, which is within the noise of the CalSim II model (see Section 4.2 [Vol. 4, Chapter 5, Section 5.3]) and also relatively low when compared to the seasonal variability.

To incorporate the location and timing of species present within the Delta, an additional analysis was applied using PTM results during the March-June period, when larval stage fish are most vulnerable due to their presence in the Delta, and when there is a substantial record of fish survey data available. The method used was adapted from the Potential Entrainment Index (PEI) method recently developed by DWR to assess effects of operations on larval stage entrainment based on CDFG 20mm survey data (Nam, 2009). To implement the PEI method as used for the analysis in this Final EIS/EIR, particle insertions were made at points associated with 20mm survey locations. The particles were then weighted according to historical 20mm survey data for delta smelt, longfin smelt and striped bass. After 30 days (the assumed growth period after which representation by neutrally buoyant passive particles is no longer appropriate), the cumulative entrainment fate of the weighted particles was resolved by summing across all insertion points for each intake. The effectiveness of positive barrier fish screens at the CCWD intakes was incorporated in post processing, and an approximate determination of the fate of screened particles was made as described above for the indirect effects analysis. Results are combined for the March through

June time period, and normalized by the total survey population to obtain a final PEI that represents the percentage of population entrained for a given scenario. The PEI provides a metric that accounts for spatial distribution and timing of specific sensitive species within the estuary, and allows the particle tracking results to be reviewed in an appropriate biological context. Additional detail on the PEI method and results is available in Appendix C7 (Vol. 4).

The results of the PEI analysis for delta smelt, longfin smelt and striped bass are shown in **Table 4.3-24**. The PEI shown below reflects the combined entrainment occurring at the Rock Slough, Old River and AIP Intakes, the New Delta Intake, SWP Banks Pumping Plant and the CVP Jones Pumping Plant.

TABLE 4.3-24
CHANGES IN POTENTIAL ENTRAINMENT INDEX (PEI) FOR MARCH-JUNE

		Change in PEI from Base		
Species	**Existing Condition**	**Alt1**	**Alt2**	**Alt4**
2005 Level of Development				
Delta Smelt	2.2%	-0.3%	-0.3%	-0.3%
Longfin Smelt	0.3%	0.0%	0.0%	0.0%
Striped Bass	4.3%	-0.3%	-0.3%	-0.4%
		Change in PEI from Base		
Species	**Future Without Project**	**Alt1**	**Alt2**	**Alt4**
2030 Level of Development				
Delta Smelt	1.8%	0.0%	0.0%	0.0%
Longfin Smelt	0.3%	0.0%	0.0%	0.0%
Striped Bass	4.1%	-0.1%	-0.1%	0.0%

In both the 2005 and 2030 level of development, the PEI in the Existing Condition and the Future Without Project for delta smelt is well below the 10% level that has been deemed protective of the delta smelt population in the recent USFWS BO (USFWS, 2008).

~~**Delta Flow Surrogate for Delta Smelt Salvage at Export Facilities**~~

~~A flow surrogate for delta smelt salvage at the SWP and CVP export facilities was used as another metric for evaluating the potential effects of operations under each of the project alternatives on Delta fish species of concern. Field data show that delta smelt salvage at the SWP and CVP export facilities is related to export flow levels and San Joaquin River flow at Vernalis during the winter months. Consequently, a weighted sum of export pumping and San Joaquin flows (total exports plus one half the San Joaquin River flow at Vernalis) was found to be a valid surrogate measure for delta smelt salvaged at the SWP Banks and CVP Jones Pumping Plants, as described in Appendix C-7.~~

~~**Table 4.3-24** presents the long-term monthly average values of the flow surrogate for fish salvage at the export facilities for each of the project alternatives from December through June. This time~~

TABLE 4.3-24
LONG-TERM MONTHLY AVERAGE AND LONG-TERM MONTHLY AVERAGE CHANGE OF FLOW SURROGATE FOR FISH SALVAGE

	December		January		February		March		April		May		June	
	Long-term Monthly Average	Average Change from Without Project Condition	Long-term Monthly Average	Average Change from Without Project Condition	Long-term Monthly Average	Average Change from Without Project Condition	Long-term Monthly Average	Average Change from Without Project Condition	Long-term Monthly Average	Average Change from Without Project Condition	Long-term Monthly Average	Average Change from Without Project Condition	Long-term Monthly Average	Average Change from Without Project Condition
2005 LEVEL OF DEVELOPMENT														
Moderate Fisheries Restrictions														
Existing Conditions	6900	--	5200	--	3500	--	2600	--	180	--	440	--	2100	--
Alternative 1	6600	-4%	4900	-5%	3200	-9%	2300	-14%	21	-89%	240	-45%	1800	-14%
Alternative 2	6600	-4%	5000	-4%	3200	-8%	2300	-12%	23	-89%	250	-43%	1800	-13%
Alternative 3	6900	1%	5400	3%	3500	1%	2800	6%	200	12%	440	0%	2100	0%
Alternative 4	6900	0%	5300	1%	3500	0%	2700	2%	190	4%	440	0%	2100	0%
Severe Fisheries Restrictions														
Existing Conditions	6800	--	5200	--	2800	--	740	--	-360	--	-170	--	270	--
Alternative 1	6500	-4%	4900	-6%	2500	-9%	380	-50%	-510	-42%	-350	-106%	34	-85%
Alternative 2	6500	-4%	4800	-7%	2500	-9%	390	-49%	-500	-42%	-350	-100%	47	-81%
Alternative 3	6900	1%	5300	2%	2700	0%	770	3%	-350	4%	-170	2%	270	0%
Alternative 4	6800	0%	5300	1%	2800	0%	750	0%	-370	-3%	-170	0%	270	0%
2030 LEVEL OF DEVELOPMENT														
Moderate Fisheries Restrictions														
Future Without Project	6900	--	5400	--	3700	--	2700	--	240	--	480	--	2100	--
Alternative 1	6600	-4%	5000	-7%	3400	-6%	2300	-12%	110	-54%	300	-38%	1900	-13%
Alternative 2	6600	-4%	5000	-7%	3400	-7%	2400	-11%	120	-50%	310	-35%	1900	-13%
Alternative 3	6900	1%	5400	1%	3800	2%	2900	7%	270	13%	490	1%	2100	0%
Alternative 4	6900	0%	5300	-1%	3700	0%	2700	1%	240	-1%	480	0%	2100	0%
Severe Fisheries Restrictions														
Future Without Project	6700	--	5300	--	2700	--	710	--	-340	--	-150	--	280	--
Alternative 1	6400	-5%	4900	-7%	2400	-8%	380	-46%	-460	-35%	-320	-113%	65	-79%
Alternative 2	6400	-4%	4900	-7%	2500	-7%	390	-45%	-460	-35%	-310	-107%	72	-75%
Alternative 3	6800	1%	5300	0%	2800	5%	870	21%	-310	11%	-160	-6%	280	1%
Alternative 4	6700	0%	5200	-2%	2700	1%	720	1%	-340	0%	-150	0%	280	1%

% = percent

~~period is presented because it captures the period in which delta smelt are typically susceptible to entrainment at the export facilities. This time period is also when the fishery restrictions included in the Existing Condition and Future Without Project are assumed to be implemented at the Banks and Jones facilities (see Appendix C-3).~~

~~As shown in Table 4.3-24, the flow surrogate values tend to be generally highest in December (within the months evaluated), and generally decrease until April, and then increase slightly in May and June. This pattern reflects the fishery restrictions that are imposed on the operation of the Banks and Jones facilities, in which export limitations are typically imposed beginning in December or January, and then generally become more restrictive in the spring. The lowest values in April and May also reflect changes in export rates under the VAMP operations, which can further decrease export pumping at Banks and Jones and increase San Joaquin River flows. The flow surrogate values are also generally lower in the severe restrictions cases than in the moderate restrictions cases, reflecting the difference in maximum allowed export levels under each set of assumptions. Alternatives 1 and 2 generally reduce the value of the flow surrogate, reflecting a fishery benefit due to potential reduction in delta smelt salvage at the SWP and CVP export facilities. This benefit is due to the reduction of diversions at the SWP and CVP Delta export facilities made possible by shifting South Bay water agencies' Delta diversions to the expanded Los Vaqueros system, through improved fish screening facilities. Alternatives 3 and 4 generally have less of an effect on the flow surrogate, as they do not shift any of the South Bay water agency diversions away from the SWP and CVP export facilities. Small changes in the average surrogate values between Alternatives 3 and 4 and the without project conditions reflect the threshold sensitivity of the CalSim II model (discussed in Section 4.2).~~

Alternative 1

Alternative 1 shows ~~significant~~ reductions in estimated potential entrainment ~~across all species using the fish entrainment index analysis, which is based on the fish monitoring data near Delta water intakes~~ for salmonid species, based on the salmonid salvage data collected at the CVP and SWP export facilities. Additionally, for larval fish originating within the ~~central~~ Delta, particle tracking analysis indicates ~~a reduction in potential entrainment; for larval fish originating in other areas of the Delta,~~ Alternative 1 would not cause impacts related to direct entrainment, and ~~would not significantly affect entrainment~~ could offer benefits. ~~Finally, using the flow surrogate analysis, Alternative 1 would generally reduce delta smelt salvage at the export facilities.~~

Upon comprehensive review, the individual analyses of direct entrainment for Alternative 1 indicate a net fishery benefit. For salmonids, ~~T~~this benefit is largely due to the fact that a portion of South Bay water agencies' Delta diversions would be shifted to the Los Vaqueros system, which provides improved fish screening relative to the SWP and CVP export facilities. The benefit could conceivably extend to adult stages of other species, such as delta smelt. As analyzed in this EIS/EIR, this reduction takes place at the same time as the shift to Los Vaqueros Reservoir system intakes~~, but~~ the timing of the reduction in potential entrainment could be adaptively managed to further benefit fish as described in Chapter 3.

Alternative 2

Similar to Alternative 1, Alternative 2 shows ~~significant~~ reductions in estimated potential net entrainment losses across the salmonid ~~all~~ species using~~for~~ the entrainment index analysis. For larval fish originating in the Delta, particle tracking analysis confirms that Alternative 2 would not cause impacts related to direct entrainment, and could offer benefits. ~~a reduction in potential entrainment of larval fish originating in the Central Delta using the particle tracking analysis, no effect on larval fish originating at other areas of the Delta using the particle tracking analysis, and a reduction in potential delta smelt entrainment at the SWP Banks and CVP Jones export facilities from the flow surrogate analysis.~~

As with Alternative 1, the benefit to salmonids in Alternative 2 is largely due to shifting a portion of South Bay water agencies' Delta diversions to the Los Vaqueros system, which provides improved fish screening relative to the SWP and CVP export facilities; this operation could be adaptively managed to further benefit fish.

As with Alternative 1, a comprehensive review of the individual analyses of direct entrainment for Alternative 2 indicates a net fishery benefit.

~~*Alternative 3*~~

~~Alternative 3 shows a significant increase in potential entrainment losses compared to without project conditions using the entrainment index method, which is based on the fish monitoring data near Delta water intakes. This is a significant impact, which is caused by the operating rules assumed for these facilities in the hydrologic modeling.~~

~~Although the other two methods used to evaluate potential entrainment (PTM and flow surrogate) do not indicate conclusive changes to the risk of entrainment, the significant impacts illustrated with the entrainment index method are substantial. To reduce or avoid these impacts, the operating assumptions could be revised to limit diversions at times when Delta fish could be impacted. Any changes to the operational assumptions would require a reassessment of the benefits and potential impacts of Alternative 3. Therefore, Alternative 3 is determined to have a significant and unavoidable impact.~~

Alternative 4

Alternative 4 generally provides no change or, under 2005 level of development conditions, slight reductions in estimated potential entrainment using the entrainment index based on fish salvage monitoring ~~near the water intakes~~. Alternative 4 effectively increases available storage in Los Vaqueros Reservoir, so it reduces the number of instances in which the No Diversion Period is waived due to insufficient stored water in Los Vaqueros Reservoir.

~~As evident in~~Review of the particle tracking results~~,~~ indicates that Alternative 4 does not ~~produce a significant change in~~ cause impacts related to potential entrainment of larval fish at Delta water intakes, and may provide some benefits.

The analysis performed for the Draft EIS/EIR found no significant changes that would adversely affect the direct entrainment or impingement of fish. When compared to the analysis preformed for the Draft EIS/EIR, the conclusion presented above for the updated modeling analysis regarding potential impacts of Alternatives 2 and 4 on entrainment or impingement of fish has not changed.

~~The effects of Alternative 4 on the flow surrogate for delta smelt salvage are generally neutral. Small changes in the average surrogate values between this alternative and the without project condition reflect the threshold sensitivity of the CalSim II model (discussed in Section 4.2), and do not indicate any actual difference in Delta circulation or impact on Delta fisheries. The impacts of Alternative 4 would be less than significant.~~

Mitigation: None required for Alternatives 1, 2 and 4.~~ Alternative 3 has significant and unavoidable impacts.~~

Impact 4.3.8: Fish screen maintenance activities would not significantly increase fish entrainment at the new Delta Intake or the expanded Old River Intake. (Less than Significant for Alternatives 1, 2 and 3; No Impact for Alternative 4)

Alternative 1

As part of intake operation, routine maintenance would include fish screen cleaning as well as periodic screen panel removal for inspection, cleaning, and repairs if needed. Fish screen cleaning and debris removal, as part of routine screen operations, is typically accomplished using an automated mechanical brush and/or rake system. Debris removal is intended to maintain the uniformity of approach velocities across the fish screen surface within the design criteria (e.g., 0.2 fps). As part of routine screen maintenance, CCWD would maintain the screen cleaning mechanisms (e.g., replacement brushes) and would curtail diversion operations in the event that the screen cleaners are not operating in accordance with design criteria to avoid potentially significant adverse impacts (e.g., velocity hot spots that could result in increased vulnerability of fish to impingement on the screen surface) until the screen cleaners have been returned to routine operations.

Screen panels are periodically removed from an intake structure for inspection and repair. Typically panels are removed and inspected annually, or more frequently, in the event of damage to a screen panel. When a screen panel is removed from the intake fish and macroinvertebrates would be vulnerable to entrainment into the water diversion. CCWD would curtail diversion operations whenever a screen panel was removed from the intake. In the event that a screen panel is replaced by a stop-log or blank panel (solid panel with no screen mesh) the maximum diversion rate would be reduced proportionally to the reduction in screen area to maintain acceptable approach velocities across the remaining screen panels.

The new Delta Intake and/or expanded Old River intake is not anticipated to require maintenance dredging. The existing Old River intake and fish screen have not required any maintenance dredging since their operations were initiated in 1998. While it is possible that a new intake on a different

location in Old River could experience different sedimentation conditions, the intake structure would be designed to minimize the likelihood of sediment accumulation. Maintenance dredging in the river channel outside the new Delta Intake structure, if necessary, would not be part of routine maintenance, and would be permitted separately.

Based on standard operating requirements, potential impacts to Delta fishery resources resulting from routine operations and maintenance of the fish screen would be less than significant.

Alternative 2

Potential impacts on Delta fisheries and aquatic resources resulting from periodic fish screen maintenance activities under Alternative 2 would be the same as those discussed for Alternative 1. As mentioned in the Alternative 1 discussion, routine maintenance dredging is not anticipated to be necessary. The impact associated with fish screen maintenance is expected to be less than significant.

Alternative 3

Alternative 3 does not include construction of a new Delta Intake on Old River, but does include enlargement of the existing intake structure on Old River. This enlargement would increase the fish screen maintenance cleaning, because of the enlarged screen surface area. However, as mentioned in the Alternative 1 discussion, the screen cleaning maintenance activities do not create impacts. Maintenance dredging is not anticipated for this alternative. This impact would therefore be less than significant, and no mitigation is required.

Alternative 4

Alternative 4 does not include construction of a new Delta intake on Old River, so would not increase the potential need for maintenance dredging or fish screen maintenance. No impact would occur and no mitigation is required.

The updates to the modeling analysis of potential operational impacts of the project alternatives did not require re-analyzing Impact 4.3.8. The conclusions regarding this potential impact have not changed from those presented in the Draft EIS/EIR.

Mitigation: None required.

Impact 4.3.9: The project alternatives, when combined with other planned projects or projects under construction in the area, could cumulatively contribute to substantial adverse impacts to Delta fisheries and aquatic resources. (Less than Significant with Mitigation for Alternatives 1, 2 and 4~~; Significant and Unavoidable for Alternative 3~~)

All Alternatives

Construction of Alternative 1 or 2 would result in impacts that would be mitigated to less-than-significant levels. No projects are known to be ongoing or planned in the direct vicinity of the in-

channel work related to Alternatives 1 and 2 at the same time that the in-channel work would occur. (See list of water-side cumulative projects in subsection 4.1.3 (Vol. 1), supra.) Therefore, no localized cumulative construction impacts would occur. The construction of Alternatives 3 and 4 would not impact Delta fisheries or aquatic resources.

The new intake structure and fish screen under Alternatives 1 and 2 would modify existing aquatic habitat by replacement and addition of riprap and would physically exclude fish from a small area of existing aquatic habitat. Although the impact to aquatic habitat characteristics resulting from use of riprap under Alternatives 1 and 2 is less than significant, it could incrementally contribute to cumulative adverse impacts to the quality and availability of aquatic habitat within the Bay-Delta estuary. Construction of the fish screen would exclude fish from about 180 feet of shoreline along the channel margin of Old River. Mitigation Measure 4.6.2b (described in Vol. 2, Section 4.6, Biological Resources) calls for compensatory mitigation for the permanent loss of wetlands and open water habitat related to construction of the new Delta Intake and fish screens at a ratio of 2:1 for restoration and 3:1 for creation of wetland habitat. Implementation of this mitigation measure reduces the project contribution to this cumulative impact to a less than cumulatively considerable level.

Because the linear shoreline habitat where exclusion by the fish screen would occur represents only a fraction of the available habitat in the south Delta and is of low quality for rearing salmon, steelhead, and other species, this loss of aquatic habitat is not likely to adversely affect chinook salmon or steelhead populations, critical habitat for delta smelt or steelhead, or EFH for Pacific salmon within Old River and the Bay-Delta. The aquatic habitat is currently disturbed and is not unique. These factors, in conjunction with implementation of Mitigation Measure 4.6.2b, result in a less than cumulatively considerable effect on fish and their habitats.

As a result of the low design approach velocities (0.2 fps) for a water intake in the Delta, and the design of the intake to avoid hydraulic turbulence and disruption of local current patterns, long-term operation of Alternatives 1 and 2 would not be anticipated to modify hydraulic conditions next to the intake structures to a degree that would be cumulatively considerable, and no mitigation is proposed.

The analysis of Impact 4.3.6 and Impact 4.3.7 is a cumulative impact analysis, because the modeling takes into account other projects affecting Delta hydrologic conditions. As also discussed above, operation of Alternatives 1 and 2 would provide net benefits to the Delta fishery, so they would actually reduce cumulative impacts occurring in the Delta. ~~Alternative 3 would contribute to fishery impacts as evaluated herein.~~ Alternative 4 would generally provide small benefits to the Delta fishery and would not contribute to cumulative adverse impacts on Delta fisheries.

As described in the updated Section 4.2 (Vol. 4, Chapter 5, Section 5.3), the Delta Wetlands Project (DWP) was not included in modeling analysis for cumulative impacts because current modeling analysis of that project has not been provided by DWP. As described in the updated Section 4.2 (Vol. 4, Chapter 5, Section 5.3), qualitative analysis indicates that future operation of the Los Vaqueros Reservoir Expansion Project and the DWP is not likely to result in cumulative impacts to Delta hydrology or water quality. The DWP does have the potential to affect flows in the Delta,

such that a cumulative impact on Delta fisheries or aquatic resources could be possible. However, it is assumed that environmental analysis performed for the DWP will limit their operations to those that are safe for the Delta ecosystem. Therefore, no cumulative impact on Delta fisheries or aquatic resources based on future operation of Los Vaqueros Reservoir Expansion Project and the DWP is anticipated.

The analysis performed for the Draft EIS/EIR found no cumulative impacts on Delta fisheries when considering the effects of the Los Vaqueros Reservoir Expansion Project along with the effects of other reasonably foreseeable projects. When compared to the analysis performed for the Draft EIS/EIR, the conclusion presented above for the updated modeling analysis regarding potential cumulative impacts of Alternatives 1, 2 and 4 with other reasonably foreseeable projects has not changed.

Mitigation for Cumulative Impacts: Implementation of Delta Fisheries and Aquatic Resources mitigation measures (measures 4.3.1, 4.3.2 and 4.3.3), together with Hazardous Materials Mitigation Measure 4.13.2, Hydrology mitigation measures 4.5-1a and Biological Resources Mitigation Measure 4.6.2b, will reduce potential impacts to less-than-significant levels. No additional measures will be required.

Impact Significance after Mitigation: Less than significant for Alternatives 1, 2 and 4. The cumulative entrainment impacts of Alternative 3 would be significant and unavoidable.

CHAPTER 6
Comments Received

6.1 Federal Agencies

6.1 Federal Agencies

TABLE 6.1-1
FEDERAL AGENCIES THAT SUBMITTED COMMENTS ON THE DRAFT EIS/EIR

Comment Format	Comment ID	Name of Commenter	Title	Organization/ Affiliation
Email	F_EPA	Kathleen M. Goforth	Manager, Environmental Review Office, Region IX,	Environmental Protection Agency

From: Fujii.Laura@epamail.epa.gov [mailto:Fujii.Laura@epamail.epa.gov]
Sent: Tuesday, April 21, 2009 3:48 PM
To: smchale@usbr.gov; Marguerite Naillon
Subject: Region 9 US EPA comments on DEIS Los Vaqueros Reservoir Expansion Project

Dear Ms. McHale and Ms. Naillon:

The U.S. Environmental Protection Agency (EPA) has reviewed the above-referenced document pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act. A .pdf file of our comments is attached below. The original signed letter has been mailed to Ms. McHale and copies faxed to each of you.

We appreciate the opportunity to review this DEIS. When the FEIS is released for public review, please send one hard copy and a CD ROM to the address below (mail code: CED-2). If you have any questions, please contact me at (415) 972-3852 or fujii.laura@epa.gov.



Sincerely,

Laura Fujii
Region 9 US Environmental Protection Agency
Environmental Review Office, CED-2
Communities and Ecosystems Division
75 Hawthorne St., San Francisco, CA. USA 94105
phone: 415-972-3852
fax: 415-947-8026
fujii.laura@epa.gov

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

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April 21, 2009

Sharon McHale
Bureau of Reclamation
Mid-Pacific Region
2800 Cottage Way
MP-730, Room W-2830
Sacramento, CA 95825-1898

Subject: Draft Environmental Impact Statement (DEIS) for the Los Vaqueros Reservoir Expansion Project, Contra Costa County, California (CEQ# 20090051)

Dear Ms. McHale:

The U.S. Environmental Protection Agency (EPA) has reviewed the above-referenced document pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and our NEPA review authority under Section 309 of the Clean Air Act.

The Contra Costa Water District (CCWD) and Bureau of Reclamation (Reclamation) propose to expand the existing Los Vaqueros Reservoir to store water for environmental water management and to improve water supply reliability and water quality for urban users in the San Francisco Bay Area. The reservoir expansion would involve enlarging the existing reservoir; building a new water intake, pump station, and conveyance facilities; modifying and building new power supply facilities; and replacing and enhancing recreation facilities.

We commend CCWD and Reclamation for the well organized, clear, and detailed DEIS. EPA believes it is important to develop water supply strategies consistent with protective water quality standards for the Sacramento River-San Joaquin River Delta (Delta) and San Francisco Bay, and to protect aquatic resources and endangered species. We support the effort to increase water supply management flexibility to serve environmental purposes and improve water supply reliability, provided this can be accomplished without further adverse effects to the Delta and its resources.

The proposed expansion project would allow CCWD to increase diversions of "excess" Delta flows during the winter and spring months, when those diversions will not adversely impact the operations of the State Water Project and Central Valley Project. We recognize that, at this time, the DEIS/EIR can only characterize potential uses of this project and the associated benefits. Notably, the Bay Delta Conservation Plan process and

reevaluation of Delta water quality control requirements by the State Water Resources Control Board could alter the regulatory and operational context for the proposed project. Nonetheless, we recommend a greater effort to provide assurances that environmental benefits will be incorporated into the project.

We have rated this DEIS as Environmental Concerns – Insufficient Information (EC-2) (see enclosed "*Summary of Rating Definitions*") because of our concerns regarding environmental assurances for the projected benefits, compensatory mitigation for vernal pools, and climate change effects. We recommend the project design incorporate mechanisms to ensure benefits, and compensatory mitigation for impacts to vernal pools along the Transfer-Bethany Pipeline. The FEIS should include a more in-depth evaluation of climate change effects and adaptation measures. Our detailed comments are enclosed.

We appreciate the opportunity to review this DEIS. When the FEIS is released for public review, please send one hard copy and a CD ROM to the address above (mail code: CED-2). If you have any questions, please contact me at (415) 972-3521, or contact Laura Fujii, the lead reviewer for this project. Laura can be reached at (415) 972-3852 or fujii.laura@epa.gov.

Sincerely,

Kathleen M. Goforth, Manager
Environmental Review Office
Communities and Ecosystems Division

Enclosures:
Detailed Comments
Summary of Rating Definitions

cc: Susan Moore, Sacramento Field Office, US Fish and Wildlife Service
Bill Guthrie, Sacramento District, US Army Corps of Engineers
Robert Solecki, Central Valley Regional Water Quality Control Board
Marguerite Naillon, Contra Costa Water District
Les Grober, State Water Resources Control Board

EPA DETAILED DEIS COMMENTS LOS VAQUEROS RESERVOIR EXPANSION, CONTRA COSTA COUNTY, CA., APRIL 21, 2009

Environmental Benefits

Incorporate environmental assurance mechanisms for projected benefits into the project design. The Draft environmental impact statement (DEIS) contends that the shift of water diversions for South Bay water agencies from the State Water Project (SWP) and Central Valley Project (CVP) diversion pumps to the expanded Los Vaqueros Reservoir, with its state-of-the-art fish screens and multiple intake locations, would provide significant advantages for Delta fish protection due to the increased flexibility to shift water diversions and water conveyance to minimize adverse effects to fish. (This is a "benefit" in the sense of reducing impacts of diverting and supplying water.) Additionally, the project could provide storage for water directed for environmental purposes, such as the Environmental Water Account or refuge water supplies. (These "benefits" depend on a sponsor to fund and manage the supplies.) EPA supports the effort to increase water supply management flexibility for environmental purposes and water supply reliability. We are concerned, however, that the environmental "benefits" are hypothetical and that the needed institutional support and funding are uncertain. 1

> ***Recommendations:***
> We recommend the project design incorporate assurance mechanisms to guarantee environmental and fishery benefits occur. Describe in the Final environmental impact statement (FEIS) a governance process and incentives or requirements to assure that projected environmental benefits are realized in a timely manner. For example, the Bureau of Reclamation (Reclamation) and Contra Costa Water District (CCWD) could require the establishment of dedicated storage for environmental water as part of the project design, as suggested in the DEIS (p. 1-9).

Evaluate the sensitivity of projected benefits to changes in project design and operational assumptions. The extent of the benefits achieved will depend on factors such as future Delta conveyance and habitat improvements, Delta operations requirements, and the project's precise environmental water management actions as further developed in project permits and agreements with project partners (p. ES- 12).

> ***Recommendation:***
> We recommend the FEIS include a discussion on the sensitivity of projected benefits to changes in the above factors. If appropriate, consider conducting sensitivity analyses to gauge the changes to presumed benefits if project operations and assumptions are changed.

Clean Water Act Section 404

Provide compensatory habitat mitigation for impacts to vernal pools. Alternatives 1 and 2 would each affect 0.86 acres of northern claypan vernal pool habitat along the Transfer-Bethany Pipeline. The project analysis presumes the effect would be temporary because these areas would be restored after construction is completed (p. 4.6-88). It is extremely difficult to re-establish vernal pools once the hardpan has been disturbed. Any 2

disturbance of the hardpan below vernal pools should be considered a permanent impact and compensatory mitigation should be provided. As proposed, the removed hardpan material should be replaced after construction to minimize indirect impacts to surrounding vernal pools. We note that Alternatives 3 and 4 have no vernal pool impacts and that Alternative 4 has significantly fewer impacts to waters of the United States.

> ***Recommendation:***
> Disturbance of the hardpan below vernal pools should be considered a permanent impact requiring compensatory habitat mitigation.

Mitigation should be consistent with the new Compensatory Mitigation Rule of April 20, 2008. The DEIS proposes compensatory mitigation for permanent, unavoidable losses of sensitive plant communities and jurisdictional wetlands and other waters of the United States. A mitigation and monitoring plan would be developed to outline mitigation and monitoring obligations (p. 4.6-91).

> ***Recommendation:***
> Compensatory mitigation, the mitigation and monitoring plan, and long-term protection and management should comply with the new Compensatory Mitigation Rule of April 20, 2008 (40 CFR Section 230.91-230.98; and Federal Register Volume 73, Thursday, April 20, 2008, p. 19687).

2 Cont.

Climate Change

Evaluate the effect of a 3-foot or greater sea level rise and increased tidal surge on Delta water quality and water supply management. The DEIS evaluates the proposed project's contributions to greenhouse gas emissions and the adverse effects of climate change on the project. However, the effects analysis evaluates only the effects of a one-foot sea-level rise on salinity, and does not factor in the influence of tidal incursion (p. 5-11). Moreover, the DEIS contends that Delta water quality standards would still be met by releasing additional water from SWP and CVP reservoirs to offset the projected increases in salinity. There is increasing evidence that sea level rise may be significantly higher than one-foot.[1] We are concerned that the effects of climate change may be much greater than portrayed and would significantly impair the ability to maintain water quality through the release of upstream reservoir water.

> ***Recommendation:***
> We recommend the FEIS update the climate change effect evaluation to analyze a 3-foot or greater sea-level rise and increased tidal surge on water quality (e.g., salinity, organic material). The analysis should evaluate the implications of climate change effects for CVP/SWP operations, water supply reliability, and expanded Los Vaqueros Reservoir operations. Explain the basis for positing that use of stored water upstream would be a feasible way of managing water quality

3

[1] Climate Change and Water Resources Management: A Federal Perspective, Circular 1331, U.S. Department of the Interior and U.S. Geological Survey, 2009, (http://pubs.usgs.gov/circ/1331/). See also Letter from Phillip L. Isenberg to Gov. Schwarzenegger, March 24, 2008 (Delta Vision Blue Ribbon Task Force adopting, for planning purpose, a sea level rise projection for 2100 of 55 inches).

at the intakes. Discuss other potential management responses, if information is available.

3 Cont.

General Comments

Include Federal and State Feasibility Reports in the FEIS. The DEIS states that Federal and State Feasibility Reports are being developed to provide detailed information on the potential project benefits and costs, the allocation of costs to potential project beneficiaries, and project participants (p. ES-6). The identification of final project participants and beneficiaries and potential benefits and costs will influence the final range of alternatives and project design.

4

Recommendation:

To ensure full public disclosure to support decision-making, we recommend the conclusions of the Federal and State Feasibility Reports be summarized in the body of the FEIS, and the Reports be included as appendices in the FEIS.

6.2 State Agencies

U.S. Environmental Protection Agency Rating System for Draft Environmental Impact Statements Definitions and Follow-Up Action*

Environmental Impact of the Action

LO – Lack of Objections

The U.S. Environmental Protection Agency (EPA) review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC – Environmental Concerns

EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts.

EO – Environmental Objections

EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU – Environmentally Unsatisfactory

EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1 – Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2 – Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses or discussion should be included in the final EIS.

Category 3 – Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the National Environmental Policy Act and or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

* From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment. February, 1987.

6.2 State Agencies

6.2 State Agencies

TABLE 6.2-1
STATE AGENCIES THAT SUBMITTED COMMENTS ON THE DRAFT EIS/EIR

Comment Format	Comment ID	Name of Commenter	Title	Organization/ Affiliation
Fax	S_Caltrans	Lisa Carboni	District Branch Chief	California Department of Transportation
Mail	S_CVFPB	James Herota	Staff Environmental Scientist	Central Valley Flood Protection Board
Email	S_DFG	Charles Armor	Regional Manager, Bay Delta Region	California Department of Fish and Game
Fax	S_DOC	Dan Otis	Williamson Act Program Manager	California Department of Conservation
Mail	S_DSOD	David A. Gutierrez	Chief	California DWR, Division of Safety of Dams
Mail	S_SWRCB	Katherine Mrowka	Chief Inland Streams Unit	California State Water Resources Control Board

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF TRANSPORTATION
111 GRAND AVENUE
P. O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 622-5491
FAX (510) 286-5559
TTY 711

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April 6, 2009

BAG0037
SCH #2006012037
CC-4-45.33-47.71
CC-160-R34.35

Ms. Marguerite Naillon
Contra Costa Water District
P.O. Box H20
Concord, CA 94524-2099

Dear Ms. Naillon:

Los Vaqueros Reservoir Expansion Project – Draft Environmental Impact Report (DEIR)

Thank you for continuing to include the California Department of Transportation (Department) in the environmental review process for the Los Vaqueros Reservoir Expansion Project. The following comments are based on our review of the DEIR.

As lead agency, the Contra Costa Water District is responsible for all project mitigation, including any needed improvements to State highways. The project's fair share contribution, financing, scheduling, and implementation responsibilities as well as lead agency monitoring should be fully discussed for all proposed mitigation measures and the project's traffic mitigation fees should be specifically identified in the Environmental Impact Report.

Any required roadway improvements should be completed prior to issuance of project occupancy permits. An encroachment permit is required when the project involves work in the State's right of way (ROW). Therefore, we strongly recommend that the lead agency ensure resolution of the Department's concerns prior to submittal of the encroachment permit application; see the end of this letter for more information regarding the encroachment permit process.

1

Cultural Resources
We are in agreement with the findings and mitigation measures in Section 4.16.1 in the Cultural Resources section of the DEIR. Should ground disturbing activities take place within the State ROW as part of this project, these mitigation measures will need to be

2

expanded to incorporate State land. If there is an inadvertent archaeological or burial discovery, the Department Office of Cultural Resource Studies, District 4, Oakland shall be immediately contacted at (510) 286-5618. A staff archaeologist will evaluate the finds within one business day of being contacted. A data recovery plan and all subsequent reports for investigations within State ROW will need to be approved by the Office of Cultural Resource Studies, District 4.

2 cont

Permits

Transportation Permits - Project work that requires movement of oversized or excessive load vehicles on State roadways requires a transportation permit that is issued by the Department. To apply, a completed transportation permit application with the determined specific route(s) for the shipper to follow from origin to destination must be submitted to the address below.

Office of Transportation Permits
California DOT Headquarters
P.O. Box 942874
Sacramento, CA 94274-0001

See the following website link for more information:
http://www.dot.ca.gov/hq/traffops/permits/.

Encroachment Permits - Additionally, any work or traffic control within the State's ROW requires an encroachment permit that is issued by the Department. Traffic-related mitigation measures will be incorporated into the construction plans during the encroachment permit process. See the following website link for more information:
http://www.dot.ca.gov/hq/traffops/developsery/permits/

3

To apply for an encroachment permit, submit a completed encroachment permit application, environmental documentation, and five (5) sets of plans which clearly indicate State ROW to the address at the top of this letterhead, marked ATTN: Michael Condie, Mail Stop #5E.

Should you have any questions regarding this letter, please contact Lisa Courington of my staff via email at lisa.ann.courington@dot.ca.gov or by phone at (510) 286-5505.

Sincerely,

for LISA CARBONI
District Branch Chief
Local Development – Intergovernmental Review

c: State Clearinghouse

STATE OF CALIFORNIA – THE RESOURCES AGENCY
ARNOLD SCHWARZENEGGER, GOVERNOR

CENTRAL VALLEY FLOOD PROTECTION BOARD
3310 El Camino Ave., Rm. LL40
SACRAMENTO, CA 95821
(916) 574-0609 FAX: (916) 574-0682
PERMITS: (916) 574-0685 FAX: (916) 574-0682

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April 23, 2009

Marguerite Naillon
Contra Costa Water District
P.O. Box H20
Concord, CA 94524-2099

Dear Ms. Naillon:

State Clearinghouse (SCH) Number: 2006012037 Draft Environmental Impact Report
Los Vaqueros Reservoir Expansion Project

Staff for the Department of Water Resources has reviewed the subject document and provides the following comments:

The Central Valley Flood Protection Board (Board) is responsible for flood safety within California and maintains the integrity of the existing flood control system and designated floodways through the Board's regulatory authority by issuing permits for encroachments. Development projects within the jurisdiction of the Board are required to meet standards for the construction, maintenance, and protection of adopted plans of flood control that will protect public lands from floods. The jurisdiction of the Board includes the Central Valley, including all tributaries and distributaries of the Sacramento River and the San Joaquin River, and designated floodways (Title 23 California Code of Regulations (Title 23 CCR), Section 2). Working with the Contra Costa Water District staff early in the project planning will help Board staff and other interested parties to identify potential project impacts, appropriate mitigation measures, and thereby improve the safety of floodways.

In the Draft Environmental Impact Report Los Vaqueros Reservoir Expansion Project, Volume 1, p. 4.5-5 the State Reclamation Board approval was acknowledged as being required for the proposed project. The Reclamation Board has been changed to the Central Valley Flood Protection Board in accordance with the California Water Code Section 8521 which states " "Board" means the Central Valley Flood Protection Board. Any reference to the Reclamation Board in this or any other code means the Central Valley Flood Protection Board." 1

A Board permit is required prior to starting the work within the Board's jurisdiction for the following:

- The placement, construction, reconstruction, removal, or abandonment of any landscaping, culvert, bridge, conduit, fence, projection, fill, embankment, building, structure, obstruction, encroachment, excavation, the planting, or removal of vegetation, and any repair or maintenance that involves cutting into the levee(CCR Section 6);

- Existing structures that predate permitting or where it is necessary to establish the conditions normally imposed by permitting. The circumstances include those where responsibility for the encroachment has not been clearly established or ownership and use have been revised (CCR Section 6). 2

The proposed project alternatives include tributaries and distributaries within the Board's jurisdiction including, but not limited to Kellogg Creek and Old River.

The permit application and Title 23 CCR can be found on the Central Valley Flood Protection Board's website at http://www.cvfpb.ca.gov/. Contact your local, federal and state agencies, as other permits may apply. If you have any questions please contact me at (916) 574-0651 or by email jherota@water.ca.gov.

2 Cont.

Sincerely,

James Herota

James Herota
Staff Environmental Scientist
Floodway Protection Section
Division of Flood Management

cc:
Governor's Office of Planning and Research
State Clearinghouse
1400 Tenth Street, Room 121
Sacramento, CA 95814

----- Original Message -----
From: Debbie HULTMAN <DHULTMAN@dfg.ca.gov>
To: Marguerite Naillon
Sent: Mon Apr 20 16:25:27 2009
Subject: Los Vaqueros Reservoir Expansion Project

Please see the attached letter. Original to follow.



Debbie Hultman, Office Technician
Department of Fish & Game
Bay Delta Region
Habitat Conservation Unit
(707) 944-5548 phone
(707) 944-5574 fax

California Natural Resources Agency
DEPARTMENT OF FISH AND GAME
Bay Delta Region
Post Office Box 47
Yountville, California 94599
(707) 944-5500
http://www.dfg.ca.gov

ARNOLD SCHWARZENEGGER, Governor
DONALD KOCH, Director



April 20, 2009

Ms. Marguerite Naillon
Contra Costa Water District
Post Office Box H2O
Concord, CA 94524-2187
Via e-mail at mnaillon@ccwater.com

Ms. Sharon McHale
Bureau of Reclamation, Mid-Pacific Region
2800 Cottage Way, Room W-2830
Sacramento, CA 95825-1898

Dear Ms. Naillon and Ms. McHale:

Subject: Los Vaqueros Reservoir Expansion Project, Draft Environmental Impact Report, SCH #2006012037, Contra Costa County

Department of Fish and Game (DFG) personnel have reviewed the draft Environmental Impact Report (EIR) for the Los Vaqueros Reservoir Expansion Project (Project), dated February 2009. Our comments and recommendations are made under the authority of the California Endangered Species Act (CESA) (Fish and Game Code § 2050-2097), and the California Environmental Quality Act (CEQA) (California Public Resources Code § 21000 et seq.). DFG is identified as a Trustee Agency pursuant to CEQA Section 15386 and is responsible for the conservation, protection, and management of the State's biological resources.

PROJECT DESCRIPTION

The Los Vaqueros Reservoir is located in the foothills west of the Sacramento-San Joaquin Delta (Delta) in Contra Costa County. The current reservoir capacity is 115 thousand acre feet (TAF). The draft EIR describes four action alternatives that represent different combinations of facility and water system operations for expanding Los Vaqueros Reservoir and associated water conveyance. Alternatives 1 and 2 include the largest reservoir expansion to 275 TAF and the South Bay Connection to serve the 3 South Bay water agencies (Contra Costa Water District, Santa Clara Valley Water District, and Zone 7) with connection to the Department of Water Resources South Bay Aqueduct (SBA) facilities at Bethany Reservoir. Alternatives 3 and 4 have no SBA Connection and differ as to the size of the expanded reservoir (275 TAF versus 160 TAF reservoir).

These comments address Alternative 1, which is the largest reservoir expansion considered of the four action alternatives, has the greatest extent of associated facilities, and would be operated to meet both of the primary Project objectives. Under this alternative, the reservoir would be expanded from the existing storage capacity of 115 TAF to 275 TAF. This would involve raising the existing dam, essentially building over the existing dam facility to raise and strengthen it to support the larger reservoir. The reservoir water surface area would increase from about 1,500 acres to about 2,500 acres.

A new Delta Intake and Pump Station as well as new conveyance facilities to move water from the Delta to the Los Vaqueros Reservoir would be constructed. The South Bay Connection would be constructed linking the Los Vaqueros Reservoir system to South Bay water agencies via Bethany Reservoir and the South Bay Aqueduct. New power facilities would be constructed to serve the new intake and other expanded Los Vaqueros Reservoir system facilities. Recreational facilities affected by the increased inundation area would be relocated or replaced. Alternative 1 also includes construction of additional recreational facilities.

IMPACTS AND MITIGATION

General Comments

We have been discussing and reviewing information about the Project with the U.S. Fish and Wildlife Service (USFWS), the Contra Costa Water District (CCWD), and the U.S. Bureau of Reclamation (BOR) from 2004 to 2008. The goal of these efforts was to discuss the best available scientific information and to use this information to formulate an accurate assessment of the impacts of this proposed Project on the special status species and habitats known to occur in the watershed and within the alignment of associated facilities. We also had extensive discussions about land outside of the watershed areas, which will be affected (i.e., Round Valley) and the context of this Project relative to other projects proposed or already constructed in the area from San Joaquin County to Black Diamond Mines Regional Preserve. Measures would then be incorporated to reduce unavoidable impacts to a less-than-significant level as required by CEQA and to fully mitigate unavoidable impacts as required by CESA.

For a number of species, the information generated from these 4 years of efforts was incorporated into the draft EIR. We appreciate that the best available information and recommendations were incorporated into the in-watershed impact assessment for California red-legged frog (*Rana aurora draytonii*; CRLF) and California tiger salamander (*Ambystoma californiense*; CTS). Updated survey methods for western burrowing owl (*Athena cunicularia*) surveys were incorporated. Information about habitat uses and dispersal information for Alameda whipsnake (*Masticophis lateralis euryxanthus)*, although it did not guide the impact assessment, was acknowledged in the draft EIR. It is important that the most accurate information be presented in these public documents.

The draft EIR did not address a number of significant concerns we have expressed throughout the four years of meetings. The draft EIR does not provide all of the information required for DFG or necessary for CEQA, and omits and defers information until a later

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date. Effects from removal of the north-south connection for grassland species through the watershed, and impacts to habitat other than breeding or "core" habitat, were not adequately mitigated. CEQA requires that the draft EIR provide sufficient analysis and detail about the Project and environmental impacts of the Project to enable informed decision-making by the Lead Agency and informed participation by the public [see CEQA Guidelines § 15151; *Kings County Farm Bureau v. City of Hanford*, 221 Cal.App.3d 692 (1990)]. Both the public and decision-makers need to fully understand the implications of the Project, alternatives, and mitigation measures [see *Laurel Heights Improvement Ass'n v. Regents of University of California*, 6 Cal.4th 1112, 1123 (1993)]. 1 Cont.

The draft EIR does not adequately identify and discuss all indirect adverse effects associated with the interface of the proposed developed and undeveloped areas. Impacts associated with new trails on the east side of the reservoir, in areas formerly designated as no public access, need to be fully discussed and avoided or mitigated based on that analysis. 2 There is also inadequate discussion of the consequences of the loss of areas encumbered by conservation easements and how these incompatible uses will be allowed to occur. 3

The draft EIR's discussion of potential effects to wildlife corridors and habitat linkages does not consider a number of additional projects in the East Contra Costa and Alameda County areas. Cumulatively, these projects threaten to eliminate the viability of the remaining grassland linkages between Black Diamond Mines Regional Preserve, Cowell Ranch State Park, Round Valley Regional Preserve, the Los Vaqueros Watershed, and San Joaquin County. Although the draft EIR does discuss some projects in these areas, it does not incorporate important information about projects in the critically narrowed grassland corridors and linkages such as the Roddy Ranch Project in Antioch, the Mountain House Residential Development near Tracy, and the Delta College Tracy Campus. For example, impacts to movement corridors from the Mountain House Project were not identified in the EIR for that project and so were not considered here. 4

The draft EIR does not discuss wind leases or wind rights on the watershed lands that may be proposed as conservation areas. DFG has concerns with these and other obligations that may diminish the conservation value of lands. The applicant needs to disclose these or any other incompatible encumbrances on potential Habitat Management lands and work with DFG to resolve any outstanding issues. 5

The draft EIR proposes avoidance and mitigation measures based on guidance in the Multi-Species Conservation Strategy (MSCS) CALFED Fed 2000 document. The various impacts discussed above (i.e., existing encumbrances, cumulative impacts, changed circumstance on previously conserved lands) were not adequately considered in the preparation of the MSCS document. Deficiencies in the discussion and analysis of these impacts make it difficult to determine if implementation of the avoidance strategies and mitigation measures proposed in the draft EIR will reduce impacts to a less-than-significant level. Recognition of these additional cumulative and indirect impacts has led DFG to conclude that conservation of additional high quality habitat will be required and that these 6

conservation areas must be highly functioning for the target species and must preserve critically threatened habitat linkages for San Joaquin kit fox ((*Vulpes macrotis mutica; SJKF)* and other grasslands dependant species. 6 Cont.

Wetlands or Waters

Project Proposal

Under Alternative 1, the Project would directly impact wetland features both within and outside the Los Vaqueros Watershed and would affect mitigation wetlands created to compensate for the existing Los Vaqueros Reservoir. Within the watershed, Permanent Emergent Wetlands would experience the greatest permanent impacts by area (2.54 acres in 17 features). Permanent impacts would also be incurred to Natural Seasonal Wetlands (1.85 acres in 29 features), Riparian Wetlands (0.24 acres in one feature) and Lacustrine Wetlands (1.25 acres in 4 features). Temporary impacts will occur to approximately 7.29 acres (0.02 acres in the watershed to non-tidal freshwater permanent emergent and 7.27 acres of wetland and waters at locations outside of the watershed).

According to the draft EIR, Alternative 1 would be significant prior to mitigation, but can be mitigated to a less-than-significant level through the incorporation of avoidance strategies, Best Management Practices, and on-site and off-site compensatory mitigation. Temporary impacts would be eliminated by site restoration and by removal of the cofferdam at the completion of in-channel work for the new Delta Intake and Pump Station.

The draft EIR states that impacts associated with Alternative 1 would be reduced to a less-than- significant level through the implementation of Mitigation Measure 4.6.2a, which seeks to avoid and minimize effects to wetlands and other waters to the greatest extent practicable, and Mitigation Measure 4.6.2b, which provides compensation for impacts through wetland restoration or creation at a ratio of between 2:1 and 3:1. A DFG-approved management and monitoring plan will be implemented for all mitigation wetland areas.

Comments

DFG does not agree with the findings that the proposed mitigation measures will reduce impacts to less-than-significant levels. The Project proposal must address the following concerns to ensure that impacts to wetlands and waters are reduced to a less-than-significant level.

Acreage estimates must include DFG jurisdictional areas addressed in Fish and Game Code Section 1600 *et. seq*. It is not clear from the description in the document that the impact estimates include all DFG jurisdictional area or if they are limited to U.S. Army Corps of Engineers jurisdictional areas. 7

Temporary impacts should be defined as impacts which last less than one season and that occur in areas where in-situ restoration is reasonably expected to restore the area to pre-project conditions within two years (areas which are unvegetated or support primarily herbaceous or rapidly growing woody vegetation).

DFG does not agree with the assumption that temporary impacts would be eliminated by site restoration and by removal of the cofferdam at the completion of in-channel work for the new Delta Intake and Pump Station. Temporary impacts to wetlands and waters should be mitigated at a ratio of 1.1:1 (conserved:impacted). Restoration of affected areas under DFG jurisdiction must occur according to plans approved by DFG.

Any wetland mitigation areas, including those restored at the impact site, will be considered as mitigation only when the area is restored, conserved, and managed in perpetuity.

DFG must approve mitigation lands for their biological suitability. These lands must be transferred to DFG in fee title or preserved through a conservation easement or another mechanism that is approved by DFG, under terms approved by DFG.

Avoidance strategies must include siting access vaults, manholes, and blow off valves for the pipelines outside of DFG jurisdictional areas and where they will minimize impacts to sensitive habitat for native species. Since the draft EIR does not specifically prohibit the location of these facilities in jurisdictional areas, an impact estimate should be provided in the EIR.

7 Cont.

Fisheries

Background

The Delta serves as habitat and/or a migratory route for Federal and State listed species, including Central Valley steelhead (*Oncorhynchus mykiss*), Sacramento River winter-run Chinook salmon (*Oncorhynchus tshawytscha*), Central Valley spring-run Chinook salmon, Delta smelt (*Hypomesus transpacificus*), longfin smelt (*Spirinchus thaleichthys*), green sturgeon (*Acipenser medirostris*),and Sacramento splittail (*Pogonychthys macrolepidotus*). Proposed diversions from the Delta have the potential to impact water quality conditions and seasonal passage for State and federally listed anadromous fish species to upstream habitat in the San Joaquin River/Sacramento watersheds. Diversion operations may also result in mortality of listed and other fish species, and have a cumulative impact on water quality objectives necessary to keep Delta species in good condition.

The recent collapse in the abundance of Sacramento and San Joaquin Delta fishes including delta smelt, longfin smelt, threadfin shad and Chinook salmon, may be a result of a significant decline in habitat quality in the Delta. Evidence implies that in normal to dry years, sufficient water is not available to satisfy all existing appropriative and riparian rights within the system without further impairing listed fish. The Interagency Ecological Program (IEP) has determined that there are three main factors acting individually or cumulatively to lower pelagic productivity in the Delta: toxic contaminants, exotic species, and water diversions. Limited information has been available about the quantity and nature of all existing diversions in the Delta, and this lack of information has been an impediment to assessing flow availability and water quality effects in the Delta. Freshwater flows are critical to maintaining minimum water quality objectives.

Project Proposal

The CCWD is aware that, during some years, water is not available for diversion during portions or all of the season authorized under existing water rights either when protective measures for listed fish species are being implemented or when water quality measures are in effect. The proposed Project would more than double the maximum instantaneous rate of diversion that could be conveyed from the Delta and could significantly increase the annual amount of water diverted from the Delta.

Comments

This increase in rate and total amount of water diversion from the Delta will have significant impacts to listed fish species not currently addressed in CESA authorizations with DFG. According to the draft EIR, current water diversions are occurring in conformance with the 1994 CESA Memorandum of Understanding (MOU) between DFG and CCWD. DFG is currently in consultation with CCWD to amend this MOU to address changes to operations, impacts and mitigation measures as part of CCWD's Alternative Intake Project. While it is anticipated that the CESA Amendment will cover water diversion at a rate of up to 320 cubic feet per second and up to 177 TAF per year, it does not address the impacts or mitigation measures resulting from increased diversion proposed by this Project. For DFG to rely on the EIR for future CESA consultation, we recommend the EIR fully disclose and analyze any expected changes to water diversion operations and propose avoidance and mitigation measures consistent with current measures protective of listed fish species. CCWD should consult with DFG to obtain any necessary CESA authorization. 8

Additional water diversions from the Delta above baseline needed to fill the proposed expanded reservoir or increase the number of water users could cause adverse impacts to listed fish species. DFG recognizes some environmental benefits of expanding storage to provide CCWD with additional operational flexibility during dry and critically dry years. However, cumulative impacts of water diversion on listed fish and other conditions in the Delta must be considered and quantified as part of a water availability analysis necessary for CESA authorization.

Special Status Plant Species

Project Proposal

Under Alternative 1, the Project would directly impact special-status plant populations including Brewer's dwarf-flax, rose-mallow, and San Joaquin spearscale. An unknown number of individual Brewer's dwarf-flax plants would be affected by inundation and relocation of the westside access road; a small population of rose-mallow would be affected at the new Delta Intake and Pump Station site; and a population of San Joaquin spearscale would be affected by the Transfer-Bethany Pipeline alignment. Limited follow-up surveys would be needed to assess the presence of heartscale and brittlescale populations that may be present in several distinct locations on the Transfer-Bethany Pipeline and on the Western powerline alignment.

The draft EIR states that Impacts related to Alternative 1 would be significant prior to mitigation, but can be mitigated to a less-than-significant level through avoidance,

protection, restoration, and habitat enhancement. Impacts associated with Alternative 1 would be reduced to a less-than-significant level through implementation of Mitigation Measure 4.6.3a, which strives to minimize impacts through avoidance strategies and protective measures; and Mitigation Measure 4.6.3b, which provides compensation for impacts through restoration and habitat enhancement.

Comments

For all unavoidable impacts to special-status plant species, land that supports known population of affected special-status plants will be identified, enhanced, and protected on mitigation lands within the watershed or on those lands acquired outside the watershed, at a ratio of 1.1:1. In addition, enhancement of suitable unoccupied habitat will occur through site management and translocation of salvaged plants or seeds or seedlings as appropriate at a ratio of 1:1.

Any mitigation areas, including those restored at the impact site or within the watershed, will be considered as suitable for mitigation only when the area is restored, conserved, managed in perpetuity and when the site can meet the success criteria approved by DFG.

DFG must approve mitigation lands for their biological suitability. These lands must be transferred to DFG in fee title or preserved through a conservation easement or another mechanism that is approved by DFG under terms approved by DFG.

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California Red-legged Frog and California Tiger Salamander

Project Proposal

Under Alternative 1, the Project would directly impact CRLF and CTS individuals, aquatic breeding habitat, and upland aestivation habitat through inundation, reduction in supplemental water supplied from the reservoir to ponds, sustained dewatering of some ponds, and other construction activities.

Permanent impacts on aquatic sites and upland aestivation habitat would generally occur as a result of reservoir inundation, while temporary impacts on upland aestivation areas would occur along pipeline corridors that traverse undeveloped annual grasslands.

According to the draft EIR, all undisturbed annual grasslands and oak woodland habitats in the watershed may support aestivating CTS or CRLF, and provide upland movement corridors for these species. The expansion of the Los Vaqueros Reservoir and associated in-watershed facilities would cause the direct and permanent loss of 976.2 acres of annual grasslands and 149.6 acres of oak woodlands, representing a total of 1,125.8 acres of upland aestivation and migratory habitat potentially occupied by these species. Temporary impacts in the watershed will occur to 45.8 acres of grassland.

Direct impacts on known and potential aquatic breeding sites include the loss of 11 ponds in the 275 TAF reservoir inundation area. Ten of the eleven inundated ponds support CRLF breeding populations and four ponds support CTS breeding. Eighteen stock ponds are dependent upon the reservoir for supplemental water.

Five ponds in the Inlet/Outlet Pipelines construction area, each of which supports CRLF breeding, would be avoided by Project design; however, these ponds are subject to long-term temporary (i.e., greater than one year) dewatering during construction, as Los Vaqueros Reservoir will be unavailable as a water source during this period.

For out-of-watershed facilities, the draft EIR estimates that there will be 251.6 acres of temporary impacts to grassland and up to 149.6 acres of oak woodland impacts.

In the Inlet/Outlet Pipelines construction area, construction activities would last for two years. The areas of temporary disturbance would ultimately be restored to annual grasslands or oak woodland after Project construction. An unknown number of CRLF and CTS would be destroyed as a result of these impacts to upland habitat and aquatic habitat sites.

Water would be bypassed around Los Vaqueros Dam during construction so that water releases into lower Kellogg Creek would be maintained during construction. Water would also continue to enter the lower reach of the creek seasonally from other natural sources tributary to the creek (e.g., spring releases, surface runoff, and groundwater). With maintained flows, the quality and availability of breeding and nonbreeding (summer) habitat for CRLF is not expected to change markedly in Kellogg Creek.

CCWD shall provide compensation for permanent and temporary impacts on CTS and CRLF aquatic habitat. In accordance with MSCS (CALFED, 2000) objectives, CCWD shall provide compensation for the permanent loss of CRLF and CTS aquatic habitat at a minimum of a 3:1 ratio. The MSCS does not require compensation for loss of CRLF and CTS aestivation habitat.

New mitigation ponds that are created for CRLF and CTS shall be hydrologically self-sustaining and shall not require a supplemental water supply. Because few natural drainages in the Los Vaqueros Watershed could maintain self-sustaining mitigation ponds, a portion of the pond mitigation locations will likely be identified outside of the watershed.

The draft EIR states that impacts related to Alternative 1 would be significant prior to mitigation, but can be mitigated to a less-than-significant level through implementation of Mitigation Measure 4.6.4a, which provides for species take avoidance and impact-minimization measures, through provision of supplemental water to pond breeding sites during construction, and Mitigation Measure 4.6.4b, which provides compensation for impacts through land acquisition and habitat management.

Comments

DFG does not agree with the findings that the proposed mitigation measures will reduce impacts to less-than-significant levels. The Project proposal must address the following concerns to ensure that impacts to CRLF and CTS are reduced to a less-than-significant level.

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DFG will approve the construction monitor. DFG will review and approve any CTS relocation or salvage plan. A description of the pre-construction site survey will be submitted to DFG and USFWS for review and approval at least one month before the survey is to be implemented. DFG and USFWS will determine the most effective time to implement the surveys.

Suitable occupied habitat must be acquired to mitigate unavoidable impacts to CTS and CRLF habitat. Mitigation must be provided for temporary and permanent impacts to upland and aquatic habitat. It is not sufficient to provide mitigation for impacts to breeding habitat only. Lands used to mitigate impacts to these species must support known populations of CTS and CRLF and must be enhanced and protected at a ratio of 3:1. Any mitigation areas, including those restored at the impact site or within the watershed, will be considered as suitable for mitigation only when the area is restored, conserved, managed in perpetuity and when the site can meet the success criteria without the use of supplemental water.

Suitable unoccupied habitat that is within dispersal distance of known populations may be acceptable as a part of the mitigation proposal if alteration of site conditions through management or pond construction results in colonization of these sites. Financial security, which could be used if necessary to acquire alternative mitigation sites, must be provided and held by DFG until it is determined that mitigation sites are occupied and will support the target species for the long-term. Success criteria will be developed in consultation with DFG and must include measurable parameters, use of a reference site, and specific timeline requirements. If DFG determines that the site enhancement is not successful within the specified period of time, the applicant must provide an alternate occupied site.

10 Cont.

DFG must approve mitigation lands for their biological suitability. The needs of CTS and CRLF differ. Requirements for ponding duration and depth, presence of vegetation and other factors differ between these species. The suitability of proposed sites and success of enhanced sites will be evaluated according to each species' specific needs and sites may or may not be suitable for both species. In addition to acreage replacement, the mitigation areas must be able to sustain populations of these species for the long-term. The mitigation areas must provide a range of aquatic features that will be suitable for breeding during a variety of water years. Also, because both species are known to be subject to local periodic extinction due to factors such as disease and predation and rely on genetic exchange to support a healthy sustainable population, landscape position of the site and spatial arrangement of the aquatic features must be accessible to dispersing individuals and conducive to recolonization. Presence of all life stages and successful reproduction and metamorphosis must occur over a number of years for a site to be deemed successful. Specific criteria will approved by DFG.

Mitigation lands must be transferred to DFG in fee title or preserved through a conservation easement or another mechanism that is approved by DFG, under terms approved by DFG.

Western Pond Turtle (*Clemmys marmorata marmorata; WPT*)

Project Proposal

Construction of the expanded Los Vaqueros Reservoir, in-watershed facilities, and recreational facilities would directly affect known WPT populations, as well as both aquatic and upland habitat for WPT. Six stock ponds, ten created wetlands, and several drainages (including Kellogg Creek) would be affected by reservoir inundation and in-watershed activities; of these areas, at least three ponds known to support WPT would be directly affected by inundation. Eight ponds that support WPT would be directly affected by construction of Los Vaqueros Dam, associated Inlet/Outlet Pipelines, and relocation of the westside access road. The WPT is documented in the Inlet/Outlet Pipelines construction area, and this species may opportunistically be encountered in ponds, within Kellogg Creek, or in uplands in this area. Where possible, siting of the pipeline and construction activity would avoid aquatic features that could support this species. Turtles would be relocated if encountered in work areas, and turtle populations would be monitored to ensure successful relocation.

Comments

Known occupied WPT habitat should be conserved when possible. A habitat management plan should include provisions that benefit WPT, such as inclusion of basking sites and woody debris where appropriate.

DFG must approve mitigation lands for their biological suitability. These lands must be transferred to DFG in fee title or preserved through a conservation easement or another mechanism that is approved by DFG, under terms approved by DFG.

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San Joaquin Kit Fox

Project Proposal

Grassland habitat in eastern Contra Costa County represents suitable habitat for the SJKF. The loss, fragmentation, and degradation of habitat are considered primary threats to the northern population of SJKF. Fragmentation of populations by aqueducts, busy highways, and other obstructions increases isolation, limits dispersal, and reduces genetic flow between populations. Other general threats to SJKF include the application of rodenticides in some areas, either as a direct threat through poisoning or as an indirect threat through reducing the abundance of their prey. Invasion of fragmented habitats by coyotes, red foxes (*Vulpes vulpes*), and feral dogs can also increase SJKF mortality. USFWS, DFG, and other resource experts consider all continuous annual grasslands in the watershed and major portions of the proposed pipeline alignment routes as suitable habitat for the SJKF. Long-term temporary habitat disturbances in the Inlet/Outlet Pipelines construction area would last a period of at least two years during construction of Los Vaqueros Dam and other facilities. During this extended period, these areas would be unavailable for SJKF habitation or movement. While these impacts are in essence temporary, during on-going consultation, DFG and USFWS have indicated that such long-term habitat disturbances require greater compensation than typically applied for short-term temporary impacts (i.e., greater than a 1.1:1 replacement ratio).

Direct Impacts to Potential Movement Corridors: In 1993, USFWS acknowledged that construction of the existing Los Vaqueros Reservoir would partially obstruct SJKF dispersal between the Herdlyn watershed (south and east of the reservoir) and Round Valley (north of the reservoir) (USFWS, 1993a).

Within the watershed, large tracts of grassland surrounding the reservoir on the north, east, and south have been identified as the some of the most important remaining routes for SJKF movement in the watershed. After reservoir expansion, these movement corridors would remain largely intact. The eastern, northeast and northern sides of the reservoir would continue to provide potential dispersal and cover habitat. This general movement corridor area would remain a link between Round Valley and important SJKF areas south and east of the watershed. The reservoir expansion would incrementally reduce the size of this corridor area north of the reservoir from about 5,222 to 5,135 feet (a distance of about 87 feet at its narrowest point). This loss of grassland habitat would not restrict potential SJKF dispersal corridors; thus, this effect on potential regional SJKF movement would be less-than-significant

On the western side, reservoir expansion to 275 TAF would inundate the remaining grassland area, thereby eliminating a potential SJKF movement corridor. This area is currently a 1,000- to 2,000-foot-wide area of annual grasslands, with a few areas of oak woodland intrusion. With reservoir expansion, the waterline would seasonally inundate annual grasslands along this corridor and advance into upslope oak woodland habitat. Assuming SJKF use this corridor, the oak woodland habitat would represent a movement barrier for SJKF. The loss of this potential western movement corridor is considered a potentially significant and unavoidable impact on SJKF movement opportunities. Mitigation through land acquisition and habitat protection is proposed to preserve and enhance other existing regional movement corridors, particularly those with documented use. However, while this mitigation may preserve effective regional movement corridors for SJKF in the eastern Contra Costa County region, information about SJKF movement in this area is insufficient to confirm that this mitigation would fully lessen the potential effects of reservoir expansion. As a result, this impact to this potential SJKF movement corridor is considered significant and unavoidable.

Indirect Impacts: Three potential indirect impacts on SJKF would result from the Project: 1) isolation of annual grasslands on the western side of the reservoir due to inundation, 2) the potential for increased predation of SJKF by coyotes, and 3) habitat disturbances in the Inlet/Outlet Pipelines construction area during construction that, while temporary, could extend for three years and render this area unusable as a movement corridor during that period. However, concurrent with dam construction, the reservoir would be fully drained and dried, opening additional movement opportunities for SJKF in the western portion of the reservoir. These impacts are discussed in the following paragraphs. Some reservoir facilities would require nighttime lighting for safety and security, both during and after construction. Limited nighttime lighting is not expected to have a substantial effect on SJKF populations.

Grassland Isolation. On the western side of Los Vaqueros Reservoir, inundation to the 275 TAF level would raise the waterline into oak woodland habitat along much of the shoreline. Two large grassland areas (118.5 acres and 96.1 acres) would not be inundated or directly affected by the Project; however, reservoir inundation would isolate these areas from surrounding grasslands and render them inaccessible to SJKF. As a result, the Project would contribute to the indirect loss of 214.6 acres of grassland habitat for SJKF habitation and dispersal.

Long-term Temporary Impacts. Construction of the Inlet/Outlet Pipelines would occur over a two-year period, rendering this area temporarily unusable as a potential SJKF movement corridor. Concurrent with Los Vaqueros Dam construction, the reservoir would be fully drained and additional SJKF movement opportunities would be temporarily available in the western portion of the reservoir. Thus, the Project would temporarily alter SJKF migration pathways in the watershed. It is expected that the reservoir would be completely dry within months after water drawdown and that SJKF would have a direct overland route across the dry reservoir within one to three months of draining. This route would require traversing less than a mile of relatively barren mineral soil and dry clay, a significant reduction in travel distances from the Round Valley region to areas south of the Los Vaqueros Reservoir. SJKF have been known to travel up to six miles in a single day and virtually all of their movements occur at night; thus, the lack of cover or refugia features is not expected to decrease the potential use of reservoir areas for overland migration. This route would be available during construction of the Inlet/Outlet Pipelines. As a result, construction of the reservoir Inlet/Outlet Facilities is not expected to contribute additional indirect impacts to SJKF.

Comments

DFG does not agree with the findings that the proposed mitigation measures will reduce impacts to less-than-significant levels and that the loss of the west side grasslands impacts have been mitigated to the maximum extent practicable. The Project proposal must address the following concerns to ensure that impacts to SJKF are reduced to a less-than-significant level.

Impacts associated with loss of the west side grasslands are underestimated. The two areas of grassland that will be isolated by the inundation have been included, as recommended by DFG, but the isolation and diminished accessibility to Round Valley Regional Preserve and habitat to the south and west of the reservoir has not been acknowledged. The most desirable SJKF habitat in the Los Vaqueros Valley was lost with the inundation of the original reservoir area. The remaining grassland on the west side is the highest quality north to south connection through the reservoir area. The accessibility of Round Valley Regional Preserve from the west side grasslands is through gently rolling grassland and is far superior to any connection available in the grasslands on the east side of the reservoir which is impeded by steep slopes and vegetation. Although SJKF can traverse quite steep slopes and vegetated areas, the likelihood of predation increases significantly under these conditions. In addition, it is necessary to maintain as many suitable routes as possible to maximize the successful movement of individuals through the

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area. The impact assessment fails to acknowledge the effect of the diminished access through the reservoir areas to Round Valley Regional Preserve both permanently and during construction of the Inlet/Outlet Pipelines and dam.

The feasibility of the proposal for the drained area of the reservoir to function as suitable habitat for SJKF while construction occurs at the Inlet/Outlet Pipelines needs additional analysis before DFG can support that assumption. Depending on the drawdown schedule; the construction schedule relative to the time it will take the area to dry; vegetation that may colonize the area; and on-going disturbance within the old reservoir footprint, the impacts from the multiple year construction at the Inlet/Outlet Pipelines may further diminish the suitability of an already compromised connection. This area is proposed as the most important long-term conservation area for SJKF in the Los Vaqueros watershed, and we do not know the long-term effect of having disturbance in these areas for multiple years.

The mitigation lands must provide viable and high quality grasslands and ideally would maintain the accessibility to Round Valley Regional Preserve through the reservoir area. Mitigation lands should also provide this function in other locations known to be critical to maintaining the connectivity of the northern range foxes from Black Diamond Mines Preserve in the north through to San Joaquin County and areas further to the south. Landscape position, existing attributes, and effective land management will be critical factors in determining the value of these lands to the SJKF population in this northern extent of the range, where fragmentation of habitat is as critical as the actual loss of acreage. Because of this, it is difficult to formulate a mitigation ratio that will adequately address the impacts from this Project. It is generally recommended that high quality habitat be conserved at a minimum ratio of 3:1. This minimum ratio should be applied to all areas permanently impacted and to long-term temporary impacts in the Inlet/Outlet Pipeline and dam area. This ratio should be used to determine the minimum conservation requirement and consideration may be given, through consultation with DFG, for a proposal for conservation of a reduced acreage of lands which are in a very desirable location for conservation. In addition, diminished access to Round Valley Regional Preserve must be accounted for. The loss of the west side connection to this important area warrants mitigation. Further analysis will be required to determine the extent of the impact and the appropriate minimization and mitigation measures needed to address this currently significant impact.

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Impacts to areas currently protected through conservation easements will be addressed separately.

DFG must approve mitigation lands for their biological suitability. These lands must be transferred to DFG in fee title or preserved through a conservation easement or another mechanism that is approved by DFG, under terms approved by DFG.

Western Burrowing Owl (*Athena cunicularia*)

Project Proposal

Under Alternative 1, the Project would directly impact western burrowing owls and their habitat through grading and excavation of grasslands and reservoir inundation. Grading and excavation constitute temporary impacts to 45.8 acres, and 976.2 acres would be permanently impacted when the reservoir is filled. This species could also be encountered at virtually any location on the Delta-Transfer Pipeline, Transfer-LV Pipeline, and Transfer-Bethany Pipeline. Impacts related to Alternative 1 would be significant prior to mitigation. Alternative 1-related impacts would be reduced to a less-than-significant level through implementation of Mitigation Measure 4.6.8a, which provides for surveys and protection measures during construction; and Mitigation Measure 4.6.8b, which provides compensation for impacts through land acquisition and dedication to a conservation easement and/or participation in a mitigation bank at a ratio of 2:1.

Comments

Suitable occupied habitat must be acquired to mitigate unavoidable impacts to burrowing owl habitat. Lands used to mitigate impacts to this species must be identified, enhanced, and protected at a ratio of 2:1. Any mitigation areas, including those restored at the impact site or within the watershed, will be considered as suitable for mitigation only when the area is restored, conserved, managed in perpetuity and when the site can meet the DFG-approved success criteria.

Unoccupied habitat that is adjacent to occupied habitat may be acceptable as a part of the mitigation proposal if alteration of site conditions through management is likely to result in colonization of these sites. Financial security to conserve alternative suitable habitat must be provided and held by DFG until it is determined that these sites are occupied and will support the target species for the long-term. Success criteria will be developed in consultation with DFG and must include measurable parameters, use of a reference site, and specific timeline requirements. If DFG determines that the site enhancement is not successful within the specified period of time, the applicant must provide an alternate occupied site. 13

Use of artificial burrows will be approved only as a temporary measure in areas where the host burrowers are expected to recolonize. Presence and abundance of host burrowers will be measured as part of the site's success criteria. Artificial burrows must be removed when sufficient natural burrows become available.

Burrowing owls populations are concentrated sporadically throughout the watershed. Facilities with some flexibility in their siting should be located to avoid areas of burrowing owl concentrations.

DFG must approve mitigation lands for their biological suitability. These lands must be transferred to DFG in fee title or preserved through a conservation easement or another mechanism that is approved by DFG, under terms approved by DFG.

Alameda Whipsnake

Project Proposal

Under Alternative 1, the Project would directly impact potential and occupied habitat for Alameda whipsnakes through the loss of scrub habitat at the borrow area, marina road, dam, and reservoir footprint, as well as habitat in adjacent oak and riparian woodlands and annual grasslands. Under this Alternative, 6.9 acres of scrub would be impacted and 102.2 acres of grasslands would be affected within 1,000 feet of scrub habitat. Impacts related to Alternative 1 would be significant prior to mitigation.

The draft EIR states that Alternative 1-related impacts would be reduced to a less-than-significant level through implementation of Mitigation Measure 4.6.10a, which provides for Project area Alameda whipsnake studies, protection measures during construction, an appropriate revegetation plan, and compensatory habitat creation/restoration within the Project area; and Mitigation Measure 4.6.10b, which provides for compensation of permanent habitat losses through the acquisition, protection, and management of occupied scrub habitat.

Alameda whipsnake movement observations demonstrate that individual dispersing snakes may venture into areas substantially greater than 1,000 feet from scrub habitat, out to 4 miles in some instances. However, the MSCS compensation guidelines do not require compensation for permanent and temporary impacts to non-scrub habitat that may support Alameda whipsnake (CALFED, 2000). Because mitigation is not required for Alameda whipsnake non-scrub habitat under MSCS guidelines, the following analysis of 1,000- and 2,500-foot study buffers around scrub habitat is intended for informational purposes to identify the magnitude of the potential impact to potentially occupied non-scrub habitat, and is not intended to inform Alameda whipsnake mitigation requirements.

Comments

DFG does not agree with the findings that the proposed mitigation measures will reduce impacts to less-than-significant levels. The Project proposal must address the following concerns to ensure that impacts to Alameda whipsnake are reduced to a less-than-significant level.

Impacts to Alameda whipsnake are under-compensated. The Project will impact 457 acres of suitable non-scrub habitat that is within 2500 feet of scrub habitat. At a minimum, this area should be compensated for at a ratio of 3:1, one through conservation and management of in-kind habitat. Mitigation lands should conserve known occupied scrub habitat and non-scrub areas between them to allow for dispersal and foraging to ensure long-term conservation of whipsnakes. This recommendation is based on best available scientific data that has become available since the 2000 CALFED Guidelines. New data indicates that whipsnakes use a wide variety of habitats and in some instances range up to four miles from scrub habitat.

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DFG must approve mitigation lands for their biological suitability. These lands must be transferred to DFG in fee title or preserved through a conservation easement or another mechanism that is approved by DFG, under terms approved by DFG.

14 Cont.

Active Breeding Bird Nest Sites

Project Proposal

For all Project alternatives, the implementation of Measure 4.6.12a and 4.6.12c will ensure that during the nesting season, pre-construction surveys will be conducted and any active nests will be adequately buffered. For Alternatives 1, 2, and 3, Mitigation Measure 4.6.12b will reduce the potential for bird electrocution at new powerlines.

The draft EIR states that implementation of these mitigation measures would reduce impacts to a less-than-significant level.

Comments

DFG does not agree with the findings that the proposed mitigation measures will reduce impacts to less-than-significant levels. The Project proposal must address the following concerns to ensure that impacts to nest sites are reduced to a less-than-significant level.

Direct take of nests outside of the breeding season does not reduce the impact to a level of less-than-significant for birds known to have high site fidelity such as burrowing owl, red-shouldered hawk, Swainson's hawk, red-tailed hawk, ferruginous hawk, and barn owl. If there will be direct take of nests on the Project site for species known to have high site fidelity, mitigation should include protection and enhancement of known nesting sites on mitigation lands at a location acceptable to DFG in accordance with established protocol. DFG recommends conducting pre-construction surveys for nesting raptors 15 days prior to tree pruning, tree removal, staging, ground-disturbing, or construction activities. Surveys should be conducted a minimum of 3 separate days during the 15 days prior to disturbance.

15

DFG must approve mitigation lands for their biological suitability. These lands must be transferred to DFG in fee title or preserved through a conservation easement or another mechanism that is approved by DFG, under terms approved by DFG.

EXISTING CONSERVATION COMMITMENTS

DFG CESA Memorandum of Understanding (MOU) for San Joaquin Kit Fox

Formal USFWS consultation on the effects of the existing Los Vaqueros Reservoir on the SJKF (federally endangered and state threatened) and bald eagle resulted in a Biological Opinion (BO) from USFWS (USFWS 1-1-92-F-48, September 3, 1993). DFG signed a CESA MOU for the existing Los Vaqueros Reservoir on February 16, 1994, which outlines several conservation measures that were included in the BO for SJKF. Measures in the BO include acquiring the conservation areas mentioned previously for this species and legally conveying the easements to DFG, monitoring of SJKF habitat, and several construction-related measures. Other measures include prohibiting the widespread use of rodenticides

in the watershed. The BO lists several terms and conditions that the U.S. Department of the Interior, Bureau of Reclamation (Reclamation) and CCWD must comply with. Measures that affect long-term management in the watershed include:

- "CCWD shall acquire and protect in perpetuity a total of 7,544 acres of habitat for San Joaquin kit fox, which includes 6,513 acres within the watershed and 1,031 acres in two separate mitigation areas outside the watershed, depending upon final assessment of all impacts from the Project." (Note that recreational impacts to San Joaquin kit fox habitat were lower than initially anticipated. As a result, the required amount of dedicated conservation easement became 5,837 acres. As of December 2008, 4,150 acres have been conveyed to DFG and an additional 1,856 acres are proposed to be conveyed to DFG.) "The habitat will be managed by CCWD under a USFWS- and DFG-approved habitat management plan. This acreage amounts to a 3:1 mitigation ratio (compensation lands: impacted lands) for Project impacts to San Joaquin kit fox habitat."

- "CCWD shall develop a recreation plan that addresses potential effects on San Joaquin kit fox and bald eagle in the watershed. USFWS and DFG shall have approval authority over the plan to ensure that any potential effects on these species are reduced to an 'insignificant level."

- "CCWD shall monitor bald eagles in the watershed to help determine the effects of recreation on bald eagle use of the area and the mortality rates resulting from wind turbines in the Project area. These effects shall be studied by CCWD using a USFWS- and DFG-approved monitoring and study plan."

At present, 4,150 acres of land in the watershed have been conveyed to DFG as a SJKF conservation easement, and 1,856 acres have been proposed to be conveyed. Of the 4,150 acres that have been encumbered by a conservation easement held by DFG, the current reservoir expansion Project will inundate or otherwise affect a total of 746.50 acres. Of this total, there will be permanent impacts to 711.40 acres, long-term temporary impacts on 20 acres at the Inlet/Outlet Pipeline, and temporary impacts to 15.1 acres.

The proposed mitigation is to provide compensation for temporary impacts to annual grasslands in the range of 1.1:1, to 1:1; for long-term temporary impacts in the range of 2:1 to 1:1; and for permanent impacts in the range of 3:1 to 1:1.

Comments

The applicant has proposed to inundate or otherwise negatively impact 746.50 acres that have been conveyed to DFG through conservation easements to ensure permanent conservation and benefit of native species including SJKF.

The majority of this acreage is in the west side grasslands adjacent to the existing reservoir. As stated previously in the SJKF discussion, this area provides a critical and high quality north south connection to Round Valley Regional Preserve and areas further north. Also, there is inadequate information about the disturbance at the Inlet/Outlet Pipeline to assume

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that longer term disturbance will not have permanent impacts. The proposal to mitigate impacts to these conserved areas by conserving similar acreage within the watershed is inadequate. The value of lands within these easement areas is based not only on their present function and value, but on the assumption that their conservation value has increased over time in response to management.

CCWD must follow the procedures of Fish and Game Code Section 1348.3, which requires notice and consultation before a wildlife conservation easement is affected. CCWD must also comply with the eminent domain law, which says that a public entity can take land for a public use, even if it is already being put to public use (CCP 1240.610). While there is a presumption that the State's public use has priority (CCP 1240.640), the public entity attempting to use eminent domain can demonstrate that their public use is more necessary.

Alternatively, DFG may consider a proposal by CCWD to minimize incompatible uses in the conservation easement area (i.e., discretionary siting of facilities would not be allowed to occur within the easement area) and to provide compensation for all losses, including direct, indirect, and temporal losses, that would occur as a result of Project implementation.

16 Cont.

To comply with later Biological Opinions, other areas within the watershed have been conserved, managed, and monitored to mitigate impacts from the construction of the current Los Vaqueros Reservoir to other species including CRLF and CTS. Although these areas are not encumbered by conservation easements, CCWD is obligated to manage and monitor these areas for the benefit of native species. No additional conservation benefit can be gained in these areas, and therefore no conservation credit will be considered.

We appreciate this opportunity to comment on the proposed Project. If you have any further questions, please contact Ms. Janice Gan, Environmental Scientist, at (209) 835-6910; Ms. Corinne Gray, Environmental Scientist, at (707) 944-5526 for fisheries issues; or Mr. Scott Wilson, Environmental Program Manager, at (707) 944-5584.

Sincerely,

Charles Armor
Regional Manager
Bay Delta Region

cc: State Clearinghouse

NATURAL RESOURCES AGENCY ARNOLD SCHWARZENEGGER, GOVERNOR

DEPARTMENT OF CONSERVATION
DIVISION OF LAND RESOURCE PROTECTION
801 K STREET • MS 18-01 • SACRAMENTO, CALIFORNIA 95814
PHONE 916 / 324-0850 • FAX 916 / 327-3430 • TDD 916 / 324-2555 • WEBSITE conservation.ca.gov

April 21, 2009



VIA FACSIMILE (925) 686-2187
Marguerite Naillor
Contra Costa Water District
P.O. Box H20
Concord, CA 94524

Dear Ms. Naillon:

Subject: Los Vaqueros Reservoir Expansion Project Draft Environmental Impact Report (Contra Costa County) - **SCH# 2006012037**

The Department of Conservation's (Department) Division of Land Resource Protection (Division) has reviewed the Draft Environmental Impact Report (DEIR) for the referenced project. The Division monitors farmland conversion on a statewide basis and administers the California Land Conservation (Williamson) Act and other agricultural land conservation programs. We offer the following comments and recommendations with respect to the project's impacts on agricultural land and resources.

Project Description

The purpose of the Los Vaqueros Reservoir Expansion project is to use an expanded Los Vaqueros Reservoir system to develop water supplies for environmental water management that supports fish protection, habitat management, and other environmental water needs in the Delta and tributary river systems. The majority of the project is located in southeastern Contra Costa County (County), while a small portion is in Alameda County. Depending on which project alternative is chosen, the project could convert approximately 22 acres of Farmland of Statewide Importance and may affect properties under the Williamson Act. The impact of this project may be significant and unavoidable. Therefore, the Division recommends that any subsequent California Environmental Quality Act (CEQA) document address the following items to provide a comprehensive discussion of potential impacts of the project on agricultural land and activities: 1

Agricultural Setting of the Project

- Location and extent of Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and other types of farmland in and adjacent to the project area.
- Current and past agricultural use of the project area. Please include data on the types of crops grown, and crop yields and farm gate sales values. 2

To help describe the full agricultural resource value of the soils on the site, the Department recommends the use of economic multipliers to assess the total contribution of the site's potential or actual agricultural production to the local, regional and state economies. Two sources of economic multipliers can be found at the University of California Cooperative Extension Service and the United States Department of Agriculture (USDA).

Project Impacts on Agricultural Land

- Type, amount, and location of farmland conversion resulting directly and indirectly from project implementation and growth inducement, respectively.
- Impacts on current and future agricultural operations; e.g., land-use conflicts, increases in land values and taxes, vandalism, etc.
- Incremental project impacts leading to cumulative impacts on agricultural land. This would include impacts from the proposed project, as well as impacts from past, current, and likely projects in the future.

3

Under California Code of Regulations §15064.7, impacts on agricultural resources may also be both quantified and qualified by use of established thresholds of significance. As such, the Division has developed a California version of the USDA Land Evaluation and Site Assessment (LESA) Model. The California LESA Model is a semi-quantitative rating system for establishing the environmental significance of project-specific impacts on farmland. The model may also be used to rate the relative value of alternative project sites. The LESA Model is available on the Division's website at:

http://www.consrv.ca.gov/DLRP/qh_lesa.htm

Mitigation Measures

The loss of agricultural land represents a permanent reduction in the State's agricultural land resources. As such, the Department recommends the use of permanent agricultural conservation easements on land of at least equal quality and size as partial compensation for the direct loss of agricultural land. If a Williamson Act contract is terminated, or if growth inducing or cumulative agricultural impacts are involved, the Department recommends that this ratio of conservation easements to lost agricultural land be increased. Conservation easements will protect a portion of those remaining land resources and lessen project impacts in accordance with CEQA Guideline §15370. The Department highlights this measure because of its acceptance and use by lead agencies as an appropriate mitigation measure under CEQA and because it follows an established rationale similar to that of wildlife habitat mitigation.

4

Mitigation via agricultural conservation easements can be implemented by at least two alternative approaches: the outright purchase of easements or the donation of mitigation fees to a local, regional or statewide organization or agency whose purpose includes the acquisition and stewardship of agricultural conservation easements. The conversion of agricultural land should be deemed an impact of at least regional significance. Hence, the search for replacement lands should be conducted regionally or statewide, and not limited strictly to lands within the project's surrounding area.

Other forms of mitigation may be appropriate for this project. One mitigation option would be to direct a mitigation fee to invest in supporting the commercial viability of the remaining agricultural land in the project area, County or region. This would be accomplished through the use of a mitigation bank that would invest in agricultural infrastructure, water supplies, marketing, etc.

The Department also has available a listing of approximately 30 "conservation tools" that have been used to conserve or mitigate project impacts on agricultural land. This compilation report may be requested from the Division at the address or phone number below. General information about agricultural conservation easements, the Williamson Act, and provisions noted above is available on the Department's website:

http://www.conservation.ca.gov/dlrp/index.htm

Of course, the use of conservation easements is only one form of mitigation that should be considered. Any other feasible mitigation measures should also be considered.

4 Cont.

Williamson Act Lands

Under California Code of Regulations §15206(b)(3), a project is deemed to be of statewide, regional or area-wide significance if it would result in the cancellation of a Williamson Act contract for any parcel of 100 or more acres. The public agency responsible for such a project, must submit a DEIR or Negative Declaration to the State Clearinghouse and the appropriate metropolitan area council of governments for review and comment. In any subsequent CEQA document, the Department recommends that the following information be provided and/or discussed:

- A map detailing the location of agricultural preserves and contracted land within each preserve. The CEQA document should also tabulate the number of Williamson Act acres, according to land type (e.g., prime or non-prime agricultural land), which could be impacted directly or indirectly by the project.
- A discussion of Williamson Act contracts that may be terminated in order to implement the project. The CEQA document should discuss the probable impacts on nearby properties resulting from the termination of adjacent Williamson Act contracts. For example, a termination of a Williamson Act contract may have a growth-inducing impact. In other words, a termination may not only lift a barrier to development, but also result in higher property taxes, and thus, an incentive to shift to a more intensive land use, such as urban development.
- As a general rule, land can only be withdrawn from a Williamson Act contract through the nine-year non-renewal process. Immediate termination via cancellation is reserved for "extraordinary circumstances" (See Sierra Club v. City of Hayward (1981) 28 Cal.3d 840, 852-855). Under Government Code §51282, the city or county must approve a request for cancellation and base that approval on specific findings that are supported by substantial evidence. When cancellation is proposed, the Department recommends that a discussion of the findings be included in the CEQA document. Finally, a notice of the hearing to

5

approve the tentative cancellation and a copy of the landowner's petition must be mailed to the Director of the Department ten working days prior to the hearing. (The notice should be mailed to Bridgett Luther, Director, Department of Conservation, c/o Division of Land Resource Protection, 801 K Street MS 18-01, Sacramento, CA 95814-3528.)

- If portions of the planning area are under Williamson Act contracts (and will continue to be under contract after project implementation) the CEQA document should discuss the proposed uses for those lands. Uses of contracted land must meet compatibility standards identified in Government Code §§51238 - 51238.3. Otherwise, contract termination (see paragraph above) must occur prior to the initiation of the land use.
- An agricultural preserve is a zone authorized by the Williamson Act and established by the local government to designate qualified land to be placed under the Williamson Act's 10-year contracts. Preserves are also intended to create a setting for contract-protected lands that is conducive to continuing agricultural use. Under Government Code §51230, "An agricultural preserve may contain land other than agricultural land, but the use of any land within the preserve and not under contract shall within two years of the effective date of any contract on land within the preserve be restricted by zoning, including appropriate minimum parcel sizes that are at a minimum consistent with this chapter, in such a way as not to be incompatible with the agricultural use of the land." Therefore, the CEQA document should also discuss any proposed general plan designation or zoning within agricultural preserves affected by the project.

5 Cont.

Thank you for giving us the opportunity to comment on this DEIR. If you have questions regarding our comments, or require technical assistance or information on agricultural land conservation, please contact Elliott Lum, Environmental Planner, at 801 K Street, MS 18-01, Sacramento, California 95814; or, phone (916) 324-0869.

Sincerely,

Dan Otis
Williamson Act Program Manager

cc: State Clearinghouse

STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY
ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791



MAR 16 2009

Ms. Marguerite Naillon
Contra Costa Water District
Post Office Box H2O
Concord, California 94524-2099

Draft Environmental Impact Statement/Report for the Los Vaqueros Reservoir Expansion Project, SCH #2006012037
Contra Costa County

Dear Ms. Naillon:

We have reviewed the subject Notice for this project, which includes the possible enlargement of Los Vaqueros Dam and modifications to its appurtenances.

Los Vaqueros Dam, No. 1019-3, is currently under the jurisdiction of the Division of Safety of Dams. To proceed with the construction project, an enlargement application, together with plans and specifications, must be filed with the Division. All dam safety related issues must be resolved prior to approval of the application and the work must be performed under the direction of a civil engineer registered in California. Mark Schultz, our Acting Design Engineering Branch Chief, is responsible for the application process and can be reached at (916) 227-4619. 1

If you have any questions or need additional information, you may contact Office Engineer Mike Sutliff at (916) 227-4601 or Regional Engineer Y-Nhi Enzler at (916) 227-4604.

Sincerely,

David A. Gutierrez, Chief
Division of Safety of Dams

cc: Ms. Nadell Gayou
Resources Agency Project Coordinator
Environmental Review Section, DPLA
901 P Street
Sacramento, California 95814

Governor's Office of Planning
and Research
State Clearinghouse
Post Office Box 3044
Sacramento, California 95812-3044

Ms. Sharon McHale
Bureau of Reclamation
Mid-Pacific Region - MP-730
2800 Cottage Way, Room W-2830
Sacramento, California 95825-1898

Linda S. Adams
Secretary for
Environmental Protection

State Water Resources Control Board

Division of Water Rights
1001 I Street, 14th Floor ♦ Sacramento, California 95814 ♦ 916.341.5300
P.O. Box 2000 ♦ Sacramento, California 95812-2000
Fax: 916.341.5400 ♦ www.waterrights.ca.gov

Arnold Schwarzenegger
Governor



In Reply Refer
to:kdm:266.0

Marguerite Naillon
Contra Costa Water District
PO Box H20
Concord, CA 94524-2099

Dear Ms. Naillon:

LOS VAQUEROS RESERVOIR EXPANSION PROJECT, ENVIRONMENTAL IMPACT REPORT (EIR) SCH#2006012037, OLD RIVER IN SAN JOAQUIN COUNTY

Division of Water Rights (Division) staff reviewed the EIR for the Los Vaqueros Reservoir Expansion Project. The proposed project would serve Contra Costa Water District (CCWD), Alameda County Flood Control and Water Conservation District, Zone 7, Alameda County Water District and Santa Clara Valley Water District (CCWD and South Bay agencies). The existing reservoir has a capacity of 100,000 acre-feet (af). The EIR evaluated the following options:

Reservoir Expansion Alternatives With Key Distinguishing Characteristics				
Expanded Reservoir Storage Capacity	275,000 af	275,000 af	275,000 af	160,000 af
New South Bay Connection?	Yes, 470 cubic feet per second (cfs)	Yes, 470 cfs	No	No
Intake Facilities	Construct new 170 cfs intake facility on Old River	Construct new 170 cfs intake facility on Old River	Expand existing CCWD intake facilities by 70 cfs	No changes to existing intake facilities
Pipeline Capacity From Intake to Expanded Reservoir	Expand 320 cfs Pipeline from Delta to Reservoir to 670 cfs. See note.	Expand 320 cfs Pipeline from Delta to Reservoir to 670 cfs. See note.	Expand 320 cfs Pipeline from Delta to Reservoir to 570 cfs.	No changes to pipeline capacity
Note: The Old River facility has a current pump capacity of 250 cfs. This would be increased to 500 cfs, by using the 250 cfs capacity Alternative Intake Pump on Victoria Canal. Also, a new 170 cfs pump would be installed on Old River.				

The existing Los Vaqueros Reservoir (or Los Vaqueros) is operated in accordance with the requirements of Decision 1629. Water is stored in the reservoir pursuant to Permits 20749 and 20750 on Applications 20245 and 25516A, and water is also directly diverted or released from upstream storage in U.S. Bureau of Reclamation (Reclamation) reservoirs and re-diverted to storage in Los Vaqueros pursuant to change petitions on 17 Reclamation water rights. Collection to storage is limited to 95,850 afa under Permit 20749. An additional 9,640 afa can be stored pursuant to Permit 20750.

It is unclear how additional water will be stored in Los Vaqueros Reservoir without obtaining an additional appropriative right. Although the EIR indicates that water will be stored in the facility pursuant to petitions to change either State Water Project (SWP) or Central Valley Project (CVP) water rights, it appears that the project is still undefined because the specific rights that will be modified are not identified. If the project proceeds pursuant to change petitions on existing rights, there will be a very limited storage window and it is unclear whether CCWD has properly modeled this limitation. Whenever the upstream reservoirs, such as Lake Oroville, are filling, water passing through these facilities is considered direct diversion. This water cannot be stored in Los Vaqueros. The water could be directly diverted, provided that the SWP and/or CVP direct diversion rights are not exceeded. Direct diversion is restricted by Decision 1629 and is not allowed from April 1 through April 30 (30 days).

In order to store water in Los Vaqueros, water must be released from upstream storage and subsequently re-stored in Los Vaqueros. As mentioned above, this could not occur during storm events or upstream reservoir fill periods, because water is not being released from upstream storage then. The EIR did not discuss which upstream reservoirs would release stored water for re-storage in Los Vaqueros and the timing for such releases. This constraint, coupled with the Decision 1629 75-day no fill period from March 15 through May 31 (unless Los Vaqueros is below specified minimums) creates a significant restriction on filling Los Vaqueros. The SWP or CVP water rights cannot be enlarged as a result of sending water to storage in Los Vaqueros. Therefore, refill of the upstream reservoirs to offset water conveyed to storage in Los Vaqueros would not be authorized. The impact of shifting water to storage in Los Vaqueros and holding reservoir storage down by a commensurate amount in upstream reservoirs was not evaluated in the EIR. Division staff requests that the EIR identify the quantity that can be put in storage and the timing for storage, after considering these issues.

1

Operations Model: (pp. C3-11 – C3-14)

The operations model used to determine the project impacts (Appendix C) states that the 75-day no-fill period and the 30-day no-diversion period were used only for the Existing and Future Without Project conditions and for Alternative 4. For Alternatives 1, 2 and 3, a 30-day no diversion period was assumed to be in effect. This is inconsistent with Decision 1629, which requires a 75-day no-fill period in addition to the 30-day no diversion period. Thus, the EIR overstates the time period when reservoir filling is allowed, which would overstate storage.

The operations model states that diversions for direct delivery are limited by existing X2 requirements. All diversions should be limited by X2 requirements. Division staff requests an analysis of impacts on X2 and other water quality parameters during periods when the reservoir is filling, and especially during periods when both reservoir fill is occurring and water is being directly delivered to customers.

2

The model assumed reduction in exports are made at Banks Pumping Plant equal to the volume of water wheeled through Los Vaqueros diversion facilities or released from Los Vaqueros Reservoir to meet SWP/CVP contract allocations. CCWD is a Reclamation contractor. Division staff discussed the issue of whether the CVP diversions would be reduced as a result of operating the enlarged Los Vaqueros facility with Reclamation staff on March 12, 2009 and was advised that there is significant unmet contractor demand due to pumping restrictions. Therefore, Reclamation will continue using its Delta pumping facility to the extent possible based on biological opinions and other operating constraints. Thus, the underlying assumption in the EIR that there will be no net effects to resources due to Los Vaqueros pumping because such pumping is offset by reduced pumping at the SWP or CVP facilities is unsupported.

The model states that the SWP is compensated for wheeling of CVP water through Los Vaqueros facilities, and corresponding reduction in exports at Banks Pumping Plant, through reassignment of storage in San Luis Reservoir from CVP water to SWP water. CCWD and the South Bay agencies have no authority to reallocate storage in San Luis Reservoir. Therefore, this conclusion is unsupported.

The model assumes that deliveries to South Bay agencies that are shifted from Banks and Jones pumping plants to the Los Vaqueros system are diverted from the Delta year-round, with the exception of the 30-day no-diversion period. Based on the March 12 discussion with Reclamation staff, it is apparent that when Los Vaqueros is filling, and deliveries are ongoing to CCWD and South Bay agencies, pumping will continue at the SWP and CVP facilities to the fullest extent possible given current limitations. Under these conditions, total Delta diversions are greater than under current operations. Division staff was unable to locate any evaluation of this issue in the EIR.

2 Cont.

Under Alternative 3, Delta diversion foregone by CCWD can be retained in Shasta Reservoir without being released to meet instream flow requirements. This statement is unsupported. Reclamation must operate its facilities, including Shasta Reservoir, to meet instream flow and other operating requirements.

The model assumptions do not state whether the following condition from Decision 1629 was used as an input:

> No diversion is authorized that would adversely affect the operation of the CVP or SWP under permits and licenses for the Projects in effect on the date of this Order. An adverse effect shall be deemed to result from permittee's diversion at any time Reclamation and the Department of Water Resources have declared the Delta to be in balanced water conditions under the Coordinated Operation Agreement or at any other time that such diversion would directly or indirectly require the CVP or SWP to release water from storage or to reduce their diversion or rediversion of water from the Delta to provide or assure flow in the Delta required to meet any applicable provision of state or federal law.

Significant and Unavoidable Impacts:

Alternative 3 was identified as resulting in an increased adverse impact of Delta fishery resources due to increased water diversion from the Delta. This was identified as both a direct project impact and a cumulative effect of the project. (p. ES-30.) It is unclear why Alternatives 2 and 3 did not result in the same conclusion. All of these alternatives increase both direct diversion and storage in the Delta. 3

Table ES-7, List of Mitigation Measures:

The list of mitigation measures does not include the following items which are discussed in the text as means to mitigate project impacts, but don't have related mitigation measures: 4

- Water treatment at the cofferdam
- Soils disposal due to cofferdam construction
- Installation of the cofferdam as mitigation during installation of the new pump
- Noise and vibration impacts associated with soil loading at the new pump location
- Reduced pumping at the SWP and CVP pumps commensurate with new diversion at the Los Vaqueros facilities

Therefore, it appears that the EIR does not properly set forth mitigation measures.

Place of Use Issues:

The EIR discusses using water from the SWP and CVP interchangeably. The EIR does not, however, evaluate any changes in place of use of the various water rights needed to implement the proposed project. The EIR should state whether new lands would be served as a result of increasing the place of use of each project and evaluate any impacts. 5

Cold Water Retention in Upstream Reservoirs: (p. 3-35.)

The EIR states that Reclamation will be able to retain cold water stored in upstream reservoirs because CCWD could refrain from pumping from the Delta and instead draw from the stored Los Vaqueros Reservoir.

To implement this project, Reclamation must provide released stored water for re-storage in Los Vaqueros Reservoir. At times, the quantity of water provided to CCWD by the CVP will be greater than under current conditions, because CCWD will continue to take water needed for direct use while it also stores water in Los Vaqueros Reservoir. The EIR states that in below normal water years, CCWD may forego some diversion and instead use its stored water. Nonetheless, since storage in Reclamation's reservoirs would be initially lowered to fill Los Vaqueros Reservoirs, it is unclear how there is a net gain in the cold-water pool. Reclamation could not refill the storage that it sends to CCWD during the same water year, because it would be considered an expansion in Reclamation's storage right. 6

Cumulative Impact Assessment:

The cumulative impact assessment states that projects were eliminated from consideration if they would not be constructed at the same time as the proposed project, or if it would not generate the same type of impacts as those resulting from the proposed Los Vaqueros project. Water rights projects are operated for very long periods of time. The following projects were not on the list of projects considered, but Division staff believes that the projects should either be taken into consideration or a valid basis for not considering them provided: Delta Wetlands Project, El Dorado Irrigation District project under State filed application, San Joaquin County's application on the American River, Mokelumne River Water and Power Authority application, Stockton East Water District's pending applications, City of Davis and City of Woodland applications. All of these projects have potential cumulative impacts on water supply, movement of X2, etc. 7

Water Rights and Water Service Contracts:

This section does not state the water rights and/or contracts held by the South Bay agencies. Moreover, this section does not explain how CCWD will obtain sufficient water to fill Los Vaqueros Reservoir when its contract with Reclamation is for delivery of up to 195,000 afa. Division staff requests an explanation of the water contracts of all participating parties, with information on how much water is available under the contracts on a monthly basis (by water year type) to fill the reservoir, while still maintaining customer service. 8

Footnote 1, page 4.2-32:

The footnote states that Common Assumptions has not yet developed a standard constraint equation for Old and Middle River flows under either the Wanger Ruling or the 2008 OCAP. The portion of pumping at the Los Vaqueros intakes to meet CCWD demand and other project benefits, either through direct diversion or diversion to storage, is not included in the equations used in the CalSim II model to constrain modeled net flow in Old and Middle Rivers. It is unclear why this wasn't included in the CalSim II model. 9

If you have any questions, I can be contacted at (916) 341-5363.

Sincerely,

Katherine Mrowka

Katherine Mrowka, Chief
Inland Streams Unit

cc: State Clearinghouse
P.O. Box 3044
Sacramento, CA 95812-3044

6.3 Local and Regional Agencies

6.3 Local and Regional Agencies

TABLE 6.3-1
LOCAL AND REGIONAL AGENCIES THAT SUBMITTED COMMENTS ON THE DRAFT EIS/EIR

Comment Format	Comment ID	Name of Commenter	Title	Organization/ Affiliation
Email	L_ACWD	Paul Piraino	General Manager	Alameda County Water District
Email	L_CCCDCD	John Cunningham	Senior Transportation Planner	Contra Costa County, Department of Conservation and Development
Email	L_CCCFC	Tim Jensen	Senior Civil Engineer	Contra Costa County, Flood Control and Water Conservation District
Email	L_CCCPW	Julia R. Bueren	Public Works Director	Contra Costa County, Public Works Department
Public Hearing	L_CCCSD1	Ann E. Farrell	Director of Engineering	Central Contra Costa Sanitary District
Courier	L_CCCSD2	Ann E. Farrell	Director of Engineering	Central Contra Costa Sanitary District
Fax	L_DDSD	Gary W. Darling	General Manager	Delta Diablo Sanitation District
Mail	L_DSRSD	David A. Requa	Assistant General Manager/District Engineer	Dublin San Ramon Services District
Email	L_EBMUD	Alexander R. Coate	Director of Water and Natural Resources	East Bay Municipal Utility District
Email	L_EBRPD1	Brad Olson	Environmental Programs Manager	East Bay Regional Park District
Mail	L_EBRPD2	Kristin B. Burford and Matthew D. Zinn	Shute, Mihaly & Weinberger LLP	East Bay Regional Park District
Email	L_ECCCHC	John Kopchik	Executive Director	East Contra Costa County Habitat Conservancy
Email	L_RCRA	Craig K. Murray	Development Project Manager II	Richmond Community Redevelopment Agency
Mail	L_RD800	Jeffrey D. Conway	District Manager	Reclamation District 800
Email	L_SCVWD	Sandy Oblonsky	Assistant Officer, Office of Water Utility Enterprise Planning	Santa Clara Valley Water District
Email	L_SRCSD	Stan R. Dean	District Manager	Sacramento Regional County Sanitation District
Email	L_SWC	Terry L. Erlewine	General Manager	State Water Contractors
Email	L_Zone 7	G.F. Duerig	General Manager	Zone 7 Water Agency

ALAMEDA COUNTY WATER DISTRICT

43885 SOUTH GRIMMER BOULEVARD • P.O. BOX 5110, FREMONT, CALIFORNIA 94537-5110
(510) 668-4200 • FAX (510) 770-1793 • www.acwd.org



April 21, 2009

Marguerite Naillon
Contra Costa Water District
P.O. Box H2O
Concord, CA 94524

Louis Moore
Bureau of Reclamation
2800 Cottage Way
MP-700
Sacramento, CA 95825

Dear Ms. Naillon and Mr. Moore:

Subject: ACWD Comments on Draft EIR/EIS for the Los Vaqueros Expansion Project

Thank you for the opportunity to comment on the Draft EIR/EIS for the Los Vaqueros Reservoir Expansion Project EIR/EIS. As you know, Alameda County Water District (ACWD or District) relies on deliveries of State Water Project (SWP) supplies via the South Bay Aqueduct (SBA) to deliver up to 42,000 acre-feet per year to our service area in southern Alameda County. This water is treated at our water treatment plants prior to distribution for potable use. In addition, a portion of our SWP supply is also used for local groundwater recharge operations. On average, the SWP provides approximately 40% of the District's total annual water supply. ACWD also utilizes local runoff from the Alameda Creek Watershed for approximately 40% of our supply, and water purchased from the San Francisco Regional Water System makes up the balance (or approximately 20%) of the District's supplies.

As documented in the Draft EIR/EIS, a key component of the Proposed Action/Project ("ELV Project") is a connection between the Los Vaqueros Reservoir and the SWP's Bethany Reservoir on the California Aqueduct. The Draft EIR/EIS states that, under this alternative (Alternative No. 1), the connection to Bethany Reservoir would be utilized to deliver water from the ELV Project to Bay Area water users, specifically ACWD, Santa Clara Valley Water District (SCVWD) and Zone 7 Water Agency (Zone 7), collectively the South Bay Aqueduct Contractors ("SBA Contractors"). Also, as described in the Draft EIR/EIS, the ELV Project would provide improved water supply reliability benefits including: 1) "Delta Supply Restoration", in which water stored at the ELV Project would be used to partially offset the loss in the SBA Contractors' supply reliability as a result of recent Delta export pumping restrictions; 2) dry year storage benefits, in which additional storage at the ELV Project could

be used to increase the amount of dry year supply for SBA Contractors; and 3) emergency storage benefits, in which stored water in the ELV Project may be available to Bay Area agencies, including ACWD, in the event of a water supply emergency.

The Draft EIR/EIS also describes the environmental benefits of diverting a major portion of the SBA Contractors' Delta supplies through the ELV Project, rather than through the existing SWP and CVP Delta export facilities. As described in the Draft EIR/EIS, these benefits include: 1) improved fish screening, in which these Delta supplies would be diverted through state-of-the-art fish screens, rather than the currently unscreened diversions of the SWP/CVP pumping facilities; 2) a "No Diversion" period in which ELV Project diversions (including diversions for the SBA Contractors) could be reduced or eliminated during periods when fish are most sensitive to diversion operations; and 3) the use of multiple ELV Project Delta intake locations to improve flexibility to respond to Delta fisheries needs.

Given the importance of the SWP supplies and the South Bay Aqueduct (SBA) in delivering SWP supplies to ACWD, and given that the ELV Project would introduce water from a new source (i.e. the expanded Los Vaqueros Reservoir) into the SBA and Alameda Creek Watershed, ACWD's concerns are primarily relate to potential impacts that the project may have on these existing sources of supply. Comments on the Draft EIR/EIS are provided below:

1. Source of supply for "Delta Supply Restoration" water: The Draft EIR/EIS quantifies the potential supply reliability benefits of providing water labeled as "Delta Supply Restoration" water. However, no description of the source of this water is provided in the Draft EIR/EIS. It is not clear if the source of this water is through transfers, purchases, Delta excess flows, or another source. It is also not clear whether this water will be obtained under CCWD's water rights, SWP water rights, CVP water rights, or another source. Because the description of the source of the reliability water is overly vague, and because of the lack of information regarding this water source, reviewers are unable to determine 1) how realistic it will be to actually acquire this water supply (and provide the water supply benefits as described in the Draft EIR/EIS), and 2) the potential environmental impacts of acquiring this supply, including potential impacts on SWP reliability and water supplies. The EIR/EIS should provide a complete description of the source (or sources) of this supply, and evaluate potential impacts, if any, of diverting this additional amount of water from the Delta. 1

2. Delivery of State Water Project Supplies and South Bay Aqueduct Operations: ACWD currently coordinates with the Department of Water Resources (DWR) for the delivery (timing and quantity) of the District's SWP supplies. These SWP supplies may be delivered directly to the District service area (via the South Bay Aqueduct), stored in San Luis Reservoir, or delivered to Semitropic Groundwater Banking Program for storage. In addition, in certain years, ACWD may recover water stored at Semitropic through exchanges with SWP supplies that otherwise would have been delivered to Kern County or southern California. Similarly, in certain years ACWD may recover water stored in San Luis Reservoir through exchanges with SWP supplies that otherwise would have been delivered to SWP Contractors downstream of San Luis Reservoir. In 2

addition, ACWD may periodically participate in a drought water bank, or other purchase of non-SWP supplies. Under current conditions, ACWD will coordinate with the DWR to convey this purchase water through the SWP facilities to the ACWD service area.

The Draft EIR/EIS does not adequately evaluate potential impacts, if any, that the ELV Project may have on these deliveries (as described above) and associated SWP operations that are critical for the management of ACWD's SWP supplies. At a minimum, EIR/EIS should evaluate the potential impacts on these deliveries (as compared with existing conditions), including timing, delivery rates and capacity constraints, environmental or institutional constraints, pumping and/or energy costs, facility requirements, and operations and maintenance requirements. The evaluation should include any potential effects that the Project may have on the daily, monthly and annual delivery capacities.

2 Cont.

3. Del Valle Reservoir: The Del Valle Reservoir is part of the State Water Project and operates as a regulatory reservoir for the operation of the South Bay Aqueduct. During some periods of the year water from the SBA is stored in Del Valle Reservoir for later release back into the SBA. In addition, Del Valle also provides storage for ACWD and Zone 7 for local supplies. The Draft EIR/EIS does not provide an evaluation of potential impacts, if any, on Del Valle Reservoir. The EIR/EIS should address potential impacts that the ELV Project may have on existing and planned SWP operations at Del Valle Reservoir, as well as any potential effects of the Project on ACWD's and Zone 7's use of the reservoir for storage of local runoff from the Del Valle watershed.

3

4. Water quality and treatment: The EIR/EIS should evaluate potential impacts, if any, to water quality in the South Bay Aqueduct as a result of the Project. Constituents to be evaluated should include: bromide, TOC, TDS, turbidity, pH, dissolved oxygen, taste and odor, algae, alkalinity, and temperature. This evaluation should include seasonal changes, as well as changes under a wide range of hydrologic conditions (i.e. critical, dry, below normal, above normal and wet conditions). The EIR/EIS should evaluate the effects that the changed SBA water quality may have on our ability to treat water from the SBA at each of our water treatment plants. Any potential changes in treated water quality, production capacity, and/or treatment costs as a result of the Project should be evaluated. Both ACWD and Zone 7 have conducted preliminary assessments of the Project in terms of impacts to treatment costs at their treatment plants. These assessments were previously transmitted to CCWD and should be considered in the EIR/EIS evaluation.

4

5. Aquatic species and habitat: Currently, water from the SBA is introduced into the Alameda Creek Watershed from a variety of mechanisms, including SBA releases to Del Valle Reservoir and releases into Alameda Creek above Niles Canyon (via the Vallecitos Turnout) for ACWD's groundwater percolation program. Given that the ELV Project would introduce a new source of supply into the SBA, the EIR/EIS should evaluate potential impacts, if any, that this new source may have on habitat and aquatic

5

species in local watersheds. This evaluation should include the potential introduction of invasive and/or predatory species that currently are not found in the Alameda Creek Watershed. 5 Cont.

Thank you again for the opportunity to comment on the Draft EIR/EIS for the Los Vaqueros Reservoir Expansion Project. We appreciate the effort that ELV Project staff has taken to coordinate with ACWD, and look forward to continue working with CCWD and the USBR on this project.

Sincerely,

Paul Piraino
General Manager

cc: Jill Duerig, Zone 7 Water Agency
Sharon Judkins, Santa Clara Valley Water District



------ Forwarded Message
From: Los Vaqueros <lvstudies@hotmail.com>
Date: Tue, 21 Apr 2009 15:14:21 -0700
To: Andrea Nocito <a.nocito@circlepoint.com>
Conversation: Comments - CALFED Los Vaqueros Reservoir Expansion Studies Website
Subject: FW: Comments - CALFED Los Vaqueros Reservoir Expansion Studies Website

> From: jcunn@cd.cccounty.us
> To: LVStudies@hotmail.com
> Subject: Comments - CALFED Los Vaqueros Reservoir Expansion Studies Website
> Date: Tue, 21 Apr 2009 18:13:55 -0400
> SENDER'S NAME: John Cunningham
> SENDER'S EMAIL: jcunn@cd.cccounty.us
> SENDER'S ADDRESS: 651 Pine Street Martinez CA 94553
> SENDER'S PHONE #: (925) 335-1243
> COMMENTS:
> Ms. Naillon, Mr. Moore:
>
> Thank you for the opportunity to comment on the subject project.
>
> Recreation
> The EIR indicates a number of recreational facilities will be inundated as a result of the project which significantly reduces/degrades recreational opportunities. The EIR goes on to state that these facilities will be relocated and/or replaced as a part of the project. However, the significant impact of the loss of recreational opportunities and the suggested/summarized mitigation measure (Pg. 4.15-9 "All existing recreation facilities that would be affected by the project would either be relocated or replaced with a new facility in the watershed") is not documented in the Summary of Impacts (Pg. 4.15-8). The impact to facilities should be fully disclosed in the Summary of Impacts and the mitigation measure should be listed, in detail, as well in order to facilitate a complete review of the impacts of the project. Considering the information found in section 4.2 related to growth inducing effects the project might remove an obstacle to growth by improving the reliability of water supply..."), recreational facilities should be replaced at a greater than 1:1 rate. 1 2
>
> Transportation/Circulation
> There is conflicting information regarding the use of fill or excavated soil (Pg. 4.9-9 indicates 25% of excavated soil would leave the site. Pg. 4.9-13 indicates onsite use or distribution of excavated material would occur at or near the project site. Please clarify this discrepancy. If soil is to be transported offsite, details on the final destination, route of the trucks and number of trucks must be disclosed in order to fully disclose the impact of the project. 3
>
> The EIR indicates that construction related traffic would be distributed to the various access points to the project site. This should not be assumed. A geographic distribution of trips should be added to the temporal distribution described in Mitigation Measure 4.9.1b in order to ensure that the construction related traffic does not overwhelm the rural roadways in the project vicinity. 4
>
> Sincerely,
>
> - John
> _____
> John Cunningham
> Senior Transportation Planner
> Department of Conservation and Development
> 651 Pine St, 4th Floor - North Wing
> Martinez, CA 94553
> (925) 335-1243
> jcunn@cd.cccounty.us
>

-----Original Message-----
From: Los Vaqueros [mailto:lvstudies@hotmail.com]
Sent: Tue 4/21/2009 5:07 PM
To: Andrea Nocito
Subject: FW: Contra Costa County Flood Control comments on the Los Vaqueros Reservoir Expansion Project

_____

Subject: Contra Costa County Flood Control comments on the Los Vaqueros Reservoir Expansion Project
Date: Tue, 21 Apr 2009 17:00:33 -0700
From: jhern@pw.cccounty.us
To: gconn@pw.cccounty.us; lvstudies@hotmail.com
CC: wmoore@mp.usbr.gov; rlier@pw.cccounty.us; tjens@pw.cccounty.us; trie@pw.cccounty.us

Ms. Naillon,

I have attached the Flood Control District comments on the proposed Los Vaqueros Reservoir Expansion Project. You should also receive a hard copy of our comments through regular mail by April 24, 2009.

We appreciate the opportunity to review plans involving Flood Control District drainage facilities and welcome continued coordination. If you have any questions please contact me via e-mail at jhern@pw.cccounty.us or phone at (925) 313-2304; alternatively, you can reach Teri Rie at trie@pw.cccounty.us or (925) 313-2363.



Truly yours,

Jorge Hernandez
Staff Engineer

cid:image001.jpg@01C868A1.23734780 <http://gfx1.hotmail.com/mail/w3/ltr/i_safe.gif>
255 Glacier Drive
Martinez, CA 94553-4897
Phone: (925) 313-2304
Fax: (925) 313-2333
A Division of the Public Works Department

Contra Costa County
Flood Control
& Water Conservation District

Julia R. Bueren,
ex officio Chief Engineer
R. Mitch Avalon,
Deputy Chief Engineer

April 21, 2009



Marguerite Naillon
Contra Costa Water District (CCWD)
P.O. Box H2O
Concord, CA 94524

Our File: 97-109
RE: Los Vaqueros Reservoir Expansion DEIS/DEIR

Dear Ms. Naillon:

We have reviewed the Draft Environmental Impact Statement / Environmental Impact Report (DEIR) for CCWD's Los Vaqueros Reservoir Expansion Project, which we received on February 24, 2009. The project is located southwest of the town of Byron and east of the Morgan Territory Regional Park.

The Contra Costa County Flood Control & Water Conservation District's (FC District's) main concern regarding this project is its impacts on Kellogg Creek and increased flood risk to the communities of Byron and Discovery Bay. Specifically, the DEIR does not adequately address the increases in storm runoff being directed into Kellogg Creek during construction of the project, during an emergency drawdown, and during a storm event when the reservoir is at capacity. It also does not address recent State legislation requiring the provision of 200-year level of flood protection for Delta communities. Prior to publishing the Final Environmental Impact Report (EIR), CCWD needs to address how mitigation will be provided to the satisfaction of the FC District and the downstream communities. We submit the following comments for your consideration:

Chapter ES.5 Issues of Known Controversy and Issues to be Resolved

Executive Summary (page ES-31)

1. This section of the DEIR should include a discussion regarding the inadequate flood capacity of Kellogg Creek and the requests from the nearby communities of Byron and Discovery Bay for CCWD to explore alternatives to lessen the risk of flooding to their residents.

1

Chapter 2.1 Existing Los Vaqueros Reservoir

Project Background (page 2-1)

2. This section of the DEIR states that the existing reservoir provides flood control benefits on Kellogg Creek, but the benefits are not quantified. Does the reservoir provide protection for a 10, 50, or 100-year storm event? What level of flood protection is provided when the reservoir is at capacity?

2

Chapter 3.5.1 Los Vaqueros Reservoir Expansion / Dam Modification

Appurtenant Facilities — Inlet / Outlet Works (pages 3-49 and 3-50)

3. This section of the DEIR states that the potential emergency drawdown flows directed into Kellogg Creek will increase, as a result of this project, from 1,140-cubic-feet-per-second (cfs) to 1,500-cfs for at least a ten day period. The EIR should state that this flow will exceed the capacity of Kellogg Creek and lead to area-wide flooding, which is a potentially significant impact. 3

Chapter 3.7 Permits and Approvals Needed for Alternatives

State and Local Decision Processes and Local Permits (pages 3-91 and 3-93)

4. The DEIR discusses construction of a temporary bridge across Kellogg Creek to access a borrow site along Walnut Boulevard as well as construction of conveyance pipelines across Kellogg Creek, Brushy Creek, and many other unnamed drainage facilities. These activities require a permit under the County's 1010 Drainage Ordinance. The need for this permit should be discussed in Section 3.7.1 and listed on Table 3-8. 4

Chapter 4.5.1 Affected Environment

Regulatory Setting — FC District (page 4.5-6)

5. This section states that the FC District or "...FCWCD, is empowered to control flooding and storm water..." This should be revised to more accurately state that the FC District works with local communities to provide flood protection and stormwater management for their residents. 5

6. This section should also state that the proposed reservoir and transfer facility expansions are located within Drainage Area 109 (DA 109), for which a drainage fee is due in accordance with Flood Control Ordinance Number 94-75. The ordinance finds that new developments, with the associated increases in impervious surface, can have adverse effects on regional drainage systems, requiring those systems to be upgraded and maintained. The ordinance requires the collection of fees based on square footage of new created impervious area to address these effects. By ordinance, all building permits issued in this area are subject to the provisions of the drainage fee ordinance. Effective February 16, 1995, the current fee in this drainage area is $0.35 per square foot of newly created impervious surface. The expanded reservoir water surface will effectively create an impervious surface, and the new transfer facility will create a new impervious surface area. Prior to construction of these facilities, the drainage area fee for these new impervious surfaces should be collected. Additionally, our records indicate that drainage area fees were not collected for the previously constructed Interpretive Center and adjacent parking lot below the dam. These fees should be paid to the FC District with this project. 6

The FC District will consider waiving the drainage area fee for the reservoir water surface, provided the project includes improvements and operational criteria that mitigate the downstream flood impacts.

6 Cont.

Environmental Setting — Hydrology — Kellogg Creek Watershed (page 4.5-8)

7. This section of the DEIR should note that Kellogg Creek currently does not have adequate capacity to convey the 100-year design storm at locations downstream of the project and that a significant number of properties are subject to flooding.
8. The DEIR states that "with the attenuating effect of the existing dam, the 100-year peak runoff in lower Kellogg Creek would be about 150-cfs." Where along Kellogg Creek does this runoff quantity occur? At what stage in the reservoir storage does this attenuation occur? Please submit hydraulic studies that show this information to the FC District for review.

7

Environmental Setting — Hydrology — Flood Potential (page 4.5-9)

9. This section mentions the Letter of Map Revision (LOMR) submitted to FEMA as a result of the construction of the original Reservoir, but does not mention the effects on the floodplain during the 4-year construction period of the expansion project, during which water will not be stored in the dam. Because of the existing Kellogg Creek capacity issues, at least 100-year level of flood protection should be provided during construction of the expansion project.

Chapter 4.5.3 Impacts and Mitigation Measures

Impact 4.5.5: Project Alternatives 1, 2, and 3 could place structures within a 100-year flood hazard area as mapped on a federal Flood Insurance Rate Map, which could impede or redirect flood flows. (page 4.5-29).

10. The DEIR does not address the impact on the downstream floodplain during construction of the project. The floodplain was revised as a result of the original Reservoir and a LOMR submitted to FEMA. As currently proposed, storm runoff within the reservoir watershed will not be detained by the dam, but will be bypassed around the project site during the 4-year construction period. Not detaining the storm runoff during construction will negate the benefits provided by the original dam, as detailed in the LOMR. As previously stated, Kellogg Creek does not have the capacity to handle the additional runoff and not detaining the storm runoff would lead to downstream flooding. Flood protection for at least a 100-year storm event should be provided during construction of the expansion project. Mitigation measures should include preparing a hydraulic plan, to the satisfaction of the FC District, which demonstrates how flood protection will be provided during construction of the project.

8

11. This section states that "even at full operating capacity, the existing reservoir acts to decrease the magnitude of the 100-year peak flow event in Kellogg Creek below the dam by having the capacity to contain flood flow and controlling the release of water downstream," but due to recent State legislation, this facility needs to be constructed and operated such that it can provide at least 200-year level of flood protection for all downstream communities. Because of the existing Kellogg Creek capacity issues, the expanded reservoir should always provide enough freeboard to not only decrease, but entirely mitigate the impacts of the 200-year peak flow storm event. The Reservoir's Operations Plan should optimize storage while providing necessary flood protection. At the very least, a drainage study needs to be conducted to determine the amount of storage volume in the reservoir will be necessary to mitigate the 200-year storm event. This may require improvements to Kellogg Creek such that no homes or other improvements are impacted. 9

    Due to the vast existing, and future, community downstream of this project, this expanded reservoir should be operated jointly as a water-storage facility and as a flood control facility with the future in mind. The CCWD should provide a detailed analysis of the drainage facilities within the downstream communities and the capacity of Kellogg Creek so the flood risk can be better evaluated prior to publishing the Final EIR. The FC District and community desire to work with CCWD to potentially obtain a LOMR from FEMA and remove as much of the community as possible from the floodplain. The FC District should review any drainage studies prepared for this project for adequacy on behalf of the nearby communities.

Impact 4.5.6: The project alternatives would not substantially increase the exposure of people and/or structures to risks associated with inundation by dam or levee failure. (pages 4.5-33 and 4.5-34).

12. This section of the DEIR mentions that a revised inundation map will be submitted to the California Office of Emergency Services and that the County of Contra Costa has prepared an emergency evacuation plan that reflects the inundation scenario associated with the existing reservoir. A copy of the revised inundation map should also be submitted to the FC District for review. Additionally, with the proposed expansion more than doubling the existing reservoir capacity, the emergency evacuation plan should be reevaluated. The Final EIR must include coordinating with the Office of Emergency Services in evaluating and revising the emergency evacuation plan as a mitigation measure. 10

13. With regard to the facility's emergency drawdown (or evacuation), this section of the DEIR states that "the discharge rate to Kellogg Creek increases to 1,500-cfs under the additional 88-feet of reservoir head and that shallow flooding would occur along sections of Kellogg Creek during the emergency release." This is not adequate, because the extent of flooding caused by the emergency release has not been quantified and evaluated to determine what the impact will be. Since the release time period is at least ten days, the impacts are potentially significant. A hydraulic study with an inundation map that determines the extent of flooding along Kellogg Creek during drawdowns needs to be submitted to the FC District for review. Appropriate mitigation measures should be proposed after review of the study in conjunction with input from the FC District and nearby communities. Improvements should be made by the CCWD to Kellogg Creek such that all emergency releases are contained within the creek and no structures or roadways are impacted. The impacts associated with any creek improvements should also be included in the Final EIR, along with proposed mitigation measures. 11

Additional Comments

14. Raising the reservoir water surface will impact wetland, floodplain, and riparian habitat. As part of the proposed mitigation for this project, the FC District recommends that CCWD create wetland, floodplain, and riparian corridor habitat areas along Kellogg Creek. This mitigation work could include flood capacity enhancements in Kellogg Creek providing CCWD mitigation for both flooding and habitat and perhaps even a more overall cost-effective mitigation. Any proposed mitigation should be in alignment with the East County Habitat Conservation Plan. The FC District and community need to be included in the development of any mitigation alternatives. 12

15. The addition of the Los Vaqueros Reservoir into the Kellogg Creek Watershed has impacted the hydro-geomorphic characteristics of Kellogg Creek downstream of the dam, affecting sediment transport, erosion, vegetation, and wildlife habitat. Although this was constructed some time ago and was evaluated in the original EIR, the requirements and scientific capabilities to evaluate the impacts of the facility upon the watershed dynamics have increased. This project should be required to measure and evaluate the impacts of the existing and proposed facility to determine if the creek system is balanced, healthy, and naturally sustainable. One of the areas of investigation should be to evaluate the hydro-geomorphology of Kellogg Creek downstream of the expanded facility — especially in regards to potential sediment generation from the now sediment deficient section of stream downstream of the dam. What would be the potential erosion created by the now "sediment-starved" section of stream? How would this sediment transport downstream? Where would it likely settle? What affects 13

would the increased sediment downstream have upon flood protection for downstream communities? For any potentially significant impacts, CCWD should provide appropriate mitigation measures to ensure proper creek characteristics and function. The FC District should be provided the opportunity to review and provide comments on the hydro-geomorphic studies and proposed mitigation measures prior to publishing the Final EIR.

13 Cont.

We appreciate the opportunity to comment on the DEIS/DEIR and welcome continued coordination. If you should have any questions, please contact Jorge Hernandez at (925) 313-2304 or via e-mail at jhern@pw.cccounty.us; alternately, you can contact Teri Rie at (925) 313-2363 or trie@pw.cccounty.us.

Sincerely,

Tim Jensen
Senior Civil Engineer
Contra Costa County Flood Control
& Water Conservation District

TJ:JH:cw
G:\FldCtl\CurDev\CITIES\Byron\97-109\Los Vaqueros Reservoir Expansion\DEIS-DEIR FCD Comments 4-21-2009.doc

c: Supervisor Mary Piepho , District 3
Julia R. Bueren, Chief Engineer
R. Mitch Avalon, Deputy Chief Engineer
Greg Connaughton, Flood Control
Paul Detjens, Flood Control
Teri E. Rie, Flood Control
Rich Lierly, Flood Control, Watershed Program
Roberta Goulart, Department of Conservation and Development
Louis Moore
Bureau of Reclamation
2800 Cottage Way, MP-700
Sacramento, CA 95825
Attn: Los Vaqueros Reservoir Expansion Project DEIS/EIR

-----Original Message-----
From: Los Vaqueros [mailto:lvstudies@hotmail.com]
Sent: Tue 4/21/2009 4:47 PM
To: Andrea Nocito
Subject: FW: Contra Costa County comments on the Los Vaqueros Reservoir Expansion Project

_____



Subject: Contra Costa County comments on the Los Vaqueros Reservoir Expansion Project
Date: Tue, 21 Apr 2009 16:29:46 -0700
From: gconn@pw.cccounty.us
To: lvstudies@hotmail.com
CC: wmoore@mp.usbr.gov; rlier@pw.cccounty.us; jhern@pw.cccounty.us

Marguerite Naillon - Find attached comment letter from Contra Costa County regarding your Draft Environmental Impact Report for the Los Vaqueros Reservoir Expansion Project. Please contact me or Rich Lierly at (925) 313-2348 if you have any questions regarding our comments.

Greg

FCD Logo010807 <http://gfx1.hotmail.com/mail/w3/ltr/i_safe.gif>
Greg Connaughton PE
Supervising Civil Engineer
Manager Flood Control Division
Public Works Department
255 Glacier Drive
Martinez, CA 94553
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Contra Costa County
Public Works Department

Julia R. Bueren, Director
Deputy Directors
R. Mitch Avalon • Brian M. Balbas
Stephen Kowalewski • Patricia McNamee

April 21, 2009



Marguerite Naillon
Contra Costa Water District (CCWD)
P.O. Box H2O
Concord, CA 94524

RE: Los Vaqueros Reservoir Expansion DEIS/DEIR

Dear Ms. Naillon:

We have reviewed the Draft Environmental Impact Statement / Environmental Impact Report (DEIR) for CCWD's Los Vaqueros Reservoir Expansion Project (LVREP), which we received on February 24, 2009. The project is located southwest of the town of Byron and east of the Morgan Territory Regional Park.

This letter summarizes the concerns of Contra Costa County (County), identified by its Public Works Department and Department of Conservation and Development, regarding inadequate analysis and proposed mitigation for the impacts of the LVREP. We believe the DEIR must address impacts of the project in the following areas:

1) Kellogg Creek Channel

The capacity of the Kellogg Creek channel must be analyzed along its entire length to determine its adequacy to convey discharges from the LVREP under normal operating conditions, during periods of emergency release and during construction. The risk of flooding and its threat to life and property and potential to create other economic and habitat loss must be determined. 1

The chronic hydro-morphological effects of changed flow regimes in Kellogg Creek resulting from the LVREP must also be assessed, including: potential for channel down-cutting and lateral movement due to sediment starvation and erosion caused by the increased frequency of low-flow events and proliferation of vegetation (due to higher base flows). 2

2) Kellogg Creek Floodplain

The EIR should consider mitigation for the impacts of increased flooding in the Kellogg Creek floodplain. The Kellogg Creek floodplain must be analyzed to determine the extent and depths of flooding due to releases from the LVREP under normal, emergency, and during construction conditions. New LIDAR based topographic information, available from the County, will facilitate this required analysis. 3

3) Habitat Impacts

The EIR should identify mitigation for habitat lost due to raising the reservoir water surface elevation. The change in water-surface elevation will impact new habitat areas as well as habitat created or restored to mitigate the original Los Vaqueros reservoir project. Proposed mitigation measures must address both types of loss. Although the LVREP is not included within the East County Habitat Conservation Plan (ECHCP), all proposed mitigation for the project should be consistent with the ECHCP. All project mitigation should be accomplished within the County (for example by constructing mitigation work within Kellogg Creek downstream of the LVREP) and not through the use of a mitigation bank outside the County. 4

4) Water for Contra Costa County

The EIR should discuss the priority rights of the ratepayers of the Contra Costa Water District (CCWD) and the interests of the citizens of the County to water stored in the Los Vaqueros Reservoir. The State of California is interested in increasing the flexibility for water management in and around the Delta. The LVREP may be an element in the State's water management plan. The EIR should set forth a clear explanation of the potential contractual requirements of the State affecting the use of water stored in the LVREP by the County. The EIR should identify means to ensure the water volume stored by the original Los Vaqueros Reservoir project remains available to the CCWD ratepayers. In addition, the EIR should discuss measures to establish priority use of the increased water volume stored in the LVREP locally in the County during an emergency or period of drought, and to avoid the contractual requirement to export water outside the County during times of critical need. 5

5) Local Recreational Access

The EIR should discuss mitigation for recreational opportunities lost due to the LVREP and the potential to enhance access and recreational opportunities for the public with expansion of the reservoir. The EIR should also identify new access to recreational opportunities convenient to the citizens of Contra Costa County to be provided by the LVREP. 6

The County's concerns regarding the LVREP are discussed in more detail below:

<u>Chapter ES.5 Issues of Known Controversy and Issues to be Resolved</u>

Executive Summary (page ES-31) 7

This section of the DEIR should discuss the inadequate flood capacity of Kellogg Creek and the need of the communities of Byron and Discovery Bay for flood risk reduction.

Chapter 2.1 Existing Los Vaqueros Reservoir

Project Background (page 2-1)

This section of the DEIR should quantify the flood control benefits provided by the existing reservoir and identify the extent of the benefited area. The level of flood protection provided by the reservoir should be characterized as a 10, 50, 100-year, or greater recurrence storm event, and the means used to provide this level of flood protection should be identified. For example: What level of flood protection is provided when the reservoir is at capacity? 8

Chapter 3.5.1 Los Vaqueros Reservoir Expansion / Dam Modification

Appurtenant Facilities — Inlet / Outlet Works (pages 3-49 and 3-50)

This section of the DEIR states that the potential emergency drawdown flows directed into Kellogg Creek will increase, as a result of this project, from 1,140-cubic-feet-per-second (cfs) to 1,500-cfs for at least a ten-day period. The EIR should state that this flow will exceed the capacity of Kellogg Creek and discuss the potential significant impact of localized or general flooding events. 9

Chapter 3.7 Permits and Approvals Needed for Alternatives

State and Local Decision Processes and Local Permits (pages 3-91 and 3-93)

The DEIR discusses construction of a temporary bridge across Kellogg Creek to access a borrow site along Walnut Boulevard as well as construction of conveyance pipelines across Kellogg Creek, Brushy Creek, and many other unnamed drainage facilities. These activities require a permit under the County's 1010 Drainage Ordinance. The need for this permit should be discussed in Section 3.7.1 and listed on the Table 3-8. 10

Chapter 4.5.1 Affected Environment

Environmental Setting — Hydrology — Kellogg Creek Watershed (page 4.5-8)

This section of the DEIR should note that Kellogg Creek currently does not have adequate capacity to convey the 100-year design storm at locations downstream of the project and the number and locations of properties potentially subject to flooding should be identified. 11

The DEIR states that "with the attenuating effect of the existing dam, the 100-year peak runoff in lower Kellogg Creek would be about 150-cfs." The EIR should identify the runoff volumes at various critical points along Kellogg Creek during a 100-year peak runoff and discuss the operational conditions of the reservoir resulting in these runoff volumes. 11 Cont.

Environmental Setting — Hydrology — Flood Potential (page 4.5-9)

This section mentions the Letter of Map Revision (LOMR) submitted to FEMA as a result of the construction of the original Reservoir, but does not mention the effects on the floodplain during the 4-year construction period of the expansion project, during which water will not be stored in the dam. Because of the existing Kellogg Creek capacity issues, at least 100-year level of flood protection should be provided during construction of the expansion project. 12

Chapter 4.5.3 Impacts and Mitigation Measures

Impact 4.5.5: Project Alternatives 1, 2, and 3 could place structures within a 100-year flood hazard area as mapped on a federal Flood Insurance Rate Map, which could impede or redirect flood flows. (page 4.5-29).

This section of the DEIR should mention the mitigation measures that will be implemented during the construction of the expansion project, during which storm runoff within the watershed will be bypassed around the project site. As previously stated, at least 100-year level of flood protection should be provided during construction of the expansion project. 13

The DEIR states that "even at full operating capacity, the existing reservoir acts to decrease the magnitude of the 100-year peak flow event in Kellogg Creek below the dam by having the capacity to contain flood flow and controlling the release of water downstream." However, the DEIR does not state that the reservoir is actually operated to provide capacity to capture and store, and thus fully mitigate, the runoff volume from the 100-year peak-flow storm event. Because of the existing Kellogg Creek capacity issues, and in light of recent State legislation, LVREP should be constructed and operated such that it can provide at least 200-year level of flood protection for all downstream communities. The DEIR should discuss the possible need to construct improvements to Kellogg Creek downstream of the LVREP to achieve mitigation of flood hazards in the flood plain due to a 200-year recurrence storm.

Impact 4.5.6: The project alternatives would not substantially increase the exposure of people and/or structures to risks associated with inundation by dam or levee failure. (pages 4.5-33 and 4.5-34). 14

This section of the DEIR should state that a revised inundation map will be submitted to the California Office of Emergency Services and to the County of Contra Costa. The DEIR should discuss the need for revisions to the emergency evacuation plan prepared by the County to reflect the inundation scenario associated with the LVREP and should identify how the revised emergency evacuation plan will be prepared. We suggest CCWD coordinate with the County Office of Emergency Services in evaluating and revising the emergency evacuation plan.

14 Cont.

With regard to the facility's emergency drawdown (or evacuation), this section of the DEIR states that "the discharge rate to Kellogg Creek increases to 1,500-cfs under the additional 88-feet of reservoir head and that shallow flooding would occur along sections of Kellogg Creek during the emergency release." The extent of flooding caused by the emergency release should be determined and appropriately mitigated. Since the release time period is at least ten days, the impacts are potentially significant. A hydraulic study with an inundation map that determines the extent of flooding along Kellogg Creek during drawdowns should be submitted to the FC District for review. Appropriate mitigation measures should be proposed after review of the study in conjunction with input from the FC District and nearby communities. Improvements should be made by the CCWD to Kellogg Creek such that all emergency releases are contained within the creek and no structures or roadways are impacted. Impacts associated with creek improvements should be included in the final EIR, along with proposed mitigation measures.

15

Raising the reservoir water surface will impact wetland, floodplain, and riparian habitat. As part of the proposed mitigation for this project, the County recommends that CCWD create wetland, floodplain, and riparian corridor habitat areas along Kellogg Creek. This mitigation work could include flood-capacity enhancements in Kellogg Creek providing CCWD multiple-mitigation benefits for both flooding and habitat restoration and may be more cost-effective mitigation. The FC District and community should be included in the development of any mitigation alternatives.

16

We appreciate the opportunity to comment on the DEIS/DEIR and welcome continued coordination. If you should have any questions, please contact Rich Lierly at (925) 313-2348 or via e-mail at rlier@pw.cccounty.us; alternately, you can contact Greg Connaughton at (925) 313-2271 or gconn@pw.cccounty.us.

Sincerely,

Julia R. Bueren
Public Works Director
Contra Costa County

JRB:GC:cw
G:\fldctl\Greg\My Documents\2009\04 April 2009\DEIS-DEIRCounty Comments 4-21-2009.doc

c: Supervisor Mary Piepho, District 3
R. Mitch Avalon, Deputy Public Works Director
Greg Connaughton, Flood Control
Paul Detjens, Flood Control
Tim Jensen, Flood Control
Teri E. Rie, Flood Control
Rich Lierly, Flood Control, Watershed Program
Roberta Goulart, Department of Conservation and Development
Louis Moore
Bureau of Reclamation
2800 Cottage Way, MP-700
Sacramento, CA 95825
Attn: Los Vaqueros Reservoir Expansion Project DEIS/EIR

LOS VAQUEROS RESERVOIR EXPANSION PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT/
ENVIRONMENTAL IMPACT REPORT (DRAFT EIS/EIR)
PUBLIC HEARINGS

CONTRA COSTA WATER DISTRICT

SPEAKER CARD

CONCORD - MARCH 31, 2009

Name: Ann Farrell

Affiliation: CCCSD

Address: 5019 Imhoff Place
Martinez CA

Phone: 925 | 229-7307

E-mail: afarrell@centralsan.org

Please submit your speaker card to the registration desk or meeting facilitator. The hearing officer will use the cards to invite participants to provide verbal comments during the public hearing.

(1)

LOS VAQUEROS RESERVOIR EXPANSION PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT/
ENVIRONMENTAL IMPACT REPORT (DRAFT EIS/EIR)
PUBLIC HEARINGS

COMMENT CARD

Comments may be submitted today or mailed to:

Marguerite Naillon
Contra Costa Water District
P.O. Box H2O
Concord, CA 94524
Attn: Los Vaqueros Reservoir Expansion Project DEIS/EIR
Fax: (925) 686-2187
lvstudies@hotmail.com

OR

Louis Moore
Bureau of Reclamation
2800 Cottage Way, MP-700
Sacramento, CA 95825
Attn: Los Vaqueros Reservoir Expansion Project DEIS/EIR
Fax: (916) 978-5094
wmoore@mp.usbr.gov

Please submit comments by 5:00 p.m. on Tuesday, April 21, 2009.

Name: Ann E Farrell
Affiliation: Central Contra Costa Sanitary District
Address: 5019 Imhoff Place, Martinez CA
Phone: 925/229-7302
E-mail: afarrell@centralsan.dst.ca.us

Comments:

Please use the reverse side or attach any additional pages

COMMENTS FOR LOS VAQUEROS RESERVOIR EXPANSION
PUBLIC HEARING
3-31-09 Concord, CA

I am Ann Farrell, Director of Engineering for Central Contra Costa Sanitary District. We treat the wastewater for the central County portion of the Contra Costa Water District Service Area. Our mission is to protect the public health and the environment by collecting and treating wastewater, promoting pollution prevention, and recycling high quality water.

I am here tonight to speak about the highly treated recycled water from our treatment facility and the role it could play in increasing the yield of any Los Vaqueros Reservoir Expansion Project. We currently discharge 40 million gallons per day of treated wastewater to the Suisun Bay – a tidal estuary that forms the entrance to the Delta. This is enough water to serve about 250,000 people or 100,000 homes.

In the early 1970's facilities were constructed to supply recycled wastewater from our treatment facility in Martinez @ the 4/680 intersection to the nearby Shell and Tesoro refineries also in Martinez. Those facilities, although unused, still exist and could supply the refineries with up to 20 million gallons per day of our effluent, with some additional treatment. This would free up 20 million gallons of fresh water - enough to serve the entire City of Concord, including the proposed development at the Concord Naval Weapons Station or to provide significant environmental benefits by leaving the water in the Delta. A flyer describing this project will be submitted with my testimony.

For the last 15 years, CCCSD has been actively lobbying CCWD to serve recycled water to the refineries and free up potable water supplies for other uses, such as water supply reliability and environmental water. CCWD has maintained that the financial cost to their rate payers was too great, due to the lost revenues from the refineries. 1

When we at CCCSD first learned of the proposal to expand Los Vaqueros and the concept of inviting other partners, including the U.S. Bureau of Reclamation and some South Bay water users, such as Santa Clara Valley Water District into the process, we thought this would be the perfect opportunity to incorporate the refinery recycled water project as a component of the Los Vaqueros Reservoir Expansion, as it would have

similar benefits. The annual yield of 22 thousand acre feet per year of raw water freed up by the refinery recycled water project could be used to fill Los Vaqueros Reservoir to reduce diversions from the Delta, could be transferred to other project participants or could be released upstream for environmental enhancement. The participation of outside partners provided the opportunity to obtain outside funding to offset CCWD's revenue loss. We submitted a letter to CCWD and CALFED in August 2003 requesting that recycled water be included in the Los Vaqueros Expansion Studies. Copies are provided for your information.

Now, more than five years later, we are greatly disappointed to find that recycled water has been dismissed in the Environmental Documents. There are few potential recycled water projects in the State of California with the potential to generate a yield of 22 thousand acre feet per year on a continuous basis. The Los Vaqueros Expansion Alternatives themselves claim benefits of a maximum of 3 thousand acre feet per year in a 6-year drought for CCWD Water Supply Reliability. A recycled water component to supply the Shell and Tesoro refineries with recycled water would increase the yield of any Expansion alternative by 22 thousand acre feet per year each and every year. If this yield were used to benefit CCWD Water Supply Reliability, it would have more than seven times the benefit of a Los Vaqueros Reservoir Expansion. Alternatively, the additional yield could be used to supplement the Environmental Water Management benefits of the Reservoir Expansion.

2

In summary, water is a valuable resource and we must use it wisely. As a public agency with a mission to protect the public health and the environment, we must respectfully request that the Los Vaqueros Reservoir Expansion environmental documentation incorporate the supply of recycled water to the Shell and Tesoro refineries in Martinez as a component of each Expansion alternative.

Central Contra Costa Sanitary District
5019 Imhoff Place, Martinez, Ca 94553 (925) 228-9500 • www.centralsan.org

FAX: (925) 676-7211

CHARLES W. BATTS
General Manager

KENTON L. ALM
Counsel for the District
(510) 808-2000

JOYCE E. MURPHY
Secretary of the District

August 21, 2003

Mr. Joseph Campbell
President, Board of Directors
Contra Costa Water District
P.O. Box H20
1331 Concord Avenue
Concord, CA 94524

Dear Mr. Campbell:

INCLUSION OF RECYCLED WATER IN LOS VAQUEROS EXPANSION STUDIES

Thank you for providing the Central Contra Costa Sanitary District (CCCSD) with a copy of the CALFED's Los Vaqueros expansion informational brochure. As a District, we understand the importance of providing a safe, reliable and high quality water supply for your ratepayers while protecting the Delta. However, we believe that CCWD needs to look at recycled water as an important resource available to help address these problems, and we would like to encourage you to make recycled water an integral part of your water supply master planning efforts for the Los Vaqueros expansion.

CCCSD has the long-term potential to supply up to 44,000 AF/yr of drought proof recycled water to our community. If fully utilized, this supply could free up an equivalent amount of Delta water to meet potable water demands. Unfortunately, only a small fraction (600 AF/yr) of our capacity is currently being utilized on a seasonal basis for landscape irrigation. Our initial studies have identified over 30,000 AF/yr of demand within our service area including about 20,000 AF/yr at the refineries for cooling tower use. Much of the infrastructure is already in place to supply recycled water to the refineries, which have expressed an interest in using recycled water if it could be made available at a price competitive with their current canal (raw) water supply. In order for this to occur, the cooperation of CCWD would be needed to reduce the proposed duplication of services charges and other burdensome costs.

BOARD OF DIRECTORS

JAMES A. NEJEDLY, President • GERALD R. LUCEY, President Pro Tem • PARKE L. BONEYSTEELE • BARBARA D. HOCKETT • MARIO M. MENESINI

Recycled Paper

The success of our current recycled water projects is due, in large part, to the cooperative agreements reached between our two agencies, such as the Zone 1 Landscape Irrigation Agreement. We would like to invite you and your staff to work with us to explore options to reduce the cost barriers to make recycled water a viable option for the refineries and lead the way for an expansion of water recycling in our community. Thank you for your consideration.

Sincerely,

Joe -
If you need any more information just let me know. Thanks.

James A. Nejedly
President, Board of Directors
Central Contra Costa Sanitary District

JN:DB:jf

cc: Mr. Patrick Wright, Director, California Bay-Delta Authority

BOARD OF DIRECTORS

JAMES A. NEJEDLY, President • GERALD R. LUCEY, President Pro Tem • PARKE L. BONEYSTEELE • BARBARA D. HOCKETT • MARIO M. MENESINI

MAILED 8-25-03 DE DISTRIBUTED 8-25-03 DE

Central Contra Costa Sanitary District
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CHARLES W. BATTS
General Manager

KENTON L. ALM
Counsel for the District
(510) 808-2000

JOYCE E. MURPHY
Secretary of the District

August 21, 2003

Mr. Patrick Wright
Director
California Bay-Delta Authority
650 Capitol Mall, 5th Floor
Sacramento, CA 95814

Dear Mr. Wright:

INCLUSION OF RECYCLED WATER IN LOS VAQUEROS EXPANSION STUDIES

The Central Contra Costa Sanitary District (CCCSD) supports the significant work that CALFED has done to address water resource and environmental issues in the Delta. We agree that increased water recycling should be part of the comprehensive solution for improving the Bay Delta system. As a recycled water supplier with substantial untapped capacity, we are very interested in seeing recycled water be included in your water supply master planning efforts, particularly as they relate to the Los Vaqueros expansion. I am attaching a copy of our letter to the Contra Costa Water District (CCWD) outlining our recycled water capacity and the large potential demands for recycled water that we have identified within our service area

We appreciate CALFED's continued support of recycled water and request that recycled water be made an integral part of your Los Vaqueros expansion studies.

Sincerely,

Don Berger
Recycled Water Program Manager
Central Contra Costa Sanitary District

DB:jf

Enclosure

Recycled Paper

Martinez Refinery Recycled Water Project



Project area shown in map above and in detail map at right.



Benefits of Martinez Refinery Project:

- Creates about 22,500 AF/yr of new water supply for California — enough to supply about 50,000 families
- Creates and supports 4,200 new jobs from construction to operation
- Reduces burden on Delta ecosystem
- Improves water supply reliability
- Reduces wastewater discharges to the Delta

Existing Facilities:

- 5 miles of distribution pipelines to the refineries
- 6 million gallons of storage tanks
- 30 million gallon reservoir

Proposed Facilities:

- Recycled water treatment facilities, including filtration, ammonia removal and demineralization

Estimated Construction Cost:

- Up to $150 million

Desired Funding:

- $37.5 million Federal grants
- $37.5 million State grants
- $75 million local funds

Contact us

If you have questions about the Martinez Refinery Recycled Water Project, contact Don Berger at 925.229 7259

Central Contra Costa Sanitary District

Protecting Public Health and the Environment

Background

California is experiencing a severe drought with below-average rainfall, low snowmelt runoff and court-ordered restrictions on Delta water pumping. Recycled water projects using urban wastewater are some of the most reliable and drought-tolerant water supplies available. Water recycling is mandated by several California codes and laws and is an integral part of the Central Contra Costa Sanitary District's (CCCSD) mission. Currently, CCCSD has a very successful landscape irrigation program and is always pursuing new recycled water opportunities such as supplying the new development at the Concord Naval Weapons Station or supplying the existing refineries.

Proposed Project Description

If implemented, the proposed Martinez Refinery Recycled Water Project would create 22,500 AF/yr of new water supply for California by using a steady, drought-proof supply of wastewater from CCCSD and treating it to produce a high-quality recycled water for use in cooling towers and for boiler feedwater at the Shell and Tesoro refineries in Martinez. The pipelines and storage tanks to deliver recycled water to the refineries are already in place. However, in order to produce the recycled water, new treatment facilities must be constructed at an estimated cost of up to $150M. CCCSD is seeking federal and state funding assistance and project partners to help make this project a reality and to meet California's urgent need for water, while providing new jobs in construction and operations to stimulate the economy.

5019 Imhoff Place, Martinez, CA 94553 | 925.228.9500 | www.centralsan.org

California is in a Drought

California is facing the most significant water crisis in its history. After experiencing two years of drought and the driest spring in recorded history in 2008, water reserves are extremely low.

Drought conditions in the Colorado River Basin, combined with a Sierra snowpack that is now dangerously unreliable due to global climate change, are leaving many communities throughout California facing mandatory restrictions on water use and/or rising water bills. If the drought continues, the results could be catastrophic to our economy.

In June 2008, the Governor issued Executive Order S-06-08 declaring a statewide drought, which directed his state agencies and departments to take immediate action to address the serious drought conditions and water delivery reductions that exist in California.

In October 2008, the Department of Water Resources announced the initial allocation of only 15 percent for water delivery to the State Water Project (SWP) contractors in 2009 – the second lowest allocation level in the history of the SWP.



The Sacramento-San Joaquin Delta is Overdrawn

With the Sacramento-San Joaquin Delta ecosystem near collapse, court-ordered restrictions on water deliveries from the Delta have reduced supplies from the state's two largest water systems by twenty to thirty percent.

A new survey from the California Department of Fish and Game finds Delta smelt are hovering at the brink of extinction. The department's fall 2008 population survey of fish species in the Sacramento-San Joaquin Delta concluded in December 2008 and found the smelt at its lowest point in 42 years of record-keeping and two nonnative fish, the American shad and threadfin shad, also at record lows. While there are many factors affecting the Delta, recent studies indicate that the biggest impact on declining fish species is the overdrafting of water from the Delta.

The State Has Issued Mandates to Use Recycled Water



The State of California, through its Water Code, has strongly encouraged the use of recycled water. The following references are included in the California Water Code:

- Section 13510 states that the people of the state have a primary interest in the development of facilities to reuse wastewater to supplement existing surface and underground water supplies and to assist in meeting the future water requirements of the State.
- Section 13511 states that a substantial portion of the future water requirements of this state may be economically met by beneficial use of reclaimed water. Use of recycled water constitutes the development of "new basic water supplies".
- Section 13512 declares it is the Intention of the Legislature that the State undertake all possible steps to encourage development of water reuse facilities so that reclaimed water may be made available to help meet the growing water demands of the State.
- Section 13550 states that the use of potable domestic water for non-potable uses, including, but not limited to, cemeteries, golf courses, parks, highway landscaped areas, and industrial and irrigation uses, is a waste or an unreasonable use of the water, if reclaimed water of adequate quality is available at reasonable cost.
- Section 13551 states that a person or public agency shall not use water from any source of quality suitable for potable domestic use for non potable uses, including cemeteries, golf courses, parks, highway landscaped areas, and industrial and irrigation uses, if suitable reclaimed water is available as provided in Section 13550.

Recycling High-Quality Water is CCCSD's Mission

In response to the mandates by the State of California and as part of Central Contra Costa Sanitary District's (CCCSD) mission to protect public health and the environment, CCCSD is committed to recycling high-quality water in order to enhance the regional water supply and to decrease the demand on the Sacramento-San Joaquin Delta.

Central Contra Costa Sanitary District
Protecting Public Health and the Environment

LOS VAQUEROS RESERVOIR EXPANSION

PUBLIC HEARING ON DRAFT EIS/EIR

Heald College Conference Center

5130 Commercial Circle, Main Conference Room

Concord, California

Tuesday, March 31, 2009

REPORTED BY: DEBORAH FUQUA, CSR #12948

A P P E A R A N C E S

Pete Lucero - Public Affairs Officer
Bureau of Reclamation Mid-Pacific Region

Sharon McHale - Project Manager
Bureau of Reclamation

Marguerite Naillon - Project Manager
Contra Costa Water District

PUBLIC OUTREACH:

Charles Gardiner - CirclePoint Project Manager

---o0o---

I N D E X

SPEAKER PAGE NO.

Anne Farrell..... 7

Bruce Ohlson..... 11

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when your 30 minutes are up.

And again, if you wish to provide comments but have not submitted a speaker card, please go to the registration table immediately. And with that, I think we're ready to start.

First two speakers we have is Ms. Ann Farrell and Mr. Bruce Ohlson.

Ms. Farrell, would you please step up.

ANN FARRELL: I will be providing a written version.

I am Ann Farrell, Director of Engineering for Central Contra Costa Sanitary District. We treat the wastewater for the Central County portion of the Contra Costa Water District Service Area. Our mission is to protect the public health and the environment by collecting and treating wastewater, promoting pollution prevention and recycling high quality water.

I'm here tonight to speak about the highly

treated recycled water from our treatment facility and the role it could play in increasing the yield of any Los Vaqueros Reservoir Expansion Project. We currently discharge 40 million gallons per day of treated

wastewater to the Suisun Bay, a tidal estuary that forms the entrance to the Delta. This is enough water to serve about 250,000 people or 100,000 homes.

In the early 1970s, facilities were constructed to supply recycled water from our treatment facility in Martinez, which is located at the intersection of the 4 and 680 freeways, to the nearby Shell and Tesoro refineries also in Martinez. Those facilities, although unused since the '70s, still exist and could supply the refineries with up to 20 million gallons per day of our effluent with some additional treatment. This would free up 20 million gallons of fresh water, enough to serve the entire city of Concord including the proposed development at the Concord Naval Weapons Station or to provide significant environmental benefits by leaving that water in the Delta. A flyer describing this project will be submitted with my testimony.

For the last 15 years, Central Contra Costa Sanitary District has been actively lobbying the Contra Water District to serve recycled water to the

refineries and free up potable water supplies for other

uses such as water supply reliability and environmental water. CCWD has maintained that the financial cost to their rate payers was too great due to the lost revenues from refineries.

So when we at CCCSD first learned of the proposal to expand Los Vaqueros and the concept of inviting other partners in, including the Bureau of Reclamation and some other South Bay water users, such as Santa Clara Valley Water District, we thought this would be the perfect opportunity to incorporate the refinery recycled water project as a component of the Los Vaqueros Reservoir Expansion, as it would have similar benefits. The annual yield of 22,000 acre feet per year of raw water freed up by the refinery project could be used to fill Los Vaqueros Reservoir and reduce the diversion from the Delta; it could be transferred to other project participants; or it could be released upstream for environmental enhancement.

The participation of the outside partners provided the opportunity to obtain outside funding to offset Contra Costa Water District's revenue loss. We submitted a letter to Contra Costa Water District and CALFED in August 2003 requesting that recycled water be included in the Los Vaqueros Expansion studies. I will

provide copies for your information.

Now, more than five years later, we are greatly disappointed to find that recycled water has been dismissed in the environmental documents. There are few potential recycled water projects in the State of California with the potential for generating yield of 22,000 acre feet per year on a continuous year-in-and-year-out basis.

The Los Vaqueros Expansion Alternatives themselves, in reading the EIR, claim benefits of a maximum of 3,000 acre feet per year during a six-year drought for Contra Costa Water District water supply reliability.

A recycled water component to supply the refineries would increase the yield in the expansion alternatives by 22,000 acre feet per year. If this yield were used to benefit Contra Costa water supply reliability, it would have more than seven times the benefit of the Los Vaqueros Reservoir Expansion. Alternatively, this additional yield could be used to supplement the environmental water management benefits of the Reservoir Expansion.

In summary, water is a valuable resource and we must use it wisely. As a public agency with a mission to protect the public health and the

environment, we must respectfully request that the Los Vaqueros Reservoir Expansion environmental documentation incorporates the supply of recycled water to the Shell and Tesoro refineries in Martinez as a component of each and every Expansion alternative.

Thank you.

PETE LUCERO: Thank you, Ms. Farrell.

Mr. Ohlson, please step up. Thank you.

BRUCE OHLSON: Good evening, Hearing Director and Project Managers. My name is Bruce Ohlson. I'm a citizen of Pittsburg. I'm a member of the board of directors of the East Bay Bicycle Coalition, and I'm on the advocacy committee of the Delta Pedalers Bicycle Club. I also want to disclose that I'm on the Planning Commission for the City of Pittsburg, but tonight I'm speaking for the bicyclists.

We respectfully request and suggest that it would be eminently reasonable to be able to bicycle on a trail from the north paved public access to the south paved public access. That would be a very small mitigation to include. It wouldn't cost a whole lot.

I'm here tonight requesting this because the

Central Contra Costa Sanitary District

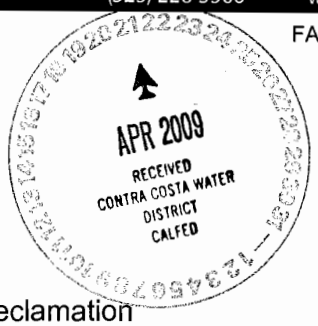
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JAMES M. KELLY
General Manager

KENTON L. ALM
Counsel for the District
(510) 808-2000

ELAINE R. BOEHME
Secretary of the District



April 21, 2009

Ms. Marguerite Naillon
Contra Costa Water District
P.O. Box H20
Concord, CA 94524

Mr. Louis Moore
US Bureau of Reclamation
2800 Cottage Way, MP-700
Sacramento, CA 95825

Dear Ms. Naillon and Mr. Moore:

Comments on the Los Vaqueros Reservoir Expansion Project DEIS/EIR

The Central Contra Costa Sanitary District (CCCSD) appreciates the opportunity to comment on the Draft Environmental Impact Statement/Environmental Impact Report (EIS/R) for the Los Vaqueros Reservoir Expansion Project (LVRE). The Project as proposed has many attributes that we support. It will provide needed water supply reliability and allow for improved environmental water management. In addition, it brings regional and state-wide partners to the table and creates opportunities to transfer any supplemental water created to these partners. For these reasons, the project creates benefits for our common rate payers and for the region and the State.

However, as you are aware, CCCSD believes recycling of treated wastewater and the Martinez Refinery Recycled Water Project (Refinery Project) should have been included and analyzed as part of the LVRE project and would significantly increase the benefits created. In fact, our estimates show adding recycled water to LVRE Alternative 1, Expansion to 275 TAF, could increase CCWD Water Supply Reliability Benefits from the project by 1100%. By adding recycled water to LVRE Alternative 4, Expansion to 160 TAF, water available for Environmental Water Management could be increased by up to 1650% over the stand alone project. In letters submitted August 21, 2003, we provided the CALFED Bay–Delta Authority and Contra Costa Water District (CCWD), respectively, with information expressing our position regarding the LVRE and our request for the inclusion of recycling of treated wastewater in the environmental review process. CCCSD also submitted verbal testimony at the LVRE public hearing held on March 31, 2009 in Concord, California. Copies of these letters and public testimony are attached for your review.

Background of the Central Contra Costa Sanitary District and the Martinez Refinery Recycled Water Project

Water recycling is an integral part of CCCSD's mission. CCCSD currently discharges an average of 44,000 acre feet per year (AFY) or 40 million gallons per day (mgd) of secondary treated wastewater to the Suisun Bay. If this amount of recycled water were used to create an offset of potable water, the offset would result in enough potable water to serve 100,000 single

Recycled Paper

family residences. This water could also be used to provide additional water supply reliability for existing uses or to enhance the Delta environment.

Currently, CCCSD has a modest recycled water program that supplies high-quality, tertiary-treated recycled water primarily for landscape irrigation purposes. Due to the substantial amount of additional recycled water that could be made available, CCCSD has been working for many years to expand use of recycled water to include supplies for industrial uses with consistent year-round demand. The table below illustrates the amount of recycled water that could be produced by CCCSD.

Treated CCCSD Effluent Available for Recycling			
	AFY	MGD	CFS
Current Annual Average Treated Wastewater Discharge	44,000	40	62
Average Dry Weather Treated Wastewater Flow Available[1]	40,000	36	56
Average Daily Existing Recycled Water Use[2]	7,000	6	16
Remaining Recycled Water Available for Use	33,000	30	46
Potential Recycled Water Demand Identified for Martinez Refineries	22,000	20	31
Remaining Recycled Water Available for Potable or Environmental Use	11,000	10	16

[1]In dry summer months
[2]In hottest summer month with highest recycled water demand

In the early 1970s, a pipeline and storage tanks were constructed with public dollars to enable the supply of recycled wastewater from CCCSD's treatment facility in Martinez to the nearby Shell and Tesoro refineries, also in Martinez. More than 30 years later, the benefits of those facilities remain largely unrealized because the facilities have hardly been used. Currently, CCCSD is seeking $100 – 150 million dollars in federal, state, and local funds to realize this opportunity. CCWD is the water purveyor in north-central Contra Costa County and shares ownership of a portion of the pipelines to the refineries. In light of these facts, CCCSD has actively engaged in discussions with CCWD for the past 15 years in an effort to implement this long-planned Refinery Project. We share the common goals of providing good quality, affordable water to our customers while reducing the burden on the fragile Delta ecosystem. Providing refineries and other users with recycled water frees up potable water supplies to meet environmental or other demands as well as improving the reliability of water supplies. CCCSD firmly believes that the Refinery Project and recycled water in general should be a component of the LVRE for the reasons stated below.

Recycling CCCSD's Treated Effluent Would Enhance Meeting LVRE Objectives

1

We believe that the Refinery Project, and recycling in general, meets the primary and secondary objectives of the project:

- **Develop water supplies for environmental water management that support fish protection, habitat management, and other environmental water needs.**

  The LVRE project purpose and need statement indicates that, during dry periods, the U.S. Department of the Interior, Bureau of Reclamation's (Reclamation) Central Valley Project (CVP) has difficulty meeting its environmental water requirements required by the Central Valley Project Improvement Act and meeting its contractual water supply obligations. Our Refinery Project could free up 22,000 acre-feet per year (AFY) of fresh water that could be used for environmental enhancement by leaving it in the Delta to augment Delta outflows to meet flow requirements necessary to protect declining fish species. Additional water recycling projects could free up another 11,000 AFY of fresh water.

- **Increase water supply reliability for water providers within the San Francisco Bay Area, to help meet municipal and industrial water demands during drought periods and emergencies or to address shortages due to regulatory and environmental restrictions.**

  The benefits derived from CCCSD's proposed Refinery Project and other similar projects are multifold. The Refinery Project alone would create up to an additional 22,000 AFY of new water supply for industrial users currently serviced by CCWD. This new supply is drought-resistant and would provide a more reliable source of water for industrial demands. This would free up a significant amount of water that Reclamation, CCWD and the South Bay project participants could use to: (a) store in Los Vaqueros Reservoir; (b) reduce diversions from the Delta; or (c) meet municipal water demands during drought, emergencies or other times of shortage. If industries were served 22,000 AFY by the Refinery Project water in lieu of CCWD potable water, CCWD would have enough potable water to meet the demands of 50,000 families or alternatively, more fresh water could be released upstream in the Delta for environmental enhancement.

  Acknowledging the importance of recycled water use in its service area, CCWD specifically included recycled water in its year 2005 Draft Urban Water Management Plan (UWMP). Table 5-2 of the UWMP lists "Potential Uses of Recycled Water" wherein there are 35,900 AFY identified as being available from CCCSD (9,000 AFY for urban irrigation and 26,900 AFY for oil refinery process use). However, the UWMP goes on to estimate actual and projected future use of recycled water as only 12,000 AFY by the year 2030 – more than 20 years from now.

  The CCWD UWMP anticipates that a multi-year drought would result in mandatory water supply reductions and that the second and third years of a multi-year drought would result in year 2030 supply deficiencies of 17% and 18%, respectfully. In addition, the plan calls for purchasing supplemental water from others which puts farmers at an economic disadvantage in the competition for scarce resources and could lead to land being taken out of production. Unfortunately some of this land has been planted in fruit trees and grape vines and cannot simply be taken out of production like land planted in rice or cotton. This can result in significant economic hardship to the impacted businesses and communities. Greater development and reliance upon recycled water could alleviate this possible demand reduction response to anticipated multi-year droughts. The use of recycled water in the CCWD service area would also free up water that could be transferred to the South Bay Water Agencies, who are potential project participants.

1
Cont.

In short, CCCSD maintains that the Refinery Project and all potential recycled water projects create *new* water supply that translates into increased water supply reliability and flexibility to meet demands and increased environmental benefits resulting from a reduction in fresh water diversion from the Delta.

- **Improve the quality of water deliveries to municipal and industrial customers in the San Francisco Bay Area.**

  The Refinery Project would result in improved water quality for industrial customers because its supply of water is steady and reliable and the quality of the water is predictable. As stated in the background of the need for the project, Delta water currently supplied to municipal and industrial users is subject to seasonal variations (and often degraded water supply) with elevated salinity, total dissolved solids, bromides and other constituents. This variation requires industries to alter their operations or provide additional water treatment to ensure the quality is acceptable for use in their cooling tower operations. The Refinery Project could help address these problems for these industrial users. The CCWD UWMP acknowledges that recycled water projects could supply highly-treated recycled wastewater to selected industrial customers for process and cooling purposes.

  As a general comment, the stated objective is to improve water quality for industrial customers; however, the background of the need for the project focuses solely on the need for improved *drinking* water quality for San Francisco Bay Area municipal customers. The need for improved water quality for industrial uses is not clearly stated or addressed.

1 Cont.

Recycled Water Inadequately Considered in Alternatives Analysis

According to CEQ NEPA Regulations (40 C.F.R. 1502.14), the alternatives section of a Draft EIS is required to rigorously explore and objectively evaluate all reasonable alternatives. CCCSD's readily available supply of high-quality recycled water and the Refinery Project in particular were not adequately considered as an alternative to increased storage or as a component that would require less storage and result in fewer environmental effects or result in an increase in yield for the same amount of storage.

The EIS/R summarily dismisses the consideration of recycled water programs in its alternatives analysis stating in Table B-1 that "recycled water programs are being actively pursued by other CALFED agencies and by individual agencies in the Bay Area." Table B-1 also states that the potential to address LVRE project objectives is limited by acceptable uses of recycled water, yet no specific examples are given.

It is true that Bay Area agencies are pursuing recycled water programs, but there are few that have the potential to deliver the yield of 22,000 AFY as the CCCSD Refinery Project. In addition, the spirit and intent of the CALFED Water Supply Reliability Program are to look at actions synergistically to achieve the overall goal. In point of fact, Reclamation is one of the implementing agencies for the CALFED Water Use Efficiency (WUE) Program – one of five elements of the CALFED Water Supply Reliability Program. WUE Program actions, including recycled water actions, were considered in the CALFED Water Supply Reliability Program. The actions of all five program elements were to be implemented in concert to achieve CALFED's overall goal of water supply reliability.

2

As a CALFED WUE implementing agency, the role of Reclamation is to "support local agencies implementing WUE actions at the local level through assistance programs and in overcoming implementation constraints." Given its CALFED role as a WUE implementing agency, and its role as federal lead on the LVRE, Reclamation has a responsibility to more rigorously consider recycling actions as part of the LVRE project.

In addition, through the LVRE project or other avenues, Reclamation could play a key role in overcoming CCCSD's Recycled Water Program implementation constraints and assist in coordinating efforts between CCWD and CCCSD to find acceptable, creative and mutually-beneficial solutions to address CCWD's potential loss of revenue.

The Alternatives Development further explains that

> … initial concepts related to water use efficiency, such as additional water conservation and recycled water use, were not carried forward beyond Step 1. In general, substantial programs are already in place at each Bay Area water agency to improve water use efficiency. Additional efforts in these concepts would not contribute to the two primary objectives defined for the project: environmental water management and water supply reliability. Further reducing Bay Area water agency demand for Delta water would result in a very small decrease in Delta diversions and the associated environmental water benefit. Additional water conservation without storage to hold water for dry years would provide little benefit in dry years and reduce the effectiveness of drought management (rationing) programs that most Bay Area water agencies would rely on to maintain deliveries through extended drought periods.

2 Cont.

Again, we believe that the Refinery Project, and recycled water in general, meet the LVRE project objectives. Moreover, the statement regarding further reduction of demand resulting in a very small decrease in Delta diversions is not correct when you consider the 22,000 AFY yield the Refinery Project would produce. In our discussion of the Benefits of the Refinery Project, below, you will see the significant percentage of increase in yield it would create for any of the project alternatives. Furthermore, this statement would appear to conflict with the CALFED Record of Decision, which viewed "investment in recycling as a cost-effective way to better balance supply and demand in the near-term, especially compared to surface storage and major conveyance improvements that were estimated to take at least 5–10 years to complete." The recycling actions in the CALFED ROD are intended to "address the growing mismatch between water supply demand caused by rapidly growing urban populations and static supplies."

Table B-6, Summary Comparison of Initial Plans, compares the ability of an initial plan to meet the federal Principles and Guidelines criteria of completeness, effectiveness, efficiency and acceptability without providing any detail on estimated costs of each initial plan. Determinations of low, moderate or high are made to provide comparison of an initial plan's ability to meet efficiency criteria. These determinations often indicate that the cost per unit of output is high or low compared to other plans. However, there is no information in the table outlining these estimated costs. To enable the public and responsible state and local agencies to fully understand how the LVRE project alternatives were developed and to compare these alternatives with other potential alternatives projects with similar benefits, such as recycling, the Alternatives Development should include the cost estimates upon which these determinations were made.

Benefits of the Refinery Project and Recycled Water

Significant Additional Yield

The CCCSD Refinery Project is one of the few potential recycled water projects in the state of California that could generate such a significant yield on a continuous annual basis. Including this project as a component of the LVRE project would result in significantly higher yields. Alternative 1 has the higher expanded capacity of 275 thousand acre feet (TAF), and Alternative 4 has the lower expanded capacity of 160 TAF. The following two tables demonstrate the range of increase the Refinery Project could produce in additional yield and percentage of increase for Alternatives 1 and 4. To provide a further point of comparison, the table notes the additional yield that could be achieved if all of CCCSD's available recycled water was used. The benefits of the additional yield in a 6-year drought situation are significant with an up to 1,100% increase in CCWD Water Reliability yield if recycled water is added to LVRE Alternative 1 and an up to 1,650% increase in Environmental Water Management yield if recycled water is added to LVRE Alternative 4.

LVRE Alternative 1 – 275 TAF Expanded Storage with South Bay Connection Summary of Benefits in 6-Year Drought —With Added Benefits of Recycled Water			
Operations	**Average Annual Yield (Table ES-2)**	**With Additional Annual 22 TAF Yield from Refinery Project (% increase)**	**With Additional Annual 33 TAF Yield from recycling all available CCCSD effluent (% increase)**
Environmental Water Management	135 TAF/yr	157TAF/yr (16%)	168 TAF/yr (24%)
South Bay Water Agencies Water Supply Reliability	30 TAF/yr	52 TAF/yr (73%)	63 TAF/yr (110%)
CCWD Water Supply Reliability	3 TAF/yr	25 TAF/yr (733%)	36 TAF/yr (1,100%)

LVRE Alternative 4 – 160 TAF Reservoir Expansion with No South Bay Connection Summary of Benefits in 6-year Drought —With Added Benefits of Recycled Water			
Operations	**Annual Average TAF Yield (Table ES-4)**	**With Additional Annual 22 TAF Yield from Refinery Project (% increase)**	**With Additional Annual 33 TAF Yield from recycling all available CCCSD effluent (% increase)**
Environmental Water Management	2 TAF/yr	24 TAF/yr (1100%)	35 TAF/yr (1650%)
Water Supply Reliability	10 TAF/yr	32 TAF/yr (220%)	43 TAF/yr (330%)

No Significant Increase in Environmental Impacts

Alternative 1, which represents the largest expansion and has the greatest extent of associated facilities, includes an expansion of the reservoir from 1,500 acres to 2,500 acres, raising the dam, constructing an additional intake facility and expanding pipelines and transfer facilities. The impacts of this alternative include those on biological resources, cultural resources and

2
Cont.

some significant and unavoidable impacts on habitat for the San Joaquin kit fox, with accompanying considerable mitigation costs.

Comparatively, the pipeline and storage tanks for the Refinery Project are already in place. Construction of additional recycled water treatment facilities would have no significant impacts as it would be constructed on the already disturbed site of the CCCSD wastewater treatment facilities. The construction of the Refinery Project in combination with Alternatives 1, 2, 3 or 4 would result in no significant increase in environmental impacts from those expected from a stand alone LVRE Project.

2 Cont.

Making the Best Collective Use of Tax Dollars

In addition to the benefit of increased yield with no significant increase in environmental impacts, the Refinery Project makes the best collective use of already expended public dollars and future proposed tax dollars. Given the current economic climate in the state of California and the world economy, the public expects reasonable returns on their public investments and more responsible, thoughtful spending of current and future tax dollars.

LVRE Project Impacts on Net Delta Outflow Greater than from Recycling all CCCSD's Effluent

As discussed in the LVRE environmental documentation, seasonal variations in Delta outflow play an important role in determining the reproductive success and survival of many estuarine species, including salmon, striped bass, delta smelt and others. Those flows from February through June are especially important.

The Delta Outflow Analysis for LVRE summarized in Tables 4.3-11 and 4.3-12 in average years notes the most significant impact in the month of May. With an outflow of 22,275 cfs in 2005 and 22,122 cfs in 2030 under Severe Fishery Restrictions, the LVRE reduces outflow by 1.5% in 2005 and 1.6% in 2030. Recycling all 46 cfs of CCCSD available treated effluent reduces Delta Outflow by less than 0.2% in May 2005 and 2030, significantly less impact than the LVRE on Delta Outflow.

The same Delta Outflow Analysis summary also notes a significant average year impact in the month of November. With an outflow of 9,743 cfs in 2005 and 9,389 cfs in 2030 under Severe Fishery Restrictions, the LVRE reduces outflow by 1.1% in 2005 and 1.5% in 2030. Recycling of 46 cfs of CCCSD available treated effluent reduces Delta Outflow by only 0.5% in November 2005 and 2030, again, significantly less impact than the LVRE on Delta Outflow.

3

While CCWD has consistently maintained that recycling CCCSD effluent has a negative impact on the Delta by reducing Delta Outflow, the environmental documentation for LVRE shows Delta Outflow reductions as high as 1.6% in average years and claims they are less than significant. If these levels of Delta Outflow reduction are less than significant for LVRE, then recycling CCCSD treated effluent would also have less than significant impacts on Delta Outflow.

Conclusion

The LVRE Project will provide needed water supply reliability and allow for improved environmental water management. In addition, it brings regional and state-wide partners to the

table and creates opportunities for more efficient and environmentally responsible use of our scarce water resources. For these reasons, we believe the project creates benefits for our common ratepayers, the region and the State as a whole.

However, CCCSD believes that making the Refinery Project and recycled water integral components of the LVRE project would greatly enhance its benefits to water supply reliability and to the Delta ecosystem. Reclamation and CCWD should more rigorously analyze the Martinez Refinery Project and recycled water as a potential component of the LVRE project. The benefits of recycled water include significant additional yield with no significant increase in environmental impacts and the best collective use of public dollars.

3 Cont.

CCCSD recognizes that with any water supply project in California there are hurdles to implementation. However, our state is facing economic, environmental and water supply issues on an almost unprecedented scale. We feel that we are mandated as public agencies to work cooperatively in an environmentally and economically sensible manner to the benefit of the people and environment of California.

Sincerely,

Ann E. Farrell
Director of Engineering

AEF/mvp

Attachments

COMMENTS FOR LOS VAQUEROS RESERVOIR EXPANSION
PUBLIC HEARING
3-31-09 Concord, CA

I am Ann Farrell, Director of Engineering for Central Contra Costa Sanitary District. We treat the wastewater for the central County portion of the Contra Costa Water District Service Area. Our mission is to protect the public health and the environment by collecting and treating wastewater, promoting pollution prevention, and recycling high quality water.

I am here tonight to speak about the highly treated recycled water from our treatment facility and the role it could play in increasing the yield of any Los Vaqueros Reservoir Expansion Project. We currently discharge 40 million gallons per day of treated wastewater to the Suisun Bay – a tidal estuary that forms the entrance to the Delta. This is enough water to serve about 250,000 people or 100,000 homes.

In the early 1970's facilities were constructed to supply recycled wastewater from our treatment facility in Martinez @ the 4/680 intersection to the nearby Shell and Tesoro refineries also in Martinez. Those facilities, although unused, still exist and could supply the refineries with up to 20 million gallons per day of our effluent, with some additional treatment. This would free up 20 million gallons of fresh water - enough to serve the entire City of Concord, including the proposed development at the Concord Naval Weapons Station or to provide significant environmental benefits by leaving the water in the Delta. A flyer describing this project will be submitted with my testimony.

For the last 15 years, CCCSD has been actively lobbying CCWD to serve recycled water to the refineries and free up potable water supplies for other uses, such as water supply reliability and environmental water. CCWD has maintained that the financial cost to their rate payers was too great, due to the lost revenues from the refineries.

When we at CCCSD first learned of the proposal to expand Los Vaqueros and the concept of inviting other partners, including the U.S. Bureau of Reclamation and some South Bay water users, such as Santa Clara Valley Water District into the process, we thought this would be the perfect opportunity to incorporate the refinery recycled water project as a component of the Los Vaqueros Reservoir Expansion, as it would have

similar benefits. The annual yield of 22 thousand acre feet per year of raw water freed up by the refinery recycled water project could be used to fill Los Vaqueros Reservoir to reduce diversions from the Delta, could be transferred to other project participants or could be released upstream for environmental enhancement. The participation of outside partners provided the opportunity to obtain outside funding to offset CCWD's revenue loss. We submitted a letter to CCWD and CALFED in August 2003 requesting that recycled water be included in the Los Vaqueros Expansion Studies. Copies are provided for your information.

Now, more than five years later, we are greatly disappointed to find that recycled water has been dismissed in the Environmental Documents. There are few potential recycled water projects in the State of California with the potential to generate a yield of 22 thousand acre feet per year on a continuous basis. The Los Vaqueros Expansion Alternatives themselves claim benefits of a maximum of 3 thousand acre feet per year in a 6-year drought for CCWD Water Supply Reliability. A recycled water component to supply the Shell and Tesoro refineries with recycled water would increase the yield of any Expansion alternative by 22 thousand acre feet per year each and every year. If this yield were used to benefit CCWD Water Supply Reliability, it would have more than seven times the benefit of a Los Vaqueros Reservoir Expansion. Alternatively, the additional yield could be used to supplement the Environmental Water Management benefits of the Reservoir Expansion.

In summary, water is a valuable resource and we must use it wisely. As a public agency with a mission to protect the public health and the environment, we must respectfully request that the Los Vaqueros Reservoir Expansion environmental documentation incorporate the supply of recycled water to the Shell and Tesoro refineries in Martinez as a component of each Expansion alternative.

Central Contra Costa Sanitary District

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CHARLES W. BATTS
General Manager

KENTON L. ALM
Counsel for the District
(510) 808-2000

JOYCE E. MURPHY
Secretary of the District

August 21, 2003

Mr. Joseph Campbell
President, Board of Directors
Contra Costa Water District
P.O. Box H20
1331 Concord Avenue
Concord, CA 94524

Dear Mr. Campbell:

INCLUSION OF RECYCLED WATER IN LOS VAQUEROS EXPANSION STUDIES

Thank you for providing the Central Contra Costa Sanitary District (CCCSD) with a copy of the CALFED's Los Vaqueros expansion informational brochure. As a District, we understand the importance of providing a safe, reliable and high quality water supply for your ratepayers while protecting the Delta. However, we believe that CCWD needs to look at recycled water as an important resource available to help address these problems, and we would like to encourage you to make recycled water an integral part of your water supply master planning efforts for the Los Vaqueros expansion.

CCCSD has the long-term potential to supply up to 44,000 AF/yr of drought proof recycled water to our community. If fully utilized, this supply could free up an equivalent amount of Delta water to meet potable water demands. Unfortunately, only a small fraction (600 AF/yr) of our capacity is currently being utilized on a seasonal basis for landscape irrigation. Our initial studies have identified over 30,000 AF/yr of demand within our service area including about 20,000 AF/yr at the refineries for cooling tower use. Much of the infrastructure is already in place to supply recycled water to the refineries, which have expressed an interest in using recycled water if it could be made available at a price competitive with their current canal (raw) water supply. In order for this to occur, the cooperation of CCWD would be needed to reduce the proposed duplication of services charges and other burdensome costs.

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The success of our current recycled water projects is due, in large part, to the cooperative agreements reached between our two agencies, such as the Zone 1 Landscape Irrigation Agreement. We would like to invite you and your staff to work with us to explore options to reduce the cost barriers to make recycled water a viable option for the refineries and lead the way for an expansion of water recycling in our community. Thank you for your consideration.

Sincerely,

Joe -
If you need any more information just let me know. Thanks.

James A. Nejedly
President, Board of Directors
Central Contra Costa Sanitary District

JN:DB:jf

cc: Mr. Patrick Wright, Director, California Bay-Delta Authority

BOARD OF DIRECTORS

JAMES A. NEJEDLY, President • GERALD R. LUCEY, President Pro Tem • PARKE L. BONEYSTEELE • BARBARA D. HOCKETT • MARIO M. MENESINI

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JOYCE E. MURPHY
Secretary of the District

August 21, 2003

Mr. Patrick Wright
Director
California Bay-Delta Authority
650 Capitol Mall, 5th Floor
Sacramento, CA 95814

Dear Mr. Wright:

INCLUSION OF RECYCLED WATER IN LOS VAQUEROS EXPANSION STUDIES

The Central Contra Costa Sanitary District (CCCSD) supports the significant work that CALFED has done to address water resource and environmental issues in the Delta. We agree that increased water recycling should be part of the comprehensive solution for improving the Bay Delta system. As a recycled water supplier with substantial untapped capacity, we are very interested in seeing recycled water be included in your water supply master planning efforts, particularly as they relate to the Los Vaqueros expansion. I am attaching a copy of our letter to the Contra Costa Water District (CCWD) outlining our recycled water capacity and the large potential demands for recycled water that we have identified within our service area

We appreciate CALFED's continued support of recycled water and request that recycled water be made an integral part of your Los Vaqueros expansion studies.

Sincerely,

Don Berger

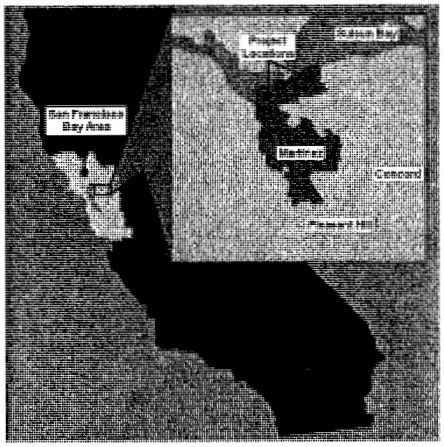
Don Berger
Recycled Water Program Manager
Central Contra Costa Sanitary District

DB:jf

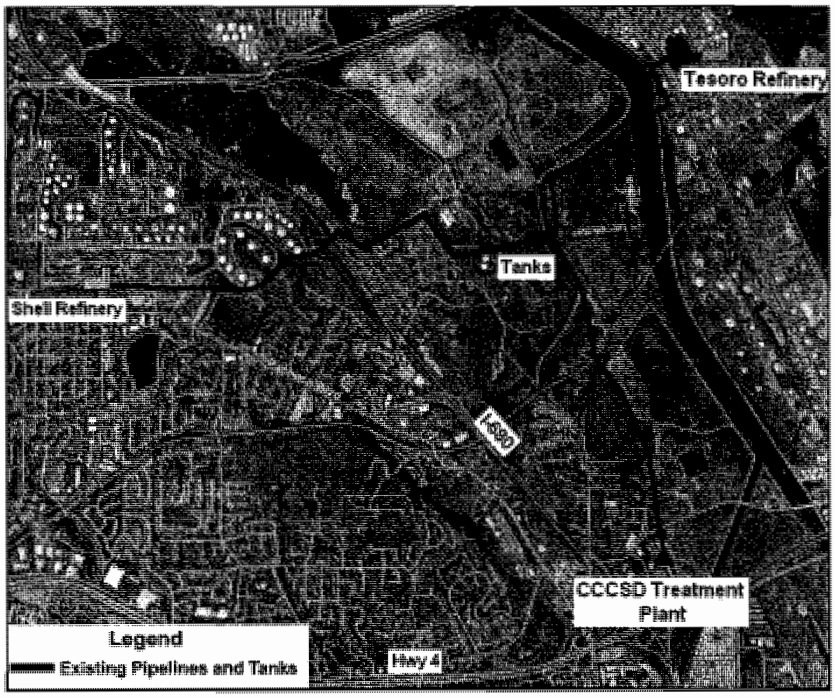
Enclosure

Recycled Paper

Martinez Refinery Recycled Water Project



Project area shown in map above and in detail map at right.



Benefits of Martinez Refinery Project:

- Creates about 22,500 AF/yr of new water supply for California — enough to supply about 50,000 families
- Creates and supports 4,200 new jobs from construction to operation
- Reduces burden on Delta ecosystem
- Improves water supply reliability
- Reduces wastewater discharges to the Delta

Existing Facilities:

- 5 miles of distribution pipelines to the refineries
- 6 million gallons of storage tanks
- 30 million gallon reservoir

Proposed Facilities:

- Recycled water treatment facilities, including filtration, ammonia removal and demineralization

Estimated Construction Cost:

- Up to $150 million

Desired Funding:

- $37.5 million Federal grants
- $37.5 million State grants
- $75 million local funds

Contact us

If you have questions about the Martinez Refinery Recycled Water Project, contact Don Berger at 925.229.7259.

Central Contra Costa Sanitary District

Protecting Public Health and the Environment

Background

California is experiencing a severe drought with below-average rainfall, low snowmelt runoff and court-ordered restrictions on Delta water pumping. Recycled water projects using urban wastewater are some of the most reliable and drought-tolerant water supplies available. Water recycling is mandated by several California codes and laws and is an integral part of the Central Contra Costa Sanitary District's (CCCSD) mission. Currently, CCCSD has a very successful landscape irrigation program and is always pursuing new recycled water opportunities such as supplying the new development at the Concord Naval Weapons Station or supplying the existing refineries.

Proposed Project Description

If implemented, the proposed Martinez Refinery Recycled Water Project would create 22,500 AF/yr of new water supply for California by using a steady, drought-proof supply of wastewater from CCCSD and treating it to produce a high-quality recycled water for use in cooling towers and for boiler feedwater at the Shell and Tesoro refineries in Martinez. The pipelines and storage tanks to deliver recycled water to the refineries are already in place. However, in order to produce the recycled water, new treatment facilities must be constructed at an estimated cost of up to $150M. CCCSD is seeking federal and state funding assistance and project partners to help make this project a reality and to meet California's urgent need for water, while providing new jobs in construction and operations to stimulate the economy.

5019 Imhoff Place, Martinez, CA 94553 | 925.228.9500 | www.centralsan.org

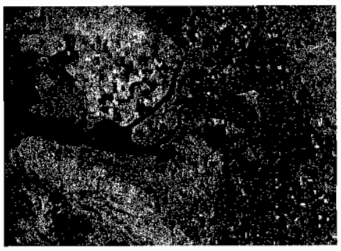
California is in a Drought

California is facing the most significant water crisis in its history. After experiencing two years of drought and the driest spring in recorded history in 2008, water reserves are extremely low.

Drought conditions in the Colorado River Basin, combined with a Sierra snowpack that is now dangerously unreliable due to global climate change, are leaving many communities throughout California facing mandatory restrictions on water use and/or rising water bills. If the drought continues, the results could be catastrophic to our economy.

In June 2008, the Governor issued Executive Order S-06-08 declaring a statewide drought, which directed his state agencies and departments to take immediate action to address the serious drought conditions and water delivery reductions that exist in California.

In October 2008, the Department of Water Resources announced the initial allocation of only 15 percent for water delivery to the State Water Project (SWP) contractors in 2009 – the second lowest allocation level in the history of the SWP.

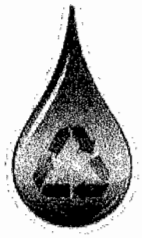


The Sacramento-San Joaquin Delta is Overdrawn

With the Sacramento-San Joaquin Delta ecosystem near collapse, court-ordered restrictions on water deliveries from the Delta have reduced supplies from the state's two largest water systems by twenty to thirty percent.

A new survey from the California Department of Fish and Game finds Delta smelt are hovering at the brink of extinction. The department's fall 2008 population survey of fish species in the Sacramento-San Joaquin Delta concluded in December 2008 and found the smelt at its lowest point in 42 years of record-keeping and two nonnative fish, the American shad and threadfin shad, also at record lows. While there are many factors affecting the Delta, recent studies indicate that the biggest impact on declining fish species is the overdrafting of water from the Delta.

The State Has Issued Mandates to Use Recycled Water



The State of California, through its Water Code, has strongly encouraged the use of recycled water. The following references are included in the California Water Code:

- Section 13510 states that the people of the state have a primary interest in the development of facilities to reuse wastewater to supplement existing surface and underground water supplies and to assist in meeting the future water requirements of the State.
- Section 13511 states that a substantial portion of the future water requirements of this state may be economically met by beneficial use of reclaimed water. Use of recycled water constitutes the development of "new basic water supplies".
- Section 13512 declares it is the Intention of the Legislature that the State undertake all possible steps to encourage development of water reuse facilities so that reclaimed water may be made available to help meet the growing water demands of the State.
- Section 13550 states that the use of potable domestic water for non-potable uses, including, but not limited to, cemeteries, golf courses, parks, highway landscaped areas, and industrial and irrigation uses, is a waste or an unreasonable use of the water, if reclaimed water of adequate quality is available at reasonable cost.
- Section 13551 states that a person or public agency shall not use water from any source of quality suitable for potable domestic use for non potable uses, including cemeteries, golf courses, parks, highway landscaped areas, and industrial and irrigation uses, if suitable reclaimed water is available as provided in Section 13550.

Recycling High-Quality Water is CCCSD's Mission

In response to the mandates by the State of California and as part of Central Contra Costa Sanitary District's (CCCSD) mission to protect public health and the environment, CCCSD is committed to recycling high-quality water in order to enhance the regional water supply and to decrease the demand on the Sacramento-San Joaquin Delta.

Central Contra Costa Sanitary District
Protecting Public Health and the Environment

On 5/19/2009, the email below was submitted to Mr. Glaser from Anne Farrell, with a copy of the letter previously submitted to Ms. Naillon and Mr. Moore on 4/21/2009. The emails have been attached to the original letter as an attachment for record-keeping. ---AET, ESA, 05/26/2009

>>> Mona Jefferies-Soniea 5/19/2009 5:03 PM >>>
It appears it is time for us to obtain the comments and responses for DLVE EIS/R. How is the comment identifed below being addressed?

Thank you

Mona Jefferies-Soniea
Chief, Delta and Conveyance Branch
Division of Planning, Mid Pacific Region Bureau of Reclamation 2800 Cottage Way
Sacramento, CA 95825

mjefferiessoniea@mp.usbr.gov
Phone: (916).978-5068

"The single biggest problem in communication is the illusion that it has taken place."
George Bernard Shaw (playwrite and Nobel Prize winner)

>>> Ann Farrell 05/19 3:09 PM >>>
Dear Mr. Glaser,

I am the Director of Engineering at Central Contra Costa Sanitary District in Martinez, CA. We treat the wastewater for the Central County area, including Walnut Creek and Concord, and our elected Board is very interested in increasing the amount of water we recycle, particularly given the current drought situation. There are facilities already in place to transport recycled water from our treatment facility to two local refineries, Shell and Tesoro. The total potential demand of these two facilities is 20 mgd, which is currently being supplied by Contra Costa Water District (CCWD) as raw water. Supplying these two refineries with recycled water were two of the highest ranked projects in the San Francisco Bay Area Regional Water Recycling Program (BARWRP), which was partially funded by the Bureau of Reclamation.
Unfortunately, local institutional issues have stood in the way of implementing this project since the mid 70's, when the transport and storage facilities were originally constructed. During the scoping for the Los Vaqueros Expansion EIR/EIS we urged CCWD and the Bureau of Reclamation to incorporate recycled water as an element of the Expansion project. When the draft document was released, we learned that recycled water had been dismissed with no consideration. We subsequently sent the attached comment letter to Louis Moore at the Bureau and also testified at the Public Hearing in Martinez. My concern is that our

proposal, to include recycled water and particularly supplying the two Martinez refineries as a component of the Los Vaqueros Expansion, will once again be summarily dismissed with no serious consideration of the potential benefits. I wanted to make you aware of this issue and request a brief meeting to present our thoughts and answer any questions you might have. I will give you a few days to review the attached letter and touch base with your staff, and then call to set up an appointment.

Thanks in advance for your consideration.

Sincerely,

Ann Farrell
Director of Engineering
Central Contra Costa Sanitary District
5019 Imhoff Place
Martinez, CA 94553
925/229-7302

Delta Diablo Sanitation District

OFFICE AND TREATMENT PLANT: 2500 PITTSBURG-ANTIOCH HIGHWAY, ANTIOCH, CA 94509-1373
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FAX: (925) 756-1961 – ADMINISTRATION

FAX TRANSMITTAL

FAX NO: (925) 686-2187	**DATE:** April 21, 2009
TO: Ms. Marguerite Naillon, Special Projects Manager Contra Costa Water District	**FROM:** Stacy Tucker for Gary Darling

Total Number of Pages (including this cover page): 11

SUBJECT: Los Vaqueros Reservoir Expansion Project DEIS/EIR

MESSAGE: Please see the attached comments.

cc: District File No. CORP.15.11-CORRES-XXX
CORP.15.21-CORRES-XXX
Chron File



Delta Diablo Sanitation District

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www.ddsd.org

April 21, 2009

APR 2009
RECEIVED
CONTRA COSTA WATER DISTRICT
CALFED

Ms. Marguerite Naillon
Bureau of Reclamation
2800 Cottage Way, MP-700
Sacramento, CA 95825

Mr. Louis Moore
Contra Costa Water District
P. O. Box H20
Concord, CA 94524

Attention: Los Vaqueros Reservoir Expansion Project DEIS/EIR

SUBJECT: COMMENTS TO DRAFT ENVIRONMENTAL IMPACT STATEMENT / ENVIRONMENTAL IMPACT REPORT, LOS VAQUEROS RESERVOIR EXPANSION PROJECT

Dear Ms. Naillon and Mr. Moore:

The Delta Diablo Sanitation District (DDSD) appreciates the opportunity to provide comments on the Draft Environmental Impact Report for the Los Vaqueros Expansion Project. DDSD serves approximately 200,000 customers that are also customers of the Contra Costa Water District (CCWD). The District supports all efforts that CCWD is taking to develop a diverse water supply portfolio for CCWD's customers as well as other Bay Area residents.

DDSD has been active in leading the Bay Area Recycled Water Coalition (BARWC) as well as generating technical papers in support of the development of a brackish desalination project in the western Delta. DDSD's interest is to have those activities properly acknowledged as a part of the environmental review process and incorporated into the decision making process to expand the Los Vaqueros Reservoir.

DDSD is in the process of a $16M Recycled Water Expansion Project. The project will serve recycled water to two golf courses and seven city parks. The project has secured both a State and Federal partnership that combined, will pay for half of the capital costs of construction. The Federal partnership was successful only because DDSD joined with other Bay Area agencies to form the BARWC. The BARWC currently has 11 agencies participating that have identified recycled water projects that could be constructed within the next few years and could produce over 88,000 acre-feet of new, highly reliable water supply to the Bay Area (see Attachment 1, the BARWC letter to USBR Mid-Pacific Regional Director Don Glaser dated March 3, 2009). The projects offer immediate drought relief, are locally supported by significant local funds, and lessen the Bay Area's impacts on the Delta.

Comment 1: Page B-11; Waste Use Efficiency: Implementing additional wastewater reclamation is deleted. The potential to address the project objectives is rated "low" because it "could (only) provide localized water supply reliability benefits, limited by acceptable uses of recycled water." Given the information cited above (i.e., potential for Bay Area agencies to develop more than 88,000 acre-feet in the near term), please reassess the ranking of this concept to address project objectives.

DDSD has completed two technical papers with outside consultants on the feasibility of developing a brackish desalination water supply project within its service area. Both studies have been shared with the water agencies involved in the Bay Area Regional Desalination Project referenced in draft environmental document, as well with USBR Mid-Pacific Region staff. The studies conclude that a brackish

Recycled Paper

desalination water supply located in the western Delta is not fatally flawed and warrants further development (see Attachment 2, letter dated May 30, 2008 to the scoping effort for the Bay Delta Conservation Plan).

These conclusions of the studies completed by DDSD (as well as the URS studies completed by the Regional Desalination partners) are not consistent with the logic used to screen out a regional desalination project in the Los vaqueros Expansion draft Environmental Impact Report/Statement (EIR/S), either in combination with existing or future storage, or as a stand-alone project. For example, on Page B-27, in reference to a regional desalination facility: "This plan was not carried forward as a final alternative because it did not contribute substantially to one of the primary project objectives, providing Bay Area water supply reliability and had less environmental water management benefits. The plan was also the least consistent with the CCWD Board principles and with the water management objectives set forth in the CALFED Record of Decision (ROD). The plan was found to have the least potential for local agency participation."

2

The technical reports completed by DDSD and the Regional Desalination Project partners give evidence that a regional desalination project located in the western Delta could:

a) Provide environmental water management benefits and a very high level of reliability.
b) Provide a very economic solution for many Bay Area agencies because the system would be on demand, fish friendly, and bottled water quality.

Comment 2: The statement that a regional desalination project is not consistent with the water management objectives set forth in the CALFED ROD needs to be clarified.

3

Comment 3: Please incorporate the information provided in the DDSD studies and the studies completed by the Regional Desalination Project.

4

If there are any questions or need for clarification, please do not hesitate to contact me at (925) 756-1920.

Sincerely,

Gary W. Darling
General Manager

GWD:st

Attachments

cc: DDSD Board of Directors
CORP.15.11-CORRES-XXX
CORP.15.21-CORRES-XXX
Chron File

O:\Clerical\Los Vaqueros Res Exp Comments to Draft EIS-EIR.doc

ATTACHMENT 1

March 3, 2009

Mr. Donald Glaser, Director
United States Bureau of Reclamation
Mid-Pacific Region
2800 Cottage Way
Sacramento, CA 95825-1898

SUBJECT: AMERICAN RECOVERY AND REINVESTMENT ACT, TITLE XVI FUNDING

Dear Mr. Glaser:

On behalf of the San Francisco Bay Area Recycled Water Coalition (BARWC), I'm writing to respectfully request $80.93 million in funding from the American Recovery and Reinvestment Act (ARRA) for our recycled water projects. This requested amount is a 25% share of the total estimated project costs and includes $42.85M for authorized projects, of which $11.58M is included in the House passed FY09 Omnibus Appropriations Bill (HR1105), and $38.08M for projects seeking authorization. This information is detailed on the first page of the attached project table.

The BARWC is a group of 11 public agencies committed to developing recycled water as a resource for the San Francisco Bay Area. BARWC members have been seeking a Federal Title XVI partnership for many projects over the past four years, and have been investing significant time and money into completing the requirements of Title XVI and NEPA.

BARWC is fortunate to have the solid backing of the entire Bay Area congressional delegation and in particular the leadership in the House of Representatives provided by Congressman Miller. Our regional approach to support each other's projects and collectively advocate as a coalition has also led to support from Senators Feinstein and Boxer. Our projects offer immediate drought relief; are locally supported by significant local funds; are non-controversial; and lessen the Bay Area's impacts on the Delta. As you can see by the attachment, BARWC recycled water projects have the potential to develop over 88,000 acre-feet of new, highly reliable water supply to replace potable water use. Also included in the attachment is a document that highlights the benefits of Federal investment in BARWC projects.

The ARRA directs a minimum of $126 million for water recycling projects through the Bureau of Reclamation's (Reclamation) Title XVI Program. BARWC has projects that immediately fit the intent of Congress and the President, as well as several other projects that can be expedited with the help of Reclamation. Funding these projects will allow Reclamation to meet both the intent and letter of the law, as these projects can meet the following: be obligated/executed quickly; result in high, immediate employment; have little schedule risk; be executed by contract or direct hire of temporary labor; and provide a useful service that does not require additional funding. This is also true when ARRA funds are used to reimburse the Federal share of projects already constructed or currently under construction, since these funds can be immediately distributed and will allow the agencies to reinvest in new projects to further stimulate the economy and expand water supply.

BARWC has nine projects and programs that are currently authorized with an estimated total cost of $302M and a Federal share of $42.85M. These projects will produce over 34,000 acre-feet of water supply. Some of the projects have had to start construction or lose their State grant funding. Some run the risk of either not starting construction or completing construction given the recent changes to our economy. The local cost shares are coming from cities that are analyzing budget cuts needed to remain solvent. BARWC projects are dependent on the Federal partnership to share the capital costs for the projects. Once the projects are built and the capital component is paid, the recycle water supply becomes a very cost effective and highly reliable supply that helps to attract new businesses or enhance urban landscapes. Funding from the ARRA would help guarantee delivery of these shovel ready projects, and reimbursement of the Federal share to constructed projects will allow the agencies to reinvest in new projects.

BARWC has submitted legislation to Congress to authorize six new Bay Area recycled water projects, with a total estimated cost of $128M and 25% Federal share of $38.1M. The projects meet the requirements of ARRA provided that Reclamation devotes the resources for expedited Feasibility Determinations, and accelerates NEPA completion.

Finally, BARWC members have identified 11 additional projects that could be completed within the timeframe of the ARRA and provide economic stimulus (see page 2 of the attached table). Constructing these projects can result in over 45,000 acre-feet/year of new, highly reliable water, at an estimated total cost of $442M ($110.5 for 25% share). These projects demonstrate the significant unfunded need in the Bay Area and the water yield that could be developed with funding through the ARRA.

The BARWC members have appreciated meeting with you and discovering that you are an advocate of recycled water projects. You realize the importance of developing new water supplies and working with local agencies that are willing to invest in recycled water projects. We look forward to working very closely with you during this exciting and unprecedented period when Congress and the President have established a "window of opportunity" for us to meet our common goals.

While we are meeting monthly with your staff to forward the BARWC projects, we would also like to meet with you to go over the details of our project schedules and how to maximize this opportunity. In the mean time, please do not hesitate to contact me at (925) 756-1920 to discuss further.

Sincerely,

Gary W. Darling
General Manager
Delta Diablo Sanitation District

GWD/JS:bjm

Attachment

cc: BARWC Member Agencies
P.90024
Chron

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04/21/2009 14:37 FAX 925 756 1961

San Francisco Bay Area Recycled Water Coalition
Title XVI Projects by Authorization

PROJECT	ESTIMATED TOTAL COST	NONFEDERAL	25% FEDERAL SHARE	Construction Status or Bid-Ready Date[1]: Underway to 60 days	60-90 days	90-120 days	120-180 days	365 days	1-2 years	JOBS SUPPORTED (2007 FHWA est: 27,800 jobs/$1 billion)	CEQA / NEPA Status	NEW ANNUAL YIELD (acre-ft/yr)
Authorized in Public Law 102-575												
South Bay (San Jose) Ph. 1	$140,000,000	$105,000,000*	$8,000,000	Construction Complete						3,892	Complete	20,000
San Jose - S. Bay Extensions	$28,000,000	$21,000,000	$7,000,000				✓			778	Complete/TBD	2,600
Authorized in Public Law 110-229												
Palo Alto/ Mountain View	$21,000,000	$16,000,000	$5,000,000	✓						584	Complete	1,480
Pittsburg Recycled Water	$5,400,000	$3,650,000	$1,750,000	✓						150	Complete	615
Antioch Recycled Water	$12,500,000	$10,250,000	$2,250,000		✓					348	Complete	530
Redwood City - Phase I Seaport	$4,600,000	$3,500,000	$1,100,000	Construction Complete						128	Complete	245
North Coast County	$9,900,000	$7,400,000	$2,500,000		✓					275	Complete/TBD	170
South Santa Clara County	$28,000,000	$21,000,000	$7,000,000			✓				778	TBD	1,790
South Bay Advanced Treatment - Phase 2	$53,000,000	$44,750,000	$8,250,000					✓		1,473	Est. Summer 2009 / TBD	6,720
Total Authorized	**$302,400,000**	**$232,550,000**	**$42,850,000**							8,406		34,150
Seeking Authorization												
CCCSD - Concord Recycled Water Project	$7,200,000	$5,400,000	$1,800,000					✓		200	Ph. 1 complete/ TBD (late 2009)	255
Petaluma Phases 2A, 2B, 3	$24,000,000	$18,000,000	$6,000,000			✓				667	Complete/TBD	1,610
Central Dublin RW Distribution & Retrofit	$4,600,000	$3,450,000	$1,150,000						✓	128	2009/TBD 2009	215
Central Redwood City RWP	$32,000,000	$24,000,000	$8,000,000						✓	890	Complete / TBD	1,075
Palo Alto RW Pipeline	$33,000,000	$24,750,000	$8,250,000						✓	917	2009/TBD	1,000
Ironhouse Sanitary District - Antioch Recycled Water	$28,000,000	$21,000,000	$7,000,000						✓	778	Complete / TBD	3,920
Antioch Recycled Water (authorization amendment)			$875,000									
South Bay Advanced Treatment-Phase 2 (authorization amendment)			$5,000,000									
Total Seeking Authorization	**$128,800,000**	**$96,600,000**	**$38,075,000**							3,580		8,075
TITLE XVI TOTAL	**$431,200,000**	**$329,150,000**	**$80,925,000**							11,986		42,225

* Partial Federal funding in prior years

[1] Refers to construction underway or estimated days to bid ready based on start day of January 20, 2009

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04/21/2009 14:37 FAX 925 756 1961

San Francisco Bay Area Recycled Water Coalition
Economic Stimulus Projects

PROJECT	LEAD AGENCY	ESTIMATED TOTAL COST	25% Share	Construction Status or Bid Ready Date[1]						NUMBER OF JOBS SUPPORTED[2]	CEQA STATUS	NEW ANNUAL YIELD (acre-ft/yr)
				Underway to 60 days	60-90 days	90-120 days	120-180 days	180-365 days	1-2 years			
Palo Alto RWQCP, Phase 3 Expansion	City of Palo Alto	$41,000,000	$10,250,000	✓						1,140	Complete	9,000
Redwood City Seaport Bid Packages 5A & 8	City of Redwood City	$1,920,000	$480,000		✓					53	Complete	51
DSRSD RW Distribution System Expansion	DSRSD	$34,350,000	$8,587,500					✓		955	Est. 2009	2,315
Petaluma Pump Stations	City of Petaluma	$1,780,000	$445,000	✓						49	NA	1,670
Petaluma Phases 4 & 5	City of Petaluma	$23,550,000	$5,887,500					✓		734	CEQA complete	
ISD Advanced Treatment & Water Recycling Facility	Ironhouse Sanitary District	$71,900,000	$17,975,000	✓							CEQA + Complete	4,800
South Bay (San Jose) Phase 2--Santa Clara and Milpitas Extensions	City of San Jose	$20,000,000	$5,000,000		✓					556	Programmatic NEPA complete	1,500
Pleasant Hill RW Project	CCCSD	$6,000,000	$1,500,000					✓		167	Est. 12/2009	250
East County Industrial Recycled Water Facility - Pittsburg Project	DDSD & CCCSD	$53,500,000	$13,375,000						✓	1,487	Est. 12/2009	3,700
Recycled Water Multi-function Pipeline	SCVWD & San Jose	$38,000,000	$9,500,000						✓	1,056	Est. 12/2009	0
Martinez Refinery RW Project, Phases 1 & 2	CCCSD	$150,000,000	$37,500,000						✓	4,170	Est. 12/2009	22,500
ECONOMIC STIMULUS PROJECT TOTAL		$442,000,000	$110,500,000	*$136,600,000*			*$305,400,000*			10,367		45,786
GRAND TOTAL		$873,200,000	$191,425,000							22,353		88,011

[1] Refers to construction underway or estimated days to bid ready based on start day of January 20, 2009

[2] 2007 Federal Highway Administration estimate of 27,800 jobs per $1 billion in Federal funds.

DDSD = Delta Diablo Sanitation District

DSRSD = Dublin San Ramon Services District

CCCSD = Central Contra Costa Sanitation District

SCVWD = Santa Clara Valley Water District

Rev. 02-26-09

007/011

Constructing the San Francisco Bay Area Recycled Water Coalition Projects is the Green Path to Economic Stimulus

Water is an increasingly limited resource that is essential to California, one of the top 10 largest economies in the world. The State can only remain competitive and a strong contributor to the United States economy with investment in new water supply.

The *Bay Area Recycled Water Coalition* represents a green solution to water supply issues. Coalition projects include over $800 million worth of recycled water projects. Of these, over $180 million worth of new projects will be ready to go to construction within 90 days[1]. Constructing *Bay Area Recycled Water Coalition* projects will provide the following benefits:

- **Support over 22,300 jobs[2].**

  Constructing these recycled water projects supports and provides new direct and indirect jobs including engineering, construction, manufacturing, operation & maintenance, retail and service providers.

- **Create New Long-Term Sustainable Water Supplies.**

  Completion of these projects will deliver over 88,000 acre-feet per year of sustainable yield, offsetting potable supplies.

- **Increase Economic Development and Green Projects.**

  New recycled water supplies enable the business community to grow and attract businesses seeking LEED certification.

- **Conserve Energy and Help meet Carbon Reduction Goals.**

  Recycled water is a resource available now in substantial quantities. Use of recycled water provides significant energy and carbon benefits over the creation of new sources or importing water.

- **Preserve Overdrawn Sacramento River and Delta System Supplies.**

  The projects extend water availability for Federal water contracts particularly during dry periods, and support Federal Bay Delta Conservation Plan (BDCP) and Central Valley Project Improvement Act (CVPIA) objectives.

- **Improve Water Quality.**

  Use of recycled water reduces the volume of treated wastewater discharged to sensitive or impaired surface waters.

---

[1] Starting from late January 2009.

[2] 2007 FHWA estimate that $1 billion in Federal funds supports 27,800 jobs, "*Employment Impact of Highway Infrastructure Investment*".

ATTACHMENT 2

Delta Diablo Sanitation District

OFFICE AND TREATMENT PLANT: 2500 PITTSBURG-ANTIOCH HIGHWAY, ANTIOCH, CA 94509-1373
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www.ddsd.org

May 30, 2008 (corrected date)

Via Facsimile No. (916) 651-9563

Ms. Delores Brown
Office of Environmental Compliance
Department of Water Resources
P.O. Box 942836
Sacramento, CA 94236

Via Facsimile No. (916) 978-5528

Ms. Patti Idlof
Bureau of Reclamation
2800 Cottage Way, MP–150
Sacramento, CA 95825

SUBJECT: COMMENTS ON NOTICE OF PREPARATION AND NOTICE OF INTENT FOR THE BAY DELTA CONSERVATION PLAN ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL IMPACT STATEMENT

Dear Ms. Brown and Ms. Idlof:

The Delta Diablo Sanitation District (DDSD) submits this letter in response to the March 17, 2008 Notice of Preparation and Notice of Intent to prepare an Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) for the Bay Delta Conservation Plan (BDCP).

DDSD is located at the western edge of the statutory Delta and provides sewage treatment services to a population of approximately 200,000, as well as provides recycled water service to two major power plants that have a capacity to serve over 1 million homes. DDSD's Strategic Plan gives priority to the development of long term sustainable resource development projects that further the District's commitment to progressive environmental stewardship. To that end, the District has taken a leadership role in securing a federal partnership for seven new recycle water projects in the Bay Area. The recent authorization signed by the President includes two projects in the District's service area that will deliver recycled water to two golf courses and seven city parks. In addition, the District is taking a lead role in the development of a biosolids to energy project that is envisioned to provide an alternative biosolids disposal option that will process biosolids into a green renewable energy supply for the Bay Area.

DDSD recognizes that there likely is not one individual solution that will adequately address the environmental challenges that the Delta faces. All solutions should be explored, including re-operations; decreasing water supply obligations through conservation, water transfers, and recycling;

Recycled Paper

increased storage, engineered solutions to redirect flows, etc. One solution that should be included in the planning and environmental review of the BDCP is the development of a new water supply from the western part of the Delta. Such a water supply could help relieve the Delta of its water supply obligations, as well as allow precious upstream reservoir releases to flow through the Delta prior to diversion.

Over the past three years, the District has completed feasibility level studies on locating a new fish friendly, high quality water supply project within the DDSD service area. The project would divert water out of one or more of the existing water supply intakes owned by others within the District's service area, and utilize advanced treatment to convert the brackish water from the western part of the Delta into a high quality water supply for urban or agricultural purposes. The District is located within an industrial corridor and has several publicly owned assets that could be utilized in the development of a new water supply project, including land and outfall capacity. The studies are in the process of being shared with the local water agencies. DDSD understands that at least one of the agencies, Dublin San Ramon Services District (DSRSD), has sent a scoping letter in with a request to include a western Delta brackish water supply in BDCP planning and environmental review process. This letter outlines the conclusions of the studies completed to date, and invites further exploration of a new water supply project that could provide direct relief of the Delta water supply obligations shared by the state and federal projects.

The feasibility level studies the District has completed include a fisheries study and a technical feasibility study that includes cost estimates (copies are available upon request). The studies provide the following conclusions:

1) Location of a brackish desalination plant in the western portion of the Delta costs only a third in terms of energy and dollar costs compared to developing a desalination project in the San Francisco Bay or the Pacific Ocean. The main reason this is true is because the salinity fluctuations are a third or less than the other two water sources (i.e., the TDS in the western Delta ranges from 500 mg/l to 14,000 mg/l, while the Bay and Ocean TDS are 30,000 mg/l). Depending on the partners investing in the project, the cost to construct and operate a project varies from approximately $500/ acre-foot to $900/ acre-foot.
2) The water from a brackish water desalination facility can be treated to any level desired, from bottled water quality for human consumption to a very much improved low salinity water supply for agricultural purposes. Generating and utilizing a high quality, low salinity water source helps to decrease the salinity levels in outfalls and/or runoff.
3) A new intake in the western part of the Delta can be operated in a fish friendly way by installing state-of-the-art fish screens, and avoiding pumping periods when protected aquatic species cannot be adequately screened (i.e., during the egg and larvae stage).
4) Brine disposal is feasible in the western portion of the Delta by exporting the brine further to the west where salinity levels raise dramatically as the Delta empties into the Bay (i.e., a desalination project does not add mass, but does increase concentration).

5) A brackish desalination project is scalable in the western portion of the Delta and could be considered as a supplemental water supply for the Bay Area, or a water supply component for other water users of the State and Federal water projects. Preliminary capital cost estimates (completed in 2006) indicate that a five million gallon per day (MGD) project could be constructed for approximately $25 million, a 50 MGD project for $250 million, up to a million acre-foot/year project for $3.5 billion. A major benefit of a brackish desalination project in the western Delta is that it is drought proof, and requires no new storage.
6) While Bay or ocean desalination projects are considered energy intensive, brackish desalination projects use much less energy. For example, the energy required to treat brackish waters in the western Delta, plus the pumping required to deliver the water to Southern California is less than an ocean desalination and delivery project located in Southern California.
7) A brackish desalination project located in the western portion of the Delta is in close proximity to major water conveyance facilities owned by Bay Area water utilities (approximately one mile), and could be used to deliver water to over five million Bay Area residents. In addition, the western Delta water supply is located approximately 20 miles from the state and federal pumping facilities.

Thank you for this opportunity to comment on the BCDP EIR/EIS process. DDSD will continue to monitor the process and encourages a local, state, and/or federal partnership to develop a new water supply from the western Delta. Please do not hesitate to call me at (925) 756-1920.

Sincerely,

Gary W. Darling
General Manager

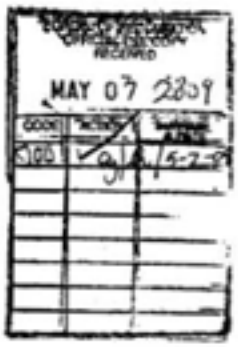
GWD:dj

cc: DDSD Board of Directors
Bert Michalczyk, Dublin San Ramon Services District
Jill Duerig, Zone 7
Terry Erlewine, State Water Contractors
William Rohwer, Mid Pacific Region, USBR
District File No. RWF.CORRES-9
Chron File

DUBLIN
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DISTRICT

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May 5, 2009



Ms. Marguerite Naillon
Bureau of Reclamation
2800 Cottage Way, MP-700
Sacramento, CA 95825

Mr. Louis Moore
Contra Costa Water District
P.O. Box H20
Concord, CA 94524

Subject: **Comments on Draft Environmental Impact Statement / Environmental Impact Report, Los Vaqueros Reservoir Expansion Project**

Dear Ms. Naillon and Mr. Moore:

The Dublin San Ramon Services District (DSRSD) thanks the Contra Costa Water District for the opportunity to review and comment on its Draft Environmental Impact Statement/Environmental Impact Report (DEIS/EIR) for the proposed Los Vaqueros Reservoir Expansion Project. DSRSD believes the project being defined by the DEIS/EIR may have significant potential benefits to the Tri-Valley area of Contra Costa and Alameda counties. DSRSD could be affected by this project because it is a potable water retailer for the Alameda County Flood Control and Water Conservation District, Zone 7 (Zone 7). This entity is specifically mentioned as benefiting from the project by receiving water from the expanded reservoir and facilities. DSRSD supports this effort that CCWD is taking to develop a more flexible water supply portfolio for all the potable water customers in the Bay Area. Below are specific comments relating to this project and the effect on area residents and DSRSD's customers.

Comment 1: As pointed out in Table 6-2 in Chapter 6 – Summary of Impacts, this project will help provide a more reliable potable water supply for domestic users in the area of Contra Costa and Alameda counties. While the total water that Zone 7 can pump out of the Delta will remain approximately the same over any given year, this project may improve the reliability of the Zone 7 supply by allowing pumping at times that would not be allowed from the current intake. For that reason, DSRSD supports selection of an alternative with the potential for a connection to the South Bay Aqueduct.

1

Comment 2: Page B-11, Water Use Efficiency - Implementing additional wastewater reclamation is deleted. The potential to address the project objective is rated "low." DSRSD has been instrumental in creating an inter-agency project with EBMUD to manufacture and

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distribute recycled water to customers for large-scale landscape irrigation named DERWA. In 2008 DERWA provided 2,483 acre-feet of recycled water for irrigation, saving that volume of potable water for domestic use in the area and reducing the demand on the Delta. DSRSD believes it is important for the DEIS/EIR to demonstrate that water agencies in this region are utilizing every technique available for the intelligent management of water supplies. This fact should make the interconnection to the South Bay Aqueduct more acceptable to the public.

2
Cont.

Sincerely,

DAVID A. REQUA
Assistant General Manager/District Engineer

DAR/SK/st

------ Forwarded Message
From: Los Vaqueros <lvstudies@hotmail.com>
Date: Tue, 21 Apr 2009 15:51:06 -0700
To: Andrea Nocito <a.nocito@circlepoint.com>
Conversation: Comments: LVE Project Draft EIS/EIR
Subject: FW: Comments: LVE Project Draft EIS/EIR

Subject: Comments: LVE Project Draft EIS/EIR
Date: Tue, 21 Apr 2009 15:47:49 -0700
From: dcollier@ebmud.com
To: lvstudies@hotmail.com

Hello Marguerite,

EBMUD appreciates the opportunity to provide comments on the Draft EIS/EIR for the Los Vaqueros Expansion (LVE) Project. The comments are attached for your review and the hard copy was mailed today via US Postal Service.

Thank you,



Dorothy E. Collier

Executive Assistant II

Water and Natural Resources Administration

East Bay Municipal Utility District

(510) 287-0548 Office

(510) 287-0541 Fax

dcollier@ebmud.com

MS #901

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MUNICIPAL UTILITY DISTRICT

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DISTRICT
CALFED

April 21, 2009

Ms. Marguerite Naillon
Contra Costa Water District
P.O. Box H2O
Concord, CA 94524

SUBJECT: Los Vaqueros Reservoir Expansion Project Draft EIS/EIR

Dear Ms. Naillon:

The East Bay Municipal Utility District (EBMUD) appreciates the opportunity to provide the following comments on the Draft EIS/EIR for the Los Vaqueros Expansion (LVE) Project.

Comment 1: The emergency storage benefits of LVE are not necessarily available to EBMUD.

In multiple locations, the Draft EIS/EIR refers to emergency storage water that may be available "through existing interties between water agencies" during shortages caused by natural disasters or other emergencies. There are operational, regulatory and environmental constraints that can preclude the ability to move water to water agencies including EBMUD during shortages or emergencies. At the very least, the Draft EIS/EIR should acknowledge that, under extreme Delta emergency scenarios when EBMUD is unable to access its Mokelumne River supplies for an extended period, CCWD and EBMUD would have significant operational, regulatory and environmental issues to resolve before EBMUD could receive any water from the LVE project. EBMUD relies primarily on its terminal storage reservoirs for emergency supplies that furnish water to all of its existing treatment plants. If an emergency required additional supplies, some of the factors that would be considered include: the location of the emergency (EBMUD-wide vs. localized), the ability of existing treatment plants to treat alternative emergency supplies, the availability of emergency supplies (i.e. the San Francisco Public Utility Commission system vs. the Contra Costa Water District system), and hydraulic capacities within various parts of the transmission, treatment and distribution system. Given the numerous factors to be considered based on the nature of the emergency, EBMUD is not currently able to quantify any emergency supply benefit from the LVE project. 1

Comment 2: Comprehensive cost estimates, while not required, would be helpful.

Although CEQA and NEPA *per se* do not require development of cost estimates for the planning, design, construction, and impact mitigation of a project, it would be helpful if CCWD could publish cost estimates contemporaneously for the LVE project so that the costs of each project alternative can be understood in parallel with the benefits described, including costs to re-pay CCWD's initial investments for the project (i.e. watershed lands, infrastructure relocations, etc.) that would be utilized for an expanded reservoir. 2

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P.O. BOX 24055 . OAKLAND . CA 94623-1055

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Comment 3: The reason for eliminating desalination as an alternative should be clarified.

Desalination with storage (emphasis added) is listed on page 3-11, as one of the alternatives not carried forward due to environmental issues related to energy use and disposal of brine. The reasons given on page 3-11, unless placed in proper context and clarified could be interpreted as a reason not to consider desalination in general. Desalination projects throughout the U.S. have been successfully implemented and more context should be provided to distinguish the "with storage" option from other applications. Potential desalination projects serving CCWD and other Bay Area utilities are currently under study that are not directly associated with storage. In fact CCWD and EBMUD, along with other Bay Area water agencies, are currently funding a regional desalination pilot test located in CCWD's system. A fuller discussion of the broader technical potential should note that advancements are being made in desalination to address issues cited in the DEIR/EIS. For example, recently developed ultra-efficient energy recovery devices reduce the energy footprint of a desalination project. Moreover, innovative approaches of brine discharge through engineering solutions such as collocation with wastewater discharge facilities may produce a beneficial situation for brine discharge in the seawater environment. 3

Comment 4: Early agreement with EBMUD is needed for water supply backup during construction.

Mitigation Measure 4.12.1b states that CCWD will phase construction to minimize the potential for water supply emergencies and complete formal arrangements with EBMUD for water supply backup prior to draining Los Vaqueros Reservoir and initiating construction. We would like to emphasize that discussions with EBMUD about potential backup supplies should begin at the earliest opportunity. The May 22, 2007 agreement between CCWD and EBMUD for Ownership and Long Term Operation and Maintenance of the CCWD/EBMUD Interconnection Facility Project covers the use of the intertie through which backup water supplies would be provided to CCWD during LVE construction. In accordance with this agreement, EBMUD must first determine if it has sufficient water to meet CCWD's request without impacting EBMUD's customers or its system reliability. Following this determination, EBMUD and CCWD must enter into a written agreement specifically addressing the backup water supply. CCWD, the requesting party, must complete all necessary environmental documentation and permitting for the backup water supply. 4

We look forward to ongoing coordination as further stages unfold in development of this project.

Sincerely,

Alexander R. Coate
Director of Water & Natural Resources

cc: Dennis Diemer, East Bay Municipal Utility District
Pat O'Brien, East Bay Regional Parks District

From: Rosie Bock [mailto:RBock@ebparks.org]
Sent: Tuesday, April 21, 2009 2:18 PM
To: Marguerite Naillon
Cc: Pat O'Brien; Bob Doyle; Allen Pulido; Yolande Barial; Brad Olson
Subject: Los Vaqueros Reservoir Exp. Project DEIS/EIR Comments

Dear Ms. Naillon –

Per Mr. Brad Olson's request, I am sending you an electronic copy of his letter regarding the Comments on Los Vaqueros Reservoir Expansion Project DEIS/EIR. The hard copy of this letter dated April 21, 2009 will be mailed to you today. If you have any questions regarding the contents of the letter, please contact Brad Olson by phone at 510/544-2622 or via email at bolson@ebparks.org. If you have any difficulties opening the attachment, please contact me by phone at 510/544-2600 or via reply to this email.

Yours truly,
Roselynne Bock, Secretary
Interagency Planning & Land Acquisition Division





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April 21, 2009



Marguerite Naillon
Contra Costa Water District
P.O. Box H20
Concord, CA 94524

Subject: Comments on Los Vaqueros Reservoir Expansion Project DEIS/EIR

Dear Ms. Naillon,

The East Bay Regional Park District believes that the Los Vaqueros Reservoir Expansion Project DEIS/EIR is inadequate for a number of reasons described in our comment letter. Of particular interest to the District are unidentified and/or unmitigated impacts to 1.) Natural resources at Byron Vernal Pools Regional Preserve; 2.) Natural and cultural resources at Vasco Caves Regional Preserve; 3.) the planned Morgan Territory to Brushy Peak Regional Trail; 4.) Public recreation in the Los Vaqueros Watershed; 5.) Wildlife movement corridors in the project area; 6.) East Contra Costa County Habitat Conservation Plan; and 7.) Numerous unmitigated cumulative impacts to natural and cultural resources, and trails and recreation. 1

As you are aware we had requested an extension on the public comment period; however, we were not granted an extension. We retained assistance in preparing our comments by the April 21, 2009, close of comments. Under separate cover the Park District will be submitting detail comments by the firm of Shute, Mihaly and Weinberger. 2

We hope to be able to meet with Water District staff to discuss our comment letter and to identify suitable mitigation measures for impacts to the above listed areas of concern. Please call me at (510) 544-2622 should you have questions or wish to arrange for a meeting. 3

Sincerely,

Brad Olson
Environmental Programs Manager

cc. Board of Directors
Pat O'Brien, General Manager
Bob Doyle, Asst. General Manager

Board of Directors

Ayn Wieskamp	Ted Radke	Doug Siden	Nancy Skinner	Beverly Lane	Carol Severin	John Sutter	Pat O'Brien
President	Vice-President	Treasurer	Secretary	Ward 6	Ward 3	Ward 2	General Manager
Ward 5	Ward 7	Ward 4	Ward 1				

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April 21, 2009

Ms. Marguerite Naillon
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Concord, CA 94254-2099

Ms. Sharon McHale
Bureau of Reclamation
2800 Cottage Way, MP-730,
Room W-2830
Sacramento, CA 95825-1898

Re: Draft Environmental Impact Statement/Environmental Impact Report for the Los Vaqueros Reservoir Expansion Project

Dear Ms. Naillon and Ms. McHale:

This firm represents the East Bay Regional Park District ("EBRPD") regarding the proposed Los Vaqueros Reservoir Expansion ("Project"). On behalf of EBRPD, we submit these comments on the February 2009 Los Vaqueros Reservoir Expansion Project Draft Environmental Impact Statement/Environmental Impact Report ("DEIS/EIR") prepared for the United States Department of the Interior, Bureau of Reclamation ("Bureau") and Contra Costa Water District ("CCWD") (collectively, "Lead Agencies").

EBRPD is a regional agency of the State of California charged with acquiring, developing, managing, and maintaining a high quality, diverse system of interconnected parklands that balances public use and education programs with protection and preservation of our natural and cultural resources. EBRPD operates 65 parks, covering more than 98,000 acres of land in Alameda and Contra Costa Counties, and more than 1,150 miles of trails. The proposed Los Vaqueros Reservoir ("Reservoir") expansion and associated pipelines, transfer facility, and other infrastructure could impact EBRPD parks and recreational opportunities. The Reservoir is located in the Los Vaqueros watershed in southwestern Contra Costa County, near several EBRPD parks,

including Vasco Caves Regional Preserve, Brushy Peak Regional Preserve, Morgan Territory Regional Preserve, and Round Valley Regional Preserve.

After carefully reviewing the DEIS/EIR for the Project, we have concluded that it does not fully comply with the requirements of the California Environmental Quality Act ("CEQA"), Public Resources Code § 21000 *et seq.*, and the National Environmental Policy Act ("NEPA"), 42 U.S.C. § 4321 *et seq*. The DEIS/EIR violates these statutes in a variety of ways, including the following: (1) failing to adequately describe the Project, (2) failing to analyze the significant environmental impacts of the Project, and (3) failing to propose feasible mitigation measures to address significant impacts. 1

The environmental impact report ("EIR") is "the heart of CEQA." *Laurel Heights Improvement Ass'n v. Regents of Univ. of Cal.*, 47 Cal. 3d 376, 392 (1988) (citations omitted).

> [It] is an environmental "alarm bell" whose purpose is to alert the public and its responsible officials to environmental changes before they have reached ecological points of no return. The EIR is also intended "to demonstrate to an apprehensive citizenry that the agency has, in fact, analyzed and considered the ecological implications of its action." Because the EIR must be certified or rejected by public officials, it is a document of accountability.

Id. (citations omitted).

Likewise, NEPA requires that federal agencies "consider every significant aspect of the environmental impact of a proposed action . . . [and] inform the public that [they have] indeed considered environmental concerns in [their] decision-making process[es]." *Earth Island Inst. v. U.S. Forest Serv.*, 351 F.3d 1291, 1300 (9th Cir. 2003) (citations omitted). The requirement that agencies prepare an environmental impact statement ("EIS") ensures that "the agency, in reaching its decision …will carefully consider[] detailed information concerning significant environmental impacts" and "guarantees that the relevant information will be made available to the larger audience that may also play a role in both the decisionmaking process and the implementation of that decision." *Robertson v. Methow Valley Citizens*, 490 U.S. 332, 349 (1989).

Where, as here, the environmental document fails to fully inform decision makers, and the public, of the environmental consequences of the proposed actions, it does not satisfy the basic goals of either statute. *See* Pub. Res. Code § 21061 ("The 2

purpose of an environmental impact report is to provide public agencies and the public in general with detailed information about the effect that a proposed project is likely to have on the environment; to list ways in which the significant effects of such a project might be minimized; and to indicate alternatives to such a project."); 40 C.F.R. § 1500.1(b) ("NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken.").

As a result of the DEIS/EIR's inadequacies, the Bureau and CCWD must revise and recirculate the DEIS/EIR to provide the public a complete, comprehensible description of the Project and its alternatives and an accurate explanation and assessment of the environmental issues at stake. 3

EBRPD would welcome an opportunity to work with the Lead Agencies in that process to address the issues discussed in this letter.

I. THE PROJECT WOULD HAVE A VARIETY OF SIGNIFICANT IMPACTS ON EBRPD PARKS AND PRESERVES.

EBRPD is concerned about the DEIS/EIR's failure to fully evaluate the Project's potential impacts to open space, recreation, natural resources, and cultural resources, particularly within EBRPD parks and preserves. The discussion of a proposed project's environmental impacts is central to an adequate EIR. *See* Cal. Code Regs. tit. 14, § 15126.2(a) ("An EIR shall identify and focus on the significant environmental effects of the proposed project.").[1] Likewise, NEPA requires that federal agencies "consider every significant aspect of the environmental impact of a proposed action . . . [and] inform the public that [they have] indeed considered environmental concerns in its decision-making process." *Earth Island Inst.*, 351 F.3d at 1300 (citations omitted).

As explained below, the DEIS/EIR does not properly analyze the Project's significant environmental impacts on recreation, cultural resources, consistency with applicable regional plans, and biological resources, nor does it consider all feasible mitigation for such significant impacts. This incomplete analysis renders the DEIS/EIR legally insufficient. *See* CEQA Guidelines § 15002(a)(1) (listing as one of the "basic 4

[1] The regulations codified in Title 14, Chapter 3 of the California Code of Regulations, commencing with section 15001, are referred to hereinafter as the "CEQA Guidelines." The CEQA Guidelines should be accorded "great weight . . . except when a provision is clearly unauthorized or erroneous." *Laurel Heights Improvement Ass'n*, 47 Cal. 3d at 391 n.2.

purposes" of CEQA to "[i]nform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities"); 40 C.F.R. § 1500.1(b) ("NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken.").

One of CEQA's fundamental objectives is to ensure that significant impacts be mitigated to the extent feasible. *See* Pub. Res. Code § 21002 ("[P]ublic agencies should not approve projects as proposed if there are . . . feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects . . . ."). As the California Supreme Court has held, "The core of an EIR is the mitigation and alternatives sections." *Citizens of Goleta Valley v. Bd. of Supervisors*, 52 Cal. 3d 553, 564 (1990).

Mitigation is defined by the CEQA Guidelines to include the following:

- Avoiding the impact altogether by not taking a certain action or parts of an action;
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
- Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment;
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
- Compensating for the impact by replacing or providing substitute resources or environments.

CEQA Guidelines § 15370.

NEPA similarly requires that agencies consider mitigation when preparing an EIS. 40 C.F.R. § 1502.14 (in the alternatives analysis, the agency must "[i]nclude appropriate mitigation measures not already included in the proposed action or alternatives"); *Robertson*, 490 U.S. at 352 (NEPA requires a "reasonably complete discussion" of potential mitigation to ensure that the severity of adverse impacts has been fully evaluated). The discussion of mitigation measures must be thorough. *Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d 1372 (9th Cir. 1988) (mitigation must contain details about how the measures would be undertaken and their effectiveness).

Mitigation measures must be more than "mere expressions of hope" that responsible agencies will be able to devise a way around the problems created by the project. *See Lincoln Place Tenants Ass'n v. City of Los Angeles*, 130 Cal. App. 4th 1491, 1508 (2005). "Mitigation measures must be fully enforceable through permit conditions, agreements, or other legally-binding agreements." CEQA Guidelines § 15126.5(a)(2).

To conclude that a measure will mitigate a significant impact, a lead agency must demonstrate based on substantial evidence that such mitigation is adequate before approving the project. *Woodward Park Homeowners Ass'n v. City of Fresno*, 150 Cal. App. 4th 683, 724 (2007). For mitigation measures, feasibility means "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors." CEQA Guidelines § 21061.1.

A. The DEIS/EIR's Description of the Environmental Setting Fails to Include the Byron Vernal Pools Regional Preserve.

An EIR's description of a project's environmental setting plays a critical part in the EIR because it provides "the baseline physical conditions by which a lead agency determines whether an impact is significant." CEQA Guidelines § 15125(a); *Save Our Peninsula Comm. v. Monterey County Bd. of Supervisors*, 87 Cal. 4th 99, 119 (2001). Similarly, under NEPA, an EIS must "describe the environment of the area(s) to be affected or created by the alternatives under consideration." 40 C.F.R. § 1502.15. The description of existing environmental conditions must include a local and regional perspective. CEQA Guidelines § 15125. The description of the project's setting should also place special emphasis on environmental resources that are rare or unique to the region and that would be affected by a project. *Id.* § 15125(a).

The DEIS/EIR fails to discuss the Byron Vernal Pools Regional Preserve. This Preserve is a new regional preserve identified on EBRPD's Master Plan Map of 2007. It is also the location of a restoration project being developed in accordance with the mitigation requirements of the East Contra Costa County Habitat Conservation Plan/Natural Communities Conservation Plan, which is discussed below in Section II . This Preserve is located along the proposed pipeline route connecting the Los Vaqueros Watershed with the South Bay Aqueduct. This Preserve will include a series of check dams and minor grading along Brushy Creek and the construction of seasonal wetlands, swales, and shallow depressions along the creek.

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As discussed below in Sections I.C.1.c and III.B, Project construction could cause myriad environmental impacts to the Preserve, including air quality, hydrology,

noise, lighting, traffic, habitat, wildlife, recreational access, inconsistency with EBRPD's Master Plan[2] and water quality impacts. The Project's potential biological resource impacts on the Preserve are particularly severe and are discussed in more detail in the biological resources section of this letter. *See infra* Section III.C. The DEIS/EIR's failure to discuss this Preserve renders the impacts analysis of a variety of impacts inadequate under NEPA and CEQA. The DEIS/EIR must evaluate all of the Project's impacts on the Preserve.[3]

5 Cont.

B. The DEIS/EIR Does Not Evaluate Project Impacts on Cultural Resources at Vasco Caves Regional Preserve.

The DEIS/EIR ignores potential impacts to cultural resources on property adjacent to the Los Vaqueros watershed because the document focuses too narrowly on impacts within the watershed. The scope of the cultural resources impact analysis must be defined by the area of potential effect. *See* DEIS/EIR at 4.16-9 to 4.16-13. As the DEIS/EIR acknowledges, the area of potential effect is "the geographical area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist." *Id.* at 4.16-9 (quoting 36 C.F.R. § 800.16(d)).

6

The DEIS/EIR narrowly confines its analysis of cultural resources impacts to the Los Vaqueros watershed. In doing so, the document ignores potential impacts on Vasco Caves Regional Preserve, which is located east of and adjacent to the Los Vaqueros watershed. Vasco Caves, which EBRPD manages, is not open to the general public due to the sensitive cultural resources located on the property. The Project creates the potential for trespass and vandalism, which could seriously impair the unique cultural resources at Vasco Caves. Site security at Vasco Caves has been an on-going concern, as unauthorized individuals have entered the Preserve and adjacent areas. The DEIS/EIR must evaluate the potential for indirect impacts to resources on the Vasco Caves property and incorporate mitigation to ensure that this cultural resource is properly protected and maintained.

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[2] EBRPD, *Master Plan 1997* (adopted Dec. 17, 1996), *available at* http://www.ebparks.org/files/RPM_Plan97.pdf.

[3] In contrast to the DEIS/EIR's failure to address the Preserve, the document does include a brief discussion of the proposed Cowell Ranch Open Space and the Project's potential recreational impacts on it. DEIS/EIR at 4.15-3.

To mitigate this impact, the Lead Agencies should consult with EBRPD to develop a management plan incorporating measures to ensure that the proposed Project does not impair the cultural resources at Vasco Caves, particularly during construction. At a minimum, the DEIS/EIR should include the following measures to protect sensitive cultural resource sites during project construction to reduce the potential for vandalism and theft of cultural artifacts:

- Site security on a 24-hours-per-day, seven-days-per-week basis; and
- Closure of some roads (including Howden Road) to prevent contractors from unnecessarily entering areas where cultural artifacts may be located.

7 Cont.

C. The DEIS/EIR Does Not Adequately Evaluate the Project's Impacts on Public Recreation.

The Project will inundate a significant length of hiking trails and other recreational facilities in the watershed and close most of the Reservoir to recreation for the duration of Project construction. DEIS/EIR at 3-87. Although the Lead Agencies propose to replace these facilities, the DEIS/EIR's analysis of recreation impacts during construction lacks evidentiary support. Furthermore, the DEIS/EIR does not mitigate the acknowledged significant temporary impacts on recreation due to the closure of the watershed for Reservoir construction. EBRPD urges the Lead Agencies to revise the recreational impacts discussion in the DEIS/EIR in consultation with EBRPD to ensure that these significant recreational impacts are properly addressed.

8

1. During Construction, the Project Will Have Significant Impacts on Public Recreation at Surrounding Facilities.

As an initial matter, it is impossible for the public and decision makers to ascertain the true severity of the Project's construction impacts, because the DEIS/EIR does not consistently describe the duration of the construction period. In the Detailed Description of Proposed Facilities, the DEIS/EIR notes that the Reservoir would "remain drained and out of service throughout the estimated 3-year construction period." DEIS/EIR at 3-46. Later, the DEIS/EIR states that the Reservoir would be out of service for "about four years." *Id.* at 3-53. Later again, the construction period is estimated to require only "24 to 30 months." *Id.* at 3-54. In the impacts assessment, there is a "2-year restriction on water-related activities" in addition to a "3-year closure of the watershed." This conflicting information makes it impossible for either the public or decision makers to understand the true impacts of Project construction.

9

a. The DEIS/EIR Lacks Support for Its Conclusion that Some Recreational Impacts Are Less than Significant.

The DEIS/EIR states that about 90 percent of the annual recreational visitors to the Reservoir seek fishing opportunities. DEIS/EIR at 4.15-16. The document also indicates that annual attendance ranges from 28,966 to 23,717 people per year. The DEIS/EIR claims that the number of anglers using the watershed is "relatively small" and that these anglers "would be dispersed over a wide geographic area" during the closure of Los Vaqueros reservoir. *Id.* Based on these statements, the DEIS/EIR concludes that the temporary loss of the recreational opportunities in the Los Vaqueros watershed would not cause or accelerate substantial physical deterioration of other local fishing areas. *Id.*

The DEIS/EIR does not provide any support for the conclusion that the number of anglers using the Reservoir is "relatively small" or that they are likely to disperse over a wide geographic area. The document does not inventory surrounding facilities that could be forced to absorb displaced users from the Reservoir. Nor does it estimate regional demand for these facilities to determine whether they have capacity to support those displaced recreational users. 10

In fact, the EBRPD Master Plan describes the challenge of managing the increased impact from population growth on natural resources at the region's recreational facilities. *Master Plan 1997* at 14. In particular, nearby EBRPD facilities, like Del Valle Reservoir, would face serious operational impacts and costs from hosting 25,000 additional visitors each year, including additional staffing requirements, fish stocking costs, and potential overcrowding. The DEIS/EIR could mitigate this impact by committing to fund measures to protect or restore natural resources at facilities affected by recreational demand displaced from the Reservoir. 11

The loss of recreational opportunities during construction is particularly significant because the Reservoir serves as an important recreational resource for residents of the region who cannot afford private recreational alternatives. To respond to this impact, the Lead Agencies should contribute funding during the construction period to provide adequate public recreational facilities offsite for those who would otherwise use the Reservoir and the watershed for recreation. 12

b. Notifying the Public of Recreational Closures Does Not Mitigate the Loss of Recreational Facilities During Construction.

The DEIS/EIR recognizes that the Project could result in a significant impact by reducing recreational opportunities during construction when most of the watershed would be closed to public access. DEIS/EIR at 4.15-9 to 4.15-14. To mitigate this potentially significant impact, Mitigation Measure 4.15.1a requires that CCWD implement a public outreach program to notify current and potential recreational users about the temporary closure of the day-use facilities and describe other opportunities in the area. *Id.* at 4.15-14. Merely notifying the public of the closure does nothing to mitigate the temporary loss of recreational opportunities onsite, and as noted above, could burden the operations of other recreational facilities near the Reservoir. 13

c. The DEIS/EIR Does Not Consider the Project's Potential Construction Impacts on the Byron Vernal Pools Regional Preserve.

The DEIS/EIR ignores EBRPD's planned Byron Vernal Pools Regional Preserve when evaluating Project impacts on recreational facilities.[4] This Preserve will be adjacent to the proposed pipeline route connecting the Los Vaqueros system with the Bethany reservoir in the South Bay. This Preserve is intended to provide habitat for endangered and threatened species and will have limited public access until a land use plan is developed. The temporary impacts of constructing a pipeline adjacent to the Preserve could impair park access with road closures and attendant traffic congestion and could cause safety impacts from construction. The DEIS/EIR must include this Preserve in the environmental setting and analysis of the Project's recreational impacts. 14

2. The DEIS/EIR Does Not Demonstrate the Feasibility of Permanently Relocating Recreational Trails in the Los Vaqueros Watershed.

The DEIS/EIR focuses heavily on the purported long-term benefits to onsite recreational facilities that will occur with Project implementation. For instance, the DEIS/EIR states that Project implementation will "enhance recreational opportunities 15

[4] Since the DEIS/EIR does discuss the proposed Cowell Ranch Open Space (*see supra* note 3), it is particularly surprising that the DEIS/EIR does not discuss the Preserve as a regional recreational opportunity that could be affected by the Project.

in the long term" by replacing eight miles of hiking-only trails with 15.5 miles of hiking-only trails and the construction of a new "optional" 14.5-mile Eastside Service Access Road/Hiking-Only Trail.[5] DEIS/EIR at 4.15-8, 4.15-10.

The DEIS/EIR fails to describe how the relocation of both mitigation areas and recreational trails can be accomplished without causing conflicts between the two. In the biological resource impacts section, the DEIS/EIR depicts access restrictions over a large portion of the watershed. *Id.* at 4.6-69. The DEIS/EIR explains that the biological opinions for the California red-legged frog and Alameda whipsnake mandate these access restrictions. *Id.* at 4.6-67. The Project will affect these species, and mitigation is required for each, including acquiring, protecting, or managing mitigation areas to protect the species. *Id.* at 4.6-114, 4.6-158. The DEIS/EIR does not describe how the Lead Agencies will ensure that relocation of hiking trails or recreational sites is consistent with the management of mitigation areas, or conversely, how access restrictions required to protect species will not conflict with recreational use. *Id.* at 3-82 to 3-83; *see also id.* at 4.6-69 (identifying access restrictions to protect species within the watershed). Some access-restricted land will be inundated if the Reservoir is expanded, but it is unclear whether and how these access restrictions will be relocated within the watershed. *Id.* at 4.6-69. The DEIS/EIR must analyze the possible conflict between the proposed trails and the conservation restrictions within the watershed. This analysis should include a map with both the locations of the proposed trails and all of the conservation restrictions on land within the watershed to determine whether the proposed trail system and the current conservation restrictions are consistent.

15 Cont.

Finally, the DEIS/EIR's planned trails are inconsistent with CCWD's own Resource Management Plan for the Los Vaqueros watershed. One of the goals of the Resource Management Plan is to provide recreational facilities and programs and public access at reasonable costs that are distributed equally among users. The proposed recreational trails in the watershed will not be multi-use trails, further increasing the disparity between hiking-only trails and multi-use trails in the watershed. DEIS/EIR at 4.15-10.

16

[5] The proposed recreational facilities map does not specifically identify an "optional" trail. DEIS/EIR at 3-82 (Figure 3-28). The DEIS/EIR does not sufficiently identify which trails on the map will be installed as part of the Project and which are optional. The maps and charts in the DEIS/EIR must account for these optional trails. *See, e.g., id.* at 3-82, 3-87.

3. The Background Description of Recreation Regulations Affecting the Project Is Insufficient.

The DEIS/EIR does not discuss all of the potential recreation restrictions to which the Project may be subject. DEIS/EIR at 4.15-1 to 4.15-3. The Bureau's involvement with the Project, although not fully explained in the DEIS/EIR, could necessitate the application of the Bureau's recreation directives and standards to the Project. The Regulatory Setting discussion does not address the applicability of any federal directives and standards to the Project. DEIS/EIR at 4.15-1. The Bureau's *Recreation Project Management Manual* (LND 01-03), attached hereto as Exhibit 1, requires that a recreation planning process be used to "identify proposed recreation facilities, opportunities, and programs, and to assist in balancing existing and long-term recreation needs with other land and water resource needs and project purposes." *Id.* at 6. Furthermore, during this planning process, the Bureau must "ensure that the public has sufficient opportunity to be involved in decisionmaking." *Id.* The DEIS/EIR should have discussed this manual and its applicability. 17

4. The DEIS/EIR Does Not Describe How Different Water Management Regimes Under the Project Alternatives Could Affect the Water Supply for Recreational Reservoirs.

The DEIS/EIR provides very little information about the alternatives' different water management operations. The failure to explain these operational differences and changes in water movement resulting from the Project leads to another failing of the DEIS/EIR as an informational document. Without a full explanation of how the operations of the Reservoir will change, the public and decision makers cannot evaluate the potential recreational impacts to reservoirs, such as Del Valle, that receive water from Los Vaqueros. If Project operations will result in significant changes to water availability for or water quality in such recreational reservoirs, the DEIS/EIR must analyze these impacts. Otherwise, the DEIS/EIR must provide sufficient information about the Project's operations to demonstrate that such impacts will not occur. 18

D. The DEIS/EIR's Analysis of Land Use Impacts Does Not Evaluate the Project's Consistency With EBRPD's Master Plan.

CEQA requires lead agencies to evaluate a project's consistency with applicable general and regional plans: 19

> The EIR shall discuss any inconsistencies between the proposed project and applicable general plans and regional plans. Such regional plans include,

> but are not limited to, the applicable air quality attainment or maintenance plan (or State Implementation Plan), area-wide waste treatment and water quality control plans, regional transportation plans, regional housing allocation plans, habitat conservation plans, national community conservation plans and regional land use plans for the protection of the coastal zone, Lake Tahoe Basin, San Francisco Bay, and Santa Monica Mountains.

19 Cont.

CEQA Guidelines § 15125(d). Here, the DEIS/EIR discusses consistency with plans in its Land Use Section, but ignores applicable regional plans.

The DEIS/EIR's Land Use Section does not even mention the EBRPD Master Plan and recently updated 2007 Master Plan Map, or analyze the Project's consistency with the Master Plan. The EBRPD Master Plan provides the vision statement that guides the activities of the EBRPD.

> The East Bay Regional Parks will preserve a priceless heritage of natural and cultural resources, open space, parks, and trails for the future and will set aside park areas for enjoyment and healthful recreation for generations to come. An environmental ethic guides us in all that we do.

Master Plan 1997 at 9.

To achieve this vision, the Master Plan sets forth the policies that will allow EBRPD to achieve this vision. The proposed Project, due to its environmental effects, may hinder EBRPD's ability to achieve the following objectives from its Master Plan:

- The District will conserve, enhance, and protect native animal species and enhance their habitats to maintain viable wildlife populations within balanced ecosystems. Non-native and feral animals will be managed to minimize conflicts with native wildlife species. The District will cooperate on a regular basis with other public and private land managers and recognized wildlife management experts to address wildlife management issues on a regional scale.

- The District will identify, evaluate, conserve, enhance, and restore rare, threatened, endangered, or locally important species of plants and animals and their habitats, using scientific research, field experience, and other proven methodologies. Populations of listed species will be monitored through periodic observations of their condition, size, habitat, reproduction, and distribution. Conservation of rare, threatened, and endangered species

of plants and animals and their supporting habitats will take precedence over other activities, if the District determines that the other uses and activities would have a significant adverse effect on these natural resources.

- The District will manage riparian and other wetland environments and their buffer zones to preserve and enhance the natural and beneficial values of these important resources and to prevent the destruction, loss, or degradation of habitat. The District will participate in the preservation, restoration, and management of riparian and wetland areas of regional significance, and will not initiate any action that could result in a net decrease in park wetlands. The District will encourage public access to the Bay/Delta shoreline, but will control access to riparian and wetland areas, when necessary, to protect natural resources.

Master Plan 1997 at 20.

In particular, the Project will result in significant destruction of habitat and wildlife movement corridors. These environmental effects could undermine EBRPD's efforts to provide habitat for such species, by eliminating movement corridors that these species use to travel to EBRPD properties near the watershed. Furthermore, the Project's impacts to the Byron Vernal Pools Preserve would interfere with EBRPD's planned restoration of wetlands at that location. EBRPD has prepared a map showing that EBRPD is planning to acquire lands along the Transfer-Bethany pipeline route for the Byron Vernal Pools Regional Preserve. *See Los Vaqueros Reservoir Expansion—Review of Impacts on East Bay Regional Park District Interests* (Mar. 13, 2009), attached hereto as Exhibit 2; *see also supra* Section I.A (for additional discussion about the Preserve). 20

II. THE PROJECT WOULD CONFLICT WITH THE EASTERN CONTRA COSTA HCP/NCCP.

The DEIS/EIR must evaluate inconsistencies between the proposed Project and both habitat conservation plans and natural communities conservation plans. *See* CEQA Guidelines § 15125(d). The DEIS/EIR's cursory analysis of the Project's consistency with the East Contra Costa Habitat Conservation Plan ("HCP")/Natural Community Conservation Plan ("NCCP") (collectively, "HCP/NCCP") is insufficient.[6] 21

[6] The Final HCP/NCCP is available online. Jones & Stokes, *East Contra Costa County Habitat Conservation Plan* (Oct. 2006, rev. Dec. 2006), *available at*
(footnote continued)

The HCP/NCCP document is intended to serve as a comprehensive conservation strategy for managing biological resources in eastern Contra Costa County and thereby support a coordinated permitting process for development in the region. HCP/NCCP at 1-2. The HCP is a joint process of the U.S. Fish and Wildlife Service ("USFWS") and the California Department of Fish and Game ("DFG"). USFWS and DFG are responsible for overseeing compliance with the federal Endangered Species Act and California Endangered Species Act, respectively. The NCCP was adopted pursuant to California's Natural Community Conservation Planning Act, which authorizes public agencies to prepare a NCCP to "conserve natural communities at the ecosystem scale while accommodating compatible land use" and allow the take of covered species after DFG approval. *Id.* at 1-12. The HCP/NCCP

> is intended to provide an effective framework to protect natural resources in eastern Contra Costa County, while improving and streamlining the environmental permitting process for impacts on endangered species. ... This [HCP/NCCP] will help to avoid project-by-project permitting that is generally costly and time consuming for applicants and often results in uncoordinated and biologically ineffective mitigation.

Id. at 1-1.

Central to the HCP/NCCP is the creation and management of a Preserve System under which the East Contra Costa Habitat Conservancy, in partnership with other local conservation organizations, will preserve between 21,450 and 34,350 acres, assembled into a system of new preserves and linked with existing protected land to form a network of protected land. *Id.* at 5-1. In particular, EBRPD is currently working with the Conservancy to acquire fee and easement interests in 4,000 acres and is likely to participate in future acquisitions as HCP/NCCP implementation moves forward.

Although the present Project is not a project covered by the HCP/NCCP, the Reservoir and other Project components are within the HCP/NCCP's inventory area. HCP/NCCP at 2-36, fig.1-1. By competing for mitigation land in the region, the Project has the potential to affect the ability of the HCP/NCCP to achieve its recovery goals, which require the acquisition of over 20,000 acres of mitigation land. HCP/NCCP at 5-1. In addition, all mitigation land for the HCP/NCCP must be purchased from willing sellers, which sharply limits the actual acreage available. Although the DEIS/EIR's

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http://www.co.contra-costa.ca.us/depart/cd/water/HCP/archive/final-hcp-rev/final_hcp_nccp.html.

Biological Resources section finds that the proposed Project and the HCP/NCCP would not conflict, this conclusion is based on insufficient analysis.

The DEIS/EIR's brief discussion of the potential for conflict between the Project mitigation and the HCP/NCCP mitigation is incomplete. Although the DEIS/EIR claims that the "acreage of land identified in eastern Contra Costa County for potential acquisition greatly exceeds the compensatory needs of the Los Vaqueros Reservoir Expansion Project" (DEIS/EIR at 4.6-188), the data tells a different story. According to the chart comparing needed mitigation land with the acreage of available habitat, for certain categories of habitat, the Project could require over 10 percent of all available habitat in eastern Contra Costa to fully mitigate its impacts. *Id.* at 4.6-184 (for Grassland, Alternative 1 could require 3,939 acres while only 26,994 acres of such habitat on private lands was identified in Eastern Contra Costa County). Furthermore, the DEIS/EIR does not quantify other local projects' mitigation needs including the City of Antioch projects in Sand Creek Valley (including Aviano) and Roddy Ranch, nor does it account for the likelihood that not all of these acres of habitat on private lands may be available for purchase. Competition for the purchase of habitat from willing sellers could significantly increase the costs of such land and inhibit the acquisition of HCP/NCCP mitigation land by EBRPD and other local conservation organizations. Accordingly, the amount of land available for mitigation of Project impacts may be far below the amount projected in the DEIS/EIR. In addition, the DEIS/EIR underestimates the amount of land needed to mitigate habitat impacts, further increasing the potential for mitigation conflicts in the limited pools of local lands available for mitigation. *See infra* Sections III.A, III.B, III.D.

22 Cont.

Second, the Project will have adverse impacts on mitigation projects proposed under the HCP/NCCP. For instance, EBRPD has designed Byron Vernal Pools Regional Preserve as a restoration project that meets the mitigation goals of the HCP/NCCP. In its evaluation of potential conflicts with the HCP/NCCP, the DEIS/EIR did not discuss either the Preserve or any conflicts that the Project might have with it. DEIS/EIR at 4.6-174. The DEIS/EIR should analyze whether an actual conflict might exist between the Project and the Byron Vernal Pools Regional Preserve.

23

Third, the Project's biological resource impacts could prevent achievement of some HCP/NCCP biological goals, including the following:

- Restore wetlands and create ponds in the Preserve System to contribute to recovery of covered species

24 Cont.

- Increase availability of burrows within grassland for San Joaquin kit fox, California tiger salamander, California red-legged frog, and western burrowing owl

- Preserve the most important movement routes and core habitat for San Joaquin kit fox

- Contribute substantially to the recovery of Alameda whipsnake in the inventory area by protecting and enhancing chaparral/scrub

HCP/NCCP at 5-5 to 5.7 (list of all HCP/NCCP biological goals).

24 Cont.

Finally, the DEIS/EIR should describe how the Lead Agencies will identify and avoid potential future conflicts as Project construction and HCP/NCCP implementation move forward. Although the Project and the HCP/NCCP may theoretically be able to avoid conflict, additional coordination will be necessary to avoid conflicts during Project implementation. Simply asserting that the Project "could help support the goals and acquisition strategies of the HCP/NCCP without competing for land or conflicting with the conservation goals and objectives of that plan" does not demonstrate that there will be no conflict here. DEIS/EIR at 4.7-174.

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III. THE DEIS/EIR DOES NOT ADEQUATELY ANALYZE OR MITIGATE THE PROJECT'S BIOLOGICAL RESOURCE IMPACTS.

The DEIS/EIR does not demonstrate the feasibility of the mitigation measures proposed to address significant biological resource impacts. To the contrary, many of the mitigation measures proposed are insufficient and will not reduce the Project's biological resource impacts to a level of insignificance.[7]

A. The DEIS/EIR's Proposed Mitigation for Impacts to San Joaquin Kit Fox Is Insufficient.

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The DEIS/EIR concludes that the Project's impacts to San Joaquin kit fox would be significant before mitigation. DEIS/EIR at 4.6-135 to 4.6-136. To mitigate those impacts, the DEIS/EIR proposes to (1) conduct preconstruction surveys, (2) enact a

[7] Brad Olson, EBRPD's Environmental Programs Manager, contributed substantially to the comments provide d in this section. Mr. Olson's CV is attached hereto as Exhibit 3.

series of avoidance measures, and (3) compensate for unavoidable impacts by acquiring conservation easements or purchasing mitigation credits. *Id.* at 4.6-139 to 4.6-140. The DEIS/EIR requires that impacts to San Joaquin kit fox habitat be mitigated at the following ratios: 1:1 to 1.1:1 for temporary impacts, 1:1 to 2:1 for long-term temporary impacts, and 1:1 to 3:1 for permanent impacts. *Id.* The DEIS/EIR delegates to other agencies the authority to determine the actual mitigation ratio within this range. *Id.* at 4.6-139. For impacts to land currently subject to conservation easements, the DEIS/EIR requires that the land be replaced and compensatory mitigation lands be provided "at a ratio up to 3:1." *Id.* at 4.6-140. This 3:1 ratio is far too low to compensate for permanent impacts to land that is currently serving as mitigation for the original Reservoir and is meant to be protected in perpetuity. Furthermore, this 3:1 ratio is only an upper limit, and the document defers selection of the actual mitigation ratio. Such a deferral is inappropriate as the DEIS/EIR fails to explain why selection of the mitigation ratio must be deferred and the mitigation measure lacks a performance standard by which the mitigation can be evaluated. *See infra* Section III.D (discussing CEQA's prohibition against deferred mitigation).

26 Cont.

The proposed mitigation ratios for the Project's San Joaquin kit fox impacts do not adequately account for the cumulative loss of kit fox habitat occurring in the Los Vaqueros watershed. The DEIS/EIR acknowledges that the Project would affect nearly 500 acres of kit fox habitat currently protected by conservation easements, which amounts to over 10 percent of the easements that CCWD conveyed to DFG as mitigation for the original Reservoir construction. *Id.* at 4.6-134. While the proposed mitigation will require this land to be replaced, the mitigation ratios proposed for this land are inadequate in light of the cumulative temporal loss of habitat for the San Joaquin kit fox. In particular, the DEIS/EIR requires compensatory mitigation for the loss of kit fox habitat easements affected by the Project at a ratio "up to 3:1." *Id.* at 4.6-140. Under this mitigation measure, the actual mitigation provided could be less than 3:1, which is the ratio the DEIS/EIR requires for permanent impacts of this Project. Destroying these conservation easements is a quintessential cumulative impact, as it eliminates protection for land that was previously protected to serve as mitigation for impacts to kit fox habitat. Allowing mitigation for impacts to conservation easements to be provided at a lower ratio than mitigation for new permanent impacts amplifies the Project's cumulative impacts. Regardless, a 3:1 ratio, while typical for permanent impacts resulting from a single project, is clearly inadequate where the watershed is suffering the cumulative losses of kit fox habitat from this Project and the original Reservoir construction. Here, the mitigation ratios should be at least 9:1 to account for these cumulative impacts and the temporal loss of habitat functions during the five-year period necessary to reestablish impacted kit fox habitat.

Further, the DEIS/EIR does not explain how the Lead Agencies intend to extinguish the existing conservation easements for kit fox habitat. As noted on DEIS/EIR Figure 4.6-14, CCWD previously conveyed to DFG conservation easements over much of the land that the Project would inundate. Unless DFG agrees to extinguish these easements (which may not be legally possible; *see infra* Section IV), any reservoir expansion would require the Lead Agencies to condemn the easements. CCWD would face a considerable burden if it sought to do so, since a condemnor who seeks to put public property to a different public use must demonstrate that the proposed use is a more necessary public use. Civ. Proc. Code § 1240.610. The existing use is presumed to be more necessary when the property is being used by the State as opposed to a local public entity. *Id.* § 1240.640(b).

Even if condemnation is permitted, however, it would undermine the CEQA process for the original Reservoir construction, by failing to mitigate for the original Reservoir's significant impact on kit fox. *See infra* Section IV (condemnation of conservation easements is itself a significant impact). DFG, as the holder of these easements, has a responsibility to manage the encumbered land to protect the San Joaquin kit fox. The Lead Agencies should consult with DFG regarding their obligations to manage these easements and whether, and if so under what conditions, the sale or exchange of these easements would be consistent with the long term protection of San Joaquin kit fox. The DEIS/EIR should discuss whether and how CCWD can acquire these easement-protected lands from DFG.

26 Cont.

Moreover, protecting existing kit fox habitat is only partial mitigation. Simply placing existing kit fox habitat into conservation easements, as proposed in the DEIS/EIR, does not fully compensate for the loss of kit fox habitat caused by the Project. DEIS/EIR at 4.6-139. The habitat that will be protected is already serving as habitat for the kit fox. Accordingly, the Project will result in an overall net loss of kit fox habitat and this impact cannot be mitigated to a level of insignificance without either creating new kit fox habitat or improving existing habitat. By comparison, the DEIS/EIR concludes that impacts to agricultural land will be significant and unavoidable because the Project will result in a net loss of agricultural land regardless of the protection of existing off-site agricultural land. New agricultural land is virtually impossible to create. *See infra* Section V. For biological impacts, by contrast, the Lead Agencies can improve existing habitat or create new habitat, although the Lead Agencies must hedge against the risk of failure in these efforts by using high mitigation ratios. Therefore, the DEIS/EIR improperly concluded that mere protection of existing habitat would mitigate impacts to kit fox habitat to a level of insignificance. DEIS/EIR at 4.6-140. The Lead Agencies must propose additional mitigation to mitigate that impact.

Further, given the Project's elimination of a kit fox movement corridor (DEIS/EIR at 4.6-131), the DEIS/EIR must identify additional mitigation to ensure that kit fox have safe movement corridors. Without such a replacement corridor, the Project will significantly reduce the value of surrounding habitat not directly affected by the Project. The existing undercrossings intended to facilitate wildlife movement under Vasco Road have not been effective, and road kill on Vasco Road is a frequent problem. As detailed in the attached study by Contra Costa Public Works Department, many special status animals have been killed on Vasco Road. Contra Costa County Public Works Department, *Vasco Road Wildlife Movement Study Report* at 7 (Mar. 30, 2009) (during the 15 month study period, five badgers, two burrowing owls, 50 California tiger salamanders, 120 California red-legged frogs, and one prairie falcon were found killed on the stretch of Vasco Road studied), attached hereto as Exhibit 4. The Report notes that "continuous fencing between existing undercrossings is necessary to reduce mortality levels." *Id.* at 27.

Due to the Project's elimination of the kit fox movement corridor on the west side of the Reservoir (DEIS/EIR at 4.6-132), the only path available to kit fox that travel through the watershed will traverse the watershed north of the reservoir. *Id.* at 4.6-130. Kit fox traveling along this corridor must cross Vasco Road. Given the severe wildlife mortality problem on Vasco Road, the kit fox mitigation measures must include substantial improvements to the wildlife crossings on Vasco Road before simply declaring the impacts significant and unavoidable. These improvements will provide a safer route for kit fox to travel and help preserve some regional connectivity for kit fox movement. The mitigation measure should require that such wildlife undercrossing improvements be implemented in a manner consistent with location and design recommendations in the scientific literature.

26 Cont.

Finally, the DEIS/EIR does not adequately mitigate potential construction impacts on the kit fox. At the least, the proposed mitigation measures should incorporate relevant mitigation from the original EIR/EIS for the construction of the Reservoir, including the following:

- "No pets or firearms would be permitted on construction sites so as to avoid harassment or killing of kit fox. Construction workers would lease the construction area and adjacent potential kit fox habitat each night to minimize disturbance of actively foraging animals unless night work is required."

- "All construction pipes, culverts, or similar structures with a diameter or 4 inches or greater that are stored at a construction site more than 8 hours

would be inspected for kit fox before the pipe is subsequently buried, capped, or moved in any way. All pipes, when possible, should be stored on pipe racks at least 3 feet off the ground or have their ends capped to reduce kit fox access."

- "Rodenticide or herbicide use would be restricted in project areas where kit fox are known to occur. If rodent control must be conducted, zinc phosphide should be used because of its proven low risk to kit fox."

Los Vaqueros Final Stage 2 Environmental Impact Report/Environmental Impact Statement for the Los Vaqueros Project, Vol. 1, SCH No. 91063072, at 8-40 to 8-43. (September 27, 1993).

26 Cont.

B. The DEIS/EIR Improperly Concludes Impacts to Habitat Are Mitigated by Merely Protecting Existing Habitat.

As discussed above for kit fox, the DEIS/EIR cannot mitigate significant impacts to species habitat simply by protecting existing habitat elsewhere. *See supra* Section III.A. The Lead Agencies must mitigate loss of habitat by creating or improving habitat, as opposed to simply maintaining the status quo. The DEIS/EIR recognizes that such a net loss is significant and unavoidable in its analysis of agricultural impacts, finding that the Project's agricultural impacts are significant and unavoidable because the Project will convert Farmland of Statewide Importance to nonagricultural use. DEIS/EIR at 4.8-22. Similarly, for habitat, if the habitat values destroyed by the Project are not offset elsewhere (through either creation or enhancement of habitat), then there will be an overall loss of habitat and a significant impact.

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Therefore, to the extent that the mitigation measures provide for protection of habitat without enhancement, the DEIS/EIR improperly concludes that biological impacts are less than significant, including impacts to tiger salamander, red-legged frog, Swainson's hawk, and Alameda whipsnake. *Id.* at 4.6-114, 4.6-153, 4.6-158. For these species, the mitigation measures appear to allow for mere protection of existing habitat. Because that mitigation is inadequate, the Lead Agencies must propose additional mitigation, including creation of new habitat or improvement of existing habitat, with appropriately conservative mitigation ratios.

C. The DEIS/EIR Does Not Evaluate Potential Impacts on Species in the Byron Vernal Pools Regional Preserve.

28

Similar to the DEIS/EIR's discussion of recreational impacts, the description of the Environmental Setting in the DEIS/EIR's Biological Impacts Section

fails to mention the Byron Vernal Pools Regional Preserve, designated on the EBRPD's 2007 Master Plan Map and developed to meet the mitigation requirements of the HCP/NCCP. EBRPD's restoration of this area is planned to provide habitat for numerous endangered, threatened, or special status species including the California red-legged frog, California tiger salamander, Contra Costa goldfields, vernal pool fairy shrimp, brittlescale, western burrowing owl, San Joaquin kit fox, and American badger. Based on the location of the pipeline, construction could significantly affect the planned restoration areas both temporarily and permanently. Given that CCWD has participated in public meetings and received numerous notices about EBRPD's Regional Preserve plans, the failure to include a discussion of this Preserve in the DEIS/EIR is particularly egregious.

That the planned pipeline route passes through a biological preserve indicates that the Project's biological resource impacts are likely to be more severe than the DEIS/EIR estimates. The following are examples of the Project's potential effects on this Regional Preserve:

- Construction of the pipeline could encroach on the adjacent Preserve's sensitive habitats. For instance, the current road and flanking drainage is only 35 feet in width, but similar CCWD pipelines have an 85-foot right-of-way. DEIS/EIR at 3-60, 3-65. Expanding the right of way could encroach up to 50 feet into the Preserve property.

- Construction could affect the movement of ground water and surface water, damaging the wetlands and other habitat features on the Preserve property and the adjacent Byron Airport. Construction could introduce non-native plants and animals into the Preserve's sensitive habitats, which could impede the reestablishment of native species.

The Lead Agencies must revise the DEIS/EIR to incorporate this Regional Preserve into the discussion of the environmental setting and to analyze the Project's potential biological impacts on the Preserve.

28 Cont.

D. The Proposed Mitigation Ratios for Alameda Whipsnake Impacts Are Unsupported and Improperly Defer Mitigation.

A lead agency may not entirely defer the formulation of mitigation. CEQA Guidelines § 15126.4(a)(1)(B). Only in limited circumstances may an EIR commit to a mitigation plan where the details of the mitigation will be adopted later. First, the agency must explain in the EIR why the proper mitigation measures could not be identified and

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evaluated during the EIR process. *San Joaquin Raptor Rescue Ctr. v. County of Merced*, 149 Cal. App. 4th 645, 671 (2007) (improper deferral found where "no reason or basis is provided in the EIR for the deferral to a future management plan (or plans) of these particular mitigation measures"). Further, the agency must articulate "specific performance criteria" with which the mitigation will comply. *Sacramento Old City Ass'n v. City Council of Sacramento*, 229 Cal. App. 3d 1011, 1029 (1991); *San Joaquin Raptor*, 149 Cal. App. 4th at 670; *Gray v. County of Madera*, 167 Cal. App. 4th 1099, 1119 (2008) (distinguishing performance standards and goals in mitigation measures, finding that only specific performance standards are appropriate when mitigation is deferred). Finally, if these requirements are met, the agency can defer the details of mitigation, but must "'commit[] itself to mitigation and list[] the alternatives to be considered, analyzed and possibly incorporated in the mitigation plan.'" *Endangered Habitats League, Inc. v. County of Orange*, 131 Cal. App. 4th 777, 793 (2005) (quoting *Defend the Bay v. City of Irvine*, 119 Cal. App. 4th 1261, 1275 (2004)).

The mitigation proposed in the DEIS/EIR for Alameda whipsnake impacts fails to satisfy this standard in several respects. Mitigation Measure 4.6.10b in the DEIS/EIR proposes a range of possible mitigation ratios (2:1 to 5:1) to compensate for permanent losses of Alameda whipsnake habitat. DEIS/EIR at 4.6-158. By failing to select a mitigation ratio, the DEIS/EIR improperly defers the final development of Alameda whipsnake habitat mitigation without a performance standard for further specification of the mitigation. The DEIS/EIR also does not describe criteria for selecting a mitigation ratio from within this range. Moreover, the DEIS/EIR does not explain why the Lead Agencies cannot develop a mitigation plan for the species before they approve the Project. Without a definite performance standard to guide the Lead Agencies' later development of mitigation and without some explanation of why mitigation cannot be specified before Project approval, the DEIS/EIR defers mitigation in violation of CEQA.

29 Cont.

Furthermore, the entire range of proposed mitigation ratios is inadequate to mitigate the loss of whipsnake habitat. Even the high end of the range, a 5:1 ratio, is not high enough to account for the unique characteristics of scrub and chaparral habitat that make it difficult to replicate successfully. In fact, the DEIS/EIR does not provide any examples of successful creation of scrub and chaparral habitat to support the feasibility of the proposed mitigation. By contrast, the HCP/NCCP established a mitigation ratio *twice as high* as the high end of the range here—approximately 10:1—for impacts to "core" scrub and chaparral habitat for Alameda whipsnake, recognizing the difficulty of creating or improving such habitat.

E. The Document Does Not Consider Impacts on Other Wildlife Species in the Watershed.

The DEIS/EIR limits its evaluation of biological resource impacts to individual species of special concern and thus neglects the many other native species that could be affected by the Project. In doing so, the document ignores its own significance criteria, which are not limited to special status species. The CEQA Guidelines also suggest that impacts analyses should not be limited to only endangered, rare, or threatened species. *See* CEQA Guidelines § 15065(a)(1) (requiring a mandatory finding of significance where a project "has the potential to…substantially reduce the habitat of a fish or wildlife species" and separately requiring a significance finding where a project would "substantially reduce the number or restrict the range of an endangered, rare or threatened species"). CEQA also requires an EIR to describe the project's "alterations to ecological systems," which is plainly broader than the impacts to individual species. CEQA Guidelines § 15126.2(a). NEPA regulations define effects to include "ecological [effects] (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems)." 40 C.F.R. § 1508.8.

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The DEIS/EIR fails to analyze direct, indirect, and cumulative impacts to large mammals that live in and migrate through the watershed, migratory birds that use the watershed seasonally, and small mammals that live along the edge of the water. The DEIS/EIR's significance criteria properly recognize as a significant impact the Project's potential to "[i]nterfere substantially with the movement of *any* native resident or migratory wildlife species or with established native resident or migratory native wildlife corridors, or impede the use of wildlife nursery sites." DEIS/EIR at 4.6-79. Yet the document evaluates Project impacts only for listed and special status species and habitat types. *See id.* at 4.6-80 to 4.6-81 (summary of impacts analysis). For instance, the Project could adversely affect large mammals' migration corridors and habitat for foraging and reproduction. In addition, higher water levels could lead to increased predation rates by non-native species living in the Reservoir, causing both direct effects to native species and indirect food-chain impacts to native predators. Therefore, these impacts on native species could have broader impacts on the ecological communities in the Los Vaqueros watershed. The failure of the DEIS/EIR to evaluate impacts on other native wildlife species, *i.e.*, non-special status species, is inconsistent with the significance criteria included in the DEIS/EIR and contrary to the commands of CEQA and NEPA.

F. The Special-Status Plant Studies Were Conducted When Certain Special-Status Plants Would Not Be Evident or Identifiable.

For the Transfer-Bethany pipeline, surveys for special-status plants were conducted only in April. DEIS/EIR at 4.6-23. Based on the surveys' failure to identify Congdon's tarplant and big tarplant, the DEIS/EIR eliminated these species from further analysis. *Id.* at 4.6-31. Yet these two species would not be identifiable or evident during April surveys, because they are late-summer/early-fall blooming plants. The Lead Agencies must conduct adequate surveys for the special-status plants that may occur in the Project area, and if special-status species are identified, the DEIS/EIR must include an analysis of the potential impacts on these species. 31

G. The Discussion of Mitigation Opportunities for Natural Communities Is Overly Simplistic and Does Not Demonstrate that Sufficient Local Mitigation Opportunities Are Available.

The categories of natural communities that the DEIS/EIR describes as characteristic habitat types affected by the Project – Grassland, Valley/Foothill Riparian, Valley/Foothill Woodland and Forest, and Upland Scrub – are too broad. Each includes a wide variety of specific biological community types that must be evaluated individually to ensure adequate mitigation for their loss. DEIS/EIR at 4.6-186 to 4.6-187. For instance, the Grassland habitat type includes non-native annual grassland, native perennial grassland, alkali grassland and grasslands with special features like vernal pools. *See id.* at 4.6-179 (discussing the grasslands affected by the Project without providing details about the specific types of grassland affected). A measure that simply provides for protection of non-native annual grassland would not mitigate the loss of native perennial grassland, as these two types of grasslands provide different habitat values.[8] Grouping the habitat types into such broad categories renders the compensatory mitigation scheme inadequate. Without a more detailed description of the biological communities affected, the DEIS/EIR cannot propose adequate mitigation for those impacts. 32

Furthermore, the analysis of available mitigation land does not account for the diversity within the habitat categories and is therefore incomplete. The analysis of available mitigation land should provide a more detailed assessment of mitigation lands including the following subcategories:

[8] Non-native grassland can be restored to native grassland, but without restoration non-native grasslands are not equal in value to native grassland.

- Grasslands
  - non-native annual,
  - native perennial,
  - alkali, and
  - with special features (*i.e.,* rock outcrops, wet meadows, and vernal pools)
- Valley/Foothill Riparian
  - valley oak dominated,
  - blue oak dominated,
  - sycamore dominated,
  - willow dominated, and
  - monocot dominated
- Valley/Foothill Woodland/Forest
  - blue oak dominated and
  - valley oak dominated
- Upland Scrub
  - soft chaparral
  - hard chaparral

32 Cont.

H. The Proposed Mitigation for Nonlisted Special-Status Reptile Species Is Inadequate.

The DEIS/EIR notes that two special-status reptile species – San Joaquin coachwhips and coast horned lizards – occur in areas potentially affected by the Project. DEIS/EIR at 4.6-167. The DEIS/EIR acknowledges that "[a]ll project alternatives would likely result in direct mortality of these species as well as temporary and permanent loss

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of their habitat." *Id.* Nevertheless, the mitigation measure included to address these impacts proposes only that CCWD "ensure that habitat disturbances are minimized in areas that are known or suspected to support San Joaquin coachwhip and coast horned lizard" and that species found in the Project area be relocated. *Id.* at 4.6-168. Although the mitigation measure requires animals to be relocated if found onsite, it does not mitigate for the loss of habitat. *Id.* The DEIS/EIR must incorporate adequate mitigation to address potential loss of habitat for these species and explain how any proposed avoidance mitigation to protect these reptiles would work.

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I. Maps of Impacts to Species Lack Important Project Information.

Maps presented in the biological resource impacts analysis omit important components of the Project. For instance, Figure 4.6-11, showing the regional distribution of San Joaquin kit fox, does not include the location of any of the project components aside from the alternative reservoir footprint options. DEIS/EIR at 4.6-53. Similarly, Figures 4.6-15 and 4.6-16, which show the location of wetlands created for California red-legged frog and access restrictions in the Los Vaqueros watershed, do not include the inundation areas for the expanded Reservoir alternatives. *Id.* at 4.6-68, 4.6-69. As a result, the reader cannot determine where the Project is likely to affect these resources.

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J. The DEIS/EIR Should Prioritize Locating Mitigation Habitat in Close Proximity to Affected Habitat.

The DEIS/EIR summarizes the Comprehensive Biological Resources Mitigation and Compensation Program that will be used to identify land to be acquired as mitigation for habitat loss. DEIS/EIR at 4.6-178. The DEIS/EIR concludes that the highest priority mitigation sites are either (1) large contiguous areas of habitat that are both near and distant from development and urban centers or (2) lands next to or near the watershed or other existing land reserves. These conditions are not sufficient, as they fail to recognize the importance of identifying suitable habitat sites near the affected habitat. Mitigation should be prioritized on or near the watershed property to maintain habitat connectivity.

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In crafting the regional conservation strategy for eastern Contra Costa County, the HCP/NCCP emphasized the importance of habitat connectivity for the San Joaquin kit fox. HCP/NCCP at 5-14 ("[T]he existing protected lands [for the San Joaquin kit fox] must be expanded, connected to each other, and connected to Alameda County and to the larger kit fox populations in the San Joaquin Valley. To conserve and recover San Joaquin kit fox in the inventory area (linking habitat through Alameda County and beyond is beyond the scope of this Plan), it is critical to preserve the kit fox habitat on

either side of the Los Vaqueros Watershed lands."). By failing to prioritize local mitigation, the Project could undermine regional conservation efforts and inhibit the movement of San Joaquin kit fox. A key concern for protecting kit fox habitat is maintaining linkages between protected lands. Mitigation that improves or protects the kit fox movement corridors through the watershed could help maintain movement corridors that link kit fox habitat. Without these movement corridors, kit fox habitat will become fragmented. Isolated pockets of kit fox habitat are not accessible to kit fox. *See* DEIS/EIR at 4.6-131 ("reservoir inundation would isolate these areas from the surrounding grasslands and render them inaccessible to kit fox"). For kit fox habitat, purchasing mitigation credits (DEIS/EIR at 4.6-139) would be completely ineffective at ensuring that these essential kit fox movement corridors are maintained. 35 Cont.

Furthermore, for certain species that will be affected by the Project, such as the burrowing owl, scientific guidance suggests that on-site or local mitigation is preferred. Burrowing Owl Consortium,[9] *Survey Protocol: Mitigation*, *available at* http://www2.ucsc.edu/scpbrg/mitigation.htm. These guidelines suggest that off-site mitigation should only be considered if "the project will reduce suitable habitat on-site below the threshold level of 6.5 acres per relocated pair or single bird." *Id.*

The DEIS/EIR should prioritize local mitigation to protect habitat connectivity and avoid stranding populations of species that reside in or near the Los Vaqueros watershed.

K. The DEIS/EIR Does Not Fully Consider the Biological Resource Impacts of Draining the Reservoir.

The DEIS/EIR does not fully analyze and mitigate the biological resource impacts of draining the Reservoir for three years. This failing affects numerous sections in the DEIS/EIR. For example, the DEIS/EIR concludes that the impact on birds using the Pacific Flyway is less than significant, even though over 165 different species of birds are supported by the Reservoir. DEIS/EIR at 4.6-172, 4.6-173. Also, while recognizing the temporary impact to California tiger salamander and California red-legged frog habitat, the DEIS/EIR does not properly mitigate this impact, as it fails to identify the mitigation ratio for impacts to these species' habitats. *Id.* at 4.6-114. 36

[9] The Burrowing Owl Consortium is group of biologists in the San Francisco Bay area involved in burrowing owl conservation. Santa Cruz Predatory Bird Research Group website, http://www2.ucsc.edu/scpbrg/survey.htm.

IV. THE PROJECT'S INCONSISTENCY WITH CONSERVATION EASEMENTS ESTABLISHED TO PROTECT HABITAT IS ITSELF A SIGNIFICANT IMPACT.

The Project would inundate 413.5 acres of land encumbered with conservation easements held by DFG and permanently affect another 83.2 acres. DEIS/EIR at 4.6-134 to 4.6-135. In addition, the Project would indirectly affect 214.6 acres of grassland habitat under easement. *Id.* at 4.6-135. This land serves as habitat for the San Joaquin kit fox in compliance with the USFWS biological opinion for the original Reservoir construction. *Id.* at 4.6-65. According to the DEIS/EIR, the biological opinion specifically requires that CCWD "acquire and protect in perpetuity a total of 7,544 acres of habitat for San Joaquin kit fox, which includes 6,513 acres within the watershed … depending upon a final assessment of all impacts from the project." *Id.* at 4.6-65 (quoting biological opinion). CCWD conveyed these easements to DFG as mitigation for habitat lost in the construction and filling of the original Reservoir. *Id.* at 4.6-134; *see also id.* at 4.6-66.

The Lead Agencies' proposal to abrogate these mitigation easements and allow the protected habitat to be inundated conflicts with the core purposes of a conservation easement and thus is itself a significant impact. A conservation easement is, by definition, "perpetual in duration." Civ. Code § 815.2(b). The easement's purpose must be "to retain land predominantly in its natural, scenic, historical, agricultural, forested, or open-space condition." *Id.* § 815.1. In other words, a conservation easement is intended to conserve land and its natural resources in perpetuity. Abrogation of a conservation easement so that the land protected thereby can be inundated is inconsistent with both the conservation purpose of such an easement and its inherently perpetual nature. Just as a project's inconsistency with a land use plan constitutes a significant impact, *see supra* Section I.D, so too must a project's inconsistency with an easement designed to protect wildlife habitat in perpetuity. 37

Moreover, the proposal to replace the terminated easements with new easements over other habitat in other areas does not mitigate for this impact. The existing easements are still being terminated, and the public interest in protecting land in perpetuity is still being impaired.

Finally, it is unclear whether, as a matter of law, conservation easements *can* be terminated by any action short of condemnation for a more necessary public purpose. While the conservation easement statute describes requirements for the creation of conservation easements, and provides that they are transferrable under some circumstances, it does not provide for their termination. No other provision of the Civil

Code authorizes termination of a conservation easement. The marketable record title statute, *id.* § 880.020 *et seq.*, expressly provides that conservation easements are not subject to expiration under the statute. *Id.* § 880.240(d). Similarly, the Civil Code's provisions for abandonment of easements apply only to affirmative easements. *Id.* § 887.010.

No court has applied the general rules governing termination of servitudes, *id.* § 811, to a conservation easement, and it is unlikely that those procedures can apply to such an easement. Although ordinary servitudes are terminated when transferred to the owner of the fee interest in the property, *see id.* § 811(1), the conservation easement statute states that "[a] conservation easement is an interest in real property . . . freely transferable in whole or in part *for the purposes stated in Section 815.1*." *Id.* § 815.2(a) (emphasis added). That purpose is "to retain land predominantly in its natural, scenic, historical, agricultural, forested, or open-space condition." *Id.* § 815.1. A transfer of a conservation easement for the express purpose of terminating that easement is not a transfer "for the purposes stated in Section 815.1" and therefore would likely violate the statute. Accordingly, DFG may not simply transfer its easements to CCWD solely for the purpose of terminating them. 37 Cont.

V. THE DEIS/EIR DOES NOT PROVIDE SUBSTANTIAL EVIDENCE SUPPORTING ITS SIGNIFICANCE DETERMINATIONS FOR AGRICULTURAL IMPACTS AND DOES NOT INCLUDE A COMPLETE DISCUSSION OF MITIGATION OPPORTUNITIES.

A. The Discussion of Mitigation Measures for the Loss of Agricultural Land Omits Other Feasible Measures.

The DEIS/EIR recognizes that the location of the new Delta Intake and Pump Station would require the permanent conversion of 21.5 acres of Farmland of Statewide Importance, which the document concludes is a significant and unavoidable impact. DEIS/EIR at 4.8-17. The document fails to incorporate a proper mitigation measure to help reduce the severity of the Project's impacts on agricultural lands. 38

The DEIS/EIR does not consider siting alternatives that could reduce or eliminate the Project's permanent impacts to farmland, but instead simply proceeds from the assumption that this loss of farmland is inevitable. The document proposes mitigation for the loss of farmland—including a variety of soil management practices during construction to ensure that that affected farmland is not permanently converted and a mitigation ratio for the conversion of important farmland—but the DEIS/EIR concludes that the impact is still significant and unavoidable. *Id.* at 4.8-21. Where the Project has

significant impacts, the DEIS/EIR must provide a complete discussion of feasible mitigation measures, rather than simply adopting a mitigation ratio and stating that the effects are significant and unavoidable. The document proposes mitigation at a 1:1 ratio, but does not consider the use of a higher ratio to better mitigate the impact. Other mitigation measures that should have been considered for the loss of farmland include the following:

- Requiring that remaining farmland, or an equal or greater amount of farmland, be placed under Williamson Act contract;
- Requiring conversion of urban uses on former farmland back to agricultural use; and
- Requiring that existing agricultural land be newly brought into production.

See American Farmland Trust, *Saving the Farm: A Handbook for Conserving Agricultural Land* at 5-4 (Jan. 1990).

38 Cont.

B. The DEIS/EIR Does Not Accurately Assess the Impacts to Agricultural Land Under Williamson Act Contracts.

The Williamson Act empowers local governments to establish agricultural preserves and contract with owners of agricultural land to enter into contracts to restrict that land to agricultural use. DEIS/EIR at 4.8-2. Nonetheless, a public agency may extinguish these Williamson Act contracts through the exercise of the eminent domain power. *Id.* at 4.8-3. Even so, a Williamson Act contract is an enforceable restriction on the property that is binding on the landowner and his/her successors in interest. Cal. Dep't of Conservation, *Williamson Act Questions and Answers Factsheet, available at* <http://www.conservation.ca.gov/dlrp/lca/Documents/WA%20fact%20sheet%2006.pdf> . In evaluating agricultural impacts, one of the significance criteria included in the DEIS/EIR is whether the Project would "[c]onflict with existing zoning for agricultural use or a Williamson Act contract." DEIS/EIR at 4.8-9.

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The DEIS/EIR determines that nine parcels currently subject to a Williamson Act contract would be affected by the Project. *Id.* at 4.8-22. Under Alternatives 1 and 2, which have the largest impact on Williamson Act contract lands, construction of the Delta-Transfer and Transfer-LV pipelines would require CCWD to acquire temporary construction easements over Williamson Act land, and construction of the Transfer-Bethany pipeline would require both temporary construction easements and

long-term acquisition of fee title or easement interests in Williamson Act land. *Id.* at 4.8-23 to 4.9-24.

Yet the DEIS/EIR concludes that, because CCWD can extinguish the Williamson Act contract through condemnation, the impacts to Williamson Act land are less than significant. *Id.* at 4.8-23. ("The Williamson Act anticipates such acquisitions and states that when an agency acquires all or a portion of property subject to the Williamson Act by eminent domain or threat of condemnation, the Williamson Act contract is deemed null and void as to the land or interest acquired by the agency. If only an easement is acquired, then the contract is void as to that interest.") Although the law authorizes public agencies to acquire land subject to the Williamson Act free of the agricultural use restrictions on the land, that does not eliminate the significance of the impact as defined by the document's own significance criteria. To the contrary, if a Williamson Act contract must be invalidated for a project to proceed, the project directly conflicts with that Williamson Act contract. The fact that the land no longer protected after condemnation is an impact and must be evaluated as such for CEQA purposes, not disregarded simply because the Williamson Act authorizes agricultural protections to be extinguished. In addition, the Williamson Act does not permit placement of a public improvement on contracted lands unless there is no other location on non-contracted land that is reasonably feasible for the public improvement. Govt. Code § 51292(b).

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VI. THE DEIS/EIR'S CUMULATIVE IMPACTS ANALYSIS DOES NOT COMPLY WITH CEQA OR NEPA.

A. The DEIS/EIR Does Not Include All of the Reasonably Foreseeable Projects that Must Be Considered in the Cumulative Impacts Analysis.

An EIR must discuss significant "cumulative impacts." CEQA Guidelines § 15130(a). "Cumulative impacts" are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." *Id.* § 15355(a). "[I]ndividual effects may be changes resulting from a single project or a number of separate projects." *Id.* A legally adequate "cumulative impacts analysis" views a particular project over time and in conjunction with other related past, present, and reasonably foreseeable future projects whose impacts might compound or interrelate with those of the project at hand. "Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time." *Id.* § 15355(b). The cumulative impacts concept recognizes that "[t]he full environmental impact of a proposed . . . action cannot be gauged in a vacuum." *Whitman v. Bd. of Supervisors*, 88 Cal. App. 3d 397, 408 (1979).

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NEPA also requires analysis of connected and similar actions that will lead to cumulative impacts. 40 C.F.R. § 1508.25(a), (c); *see also Florida Wildlife Fed'n v. U.S. Army Corps of Eng'rs*, 401 F. Supp. 2d 1298 (D. Fla. 2005). NEPA regulations define a "cumulative impact" as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions." 40 C.F.R. § 1508.7.

Under CEQA, there are two recognized approaches for cumulative impacts analyses: the list approach and the projection approach. CEQA Guidelines § 15130(b). For landside resources, the DEIS/EIR takes the list approach. DEIS/EIR at 4.1-8. Accordingly, the DEIS/EIR must include "[a] list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency." CEQA Guidelines § 15130(b)(1)(A). Further, when using the list approach, the agency must consider the following factors in determining whether to include a certain project in the cumulative impacts analysis: "the nature of each environmental resource being examined, the location of the project and its type." *Id.* § 15130(b(2).

The list contained in the DEIS/EIR does not include the following developments and projects proposed in the area which could be affected by the Project:

- Roddy Ranch Development in Antioch
- Aviano Development in Antioch
- Byron Vernal Pools Regional Preserve

DEIS/EIR at 4.1-13. Similar to the Los Vaqueros Reservoir Project, these nearby projects could also have impacts on recreation, biological resources, and agriculture in the region. Therefore, these projects should have been included on the cumulative projects list and analyzed in the DEIS/EIR.

The DEIS/EIR states that since many Project impacts are short-term, the "most relevant" projects are those proposed for construction during the same timeframe as the reservoir expansion. DEIS/EIR at 4.1-8. In fact, the Project will result in significant and unavoidable permanent impacts to agriculture and potential permanent impacts to biological resources. *Id.* at ES-45 to ES-72, ES-73 to ES-75. The cumulative impacts analysis must include related projects that could have similar environmental impacts.

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Furthermore, the cumulative impact analysis in the DEIS/EIR should have included past projects with related impacts. In particular, the original Reservoir has had a variety of biological resource impacts, and land within the watershed that serves as mitigation for the original reservoir project is now proposed to be inundated. *Id.* at 4.6-64 to 4.6-70; CALFED Bay-Delta Program, *Los Vaqueros Reservoir Expansion Studies Draft* at 5.3-3 (May 2003). The loss of that mitigation habitat undermines the mitigation of the original development and operation of the Los Vaqueros reservoir. To the extent that the mitigation habitat was necessary to mitigate otherwise significant impacts of the existing reservoir, the loss of that mitigation habitat now must be considered a significant impact.

In addition, the original Reservoir construction required the relocation of Vasco Road. To mitigate the impacts on the San Joaquin kit fox of this relocation, the EIR required fencing and undercrossings along the road. *See Los Vaqueros Final Stage 2 EIR/EIS for the Los Vaqueros Project, supra*, at 8-43 (describing changes to the mitigation approach contained in Vasco Road EIR). The recent study by the Contra Costa Public Works Department clearly shows that the mitigation measures in place are not effective at preventing wildlife mortality: there is a severe road-kill problem on Vasco Road. *See* Exhibit 4 (*Vasco Road Wildlife Movement Study Report*) at 7. The cumulative impacts analysis must include these prior projects and address the continued impacts resulting from their failed mitigation in combination with the impacts to be generated by the Project.

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B. The DEIS/EIR's Analysis of Cumulative Biological Resource Impacts Is Inadequate.

The DEIS/EIR's conclusion that the Project will have no cumulatively significant biological resource impacts is not supported by substantial evidence. The requirement of cumulative impacts analysis is a "vital provision" of CEQA and NEPA, as it ensures that significant impacts are not ignored merely because the project does not have an individually significant impact. *Bozung v. LAFCO,* 13 Cal. 3d 263, 283 (1975). An EIR must discuss a cumulative impact if the project's incremental effect combined with the effects of other projects is cumulatively considerable. CEQA Guidelines § 15130(a).

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NEPA also requires that an EIS evaluate cumulative impacts resulting from the action "when added to other past, present, and reasonably foreseeable future actions." 40 C.F.R. §§ 1508.25(c)(3), 1508.7. To comply with NEPA, the agency must take a "hard look" at cumulative impacts; that is, it must "give a sufficiently detailed catalogue of past, present, and future projects, and provide adequate analysis about how these

projects, and differences between the projects, are thought to have impacted the environment." *Lands Council v. Powell*, 395 F.3d 1019, 1028 (9th Cir. 2005).

The DEIS/EIR's cumulative impacts analysis for biological resources includes only the single significant and unavoidable impact identified in the document – impacts to San Joaquin kit fox movement corridors. DEIS/EIR at 4.6-176. That analysis states only that "[n]o other project planned or proposed in the region would also affect this specific potential movement corridor, so no cumulative impact to the corridor would occur." *Id.*

This approach is incomplete is several respects. First, with respect to the one cumulative impact that the document did consider, the analysis must look beyond the single movement corridor affected by the Project and consider instead cumulative impacts on the species's movement generally. For instance, other proposed projects, specifically Vasco Road, Aviano, and Roddy Ranch, might individually cut off all other potential kit fox movement corridors in the region, resulting in a significant, even catastrophic, cumulative impact to the kit fox. Yet under the standard of significance applied here, the cumulative impact would be less than significant because the other projects affected impaired kit fox movement in other ways. The DEIS/EIR, as written, sidesteps the possibility of region-wide impacts to kit fox movement. This analysis undermines the purpose of a cumulative impacts analysis by artificially narrowing the impact and thus minimizing the significance of the overarching problem. *See* CEQA Guidelines § 15130(a)(1) ("a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing *related* impacts") (emphasis added).

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Moreover, the document's cumulative impacts analysis fails to discuss the significant impacts on kit fox movement corridors and habitat associated with projects that have already been constructed. For instance, the initial reservoir construction required mitigation for its destruction of kit fox habitat, and the Project will destroy much of that original mitigation acreage. The DEIS/EIR must analyze the impacts to kit fox movement and habitat from these past projects, other current projects, and probable future projects. CEQA Guidelines § 15065(a)(3); 40 C.F.R. § 1508.25(c)(3).

Second, the DEIS/EIR claims that the Project will have no significant cumulative impacts because the project-specific impacts have ostensibly been

mitigated.[10] This approach improperly equates project-specific impacts and cumulative impacts. CEQA contemplates that a project may make a cumulatively considerable contribution to a significant impact even though the project's impact would be less than significant if considered in isolation. *See* CEQA Guidelines § 15065(a)(3) (mandatory finding of significance required where "project has possible environmental effects that are *individually limited but cumulatively considerable*" (emphasis added)). Therefore, even assuming that a measure is adequate to fully mitigate a project-specific impact, it does not follow that the measure is also adequate to mitigate the project's contribution to a broader, cumulative problem. Here, for instance, the loss of Alameda whipsnake habitat could have significant cumulative impacts as the available habitat for this species in the region is scarce. Consequently, the DEIS/EIR must explain why the Project mitigation measures are adequate to mitigate both Project-specific impacts and the Project's contribution to cumulative impacts.

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VII. THE NOTICE OF PREPARATION FOR THE PROJECT WAS INACCURATE.

NEPA requires that, before preparing an EIS, project proponents must issue a Notice of Intent that briefly describes the proposed action and alternatives. 40 C.F.R. § 1508.22. CEQA similarly requires the lead agency to issue a Notice of Preparation for the proposed project that includes a description of the project, its location, and probable environmental effects. CEQA Guidelines § 15082(a)(1)(A)-(C). Here, the Notice of Preparation did not accurately indicate the location of all of the significant Project components and thus deprived responsible and trustee agencies of an opportunity to assess the Project's likely environmental impacts.

In the 2003 expansion studies for the Project, maps prepared indicated that the proposed pipeline connecting Los Vaqueros to the South Bay water agencies would proceed from just north of the dam to the mid-point of the South Bay Aqueduct. The 2005 Notice of Preparation shows two potential alignments, both originating just north of the dam. The first connects to the South Bay Aqueduct at the mid-point, similar to the expansion studies, while the second connects directly to the Bethany reservoir. By contrast, the 2008 DEIS/EIR proposes an entirely new alignment for this pipeline, connecting the transfer station, approximately five miles north of the dam, to the Bethany reservoir. The new route of this pipeline affects areas that otherwise would have been

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[10] In fact, as described elsewhere in this letter, much of that mitigation is inadequate to mitigate the Project's significant impacts.

undisturbed by the Project, including EBRPD's proposed Byron Vernal Pools Regional Preserve.

Because the Notice of Preparation presented an entirely different route for the proposed pipeline than that identified in the DEIS/EIR, the Notice was inadequate. Noncompliance with CEQA's information disclosure requirements is grounds for invalidating a decision where that noncompliance prevents informed decision making and public participation. Pub. Res. Code § 21168.5; *cf. Fall River Wild Trout Found. v. County of Shasta*, 70 Cal. App. 4th 482, 491-493 (1999) (setting aside adoption of mitigated negative declaration was proper remedy for failure to provide the document to trustee agencies before approval).

42 Cont.

VIII. THE DEIS/EIR FAILS TO DESIGNATE AN ENVIRONMENTALLY SUPERIOR ALTERNATIVE AS REQUIRED BY CEQA.

CEQA requires that an EIR identify one of the action alternatives, i.e., an alternative other than the no-project alternative, as the environmentally superior alternative. CEQA Guidelines § 15126.6(e)(2). The DEIS/EIR does not designate an environmentally superior alternative and does not address this requirement in the discussion of legal requirements for the development and screening of alternatives. DEIS/EIR at 3-5 to 3-7. The DEIS/EIR states only that it is too early in the process to designate a "Preferred Alternative under NEPA or the Least Environmentally Damaging Practicable Alternative under Section 404(b)(1) of the federal Clean Water Act because related engineering, economic and financial feasibility analyses are not complete." *Id.* at 3-16. This statement does not address the CEQA requirement, but we assume that the Lead Agencies intended to defer that determination as well. Without designation of an environmentally superior alternative, the document deprives the public and decision makers of a ready metric for evaluating the environmental merits and demerits of the various alternatives. The failure to select an environmentally superior alternative plainly violates CEQA. CEQA Guidelines § 15126.6(e)(3).

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IX. THE DEFICIENCIES IN THE DEIS/EIR REQUIRE THAT ADDITIONAL ANALYSIS BE PERFORMED AND THE DEIS/EIR BE RECIRCULATED.

CEQA requires recirculation of a revised draft DEIR "[w]hen significant new information is added to an environmental impact report" after public review and comment on the earlier draft EIR. Pub. Res. Code § 21092.1. The opportunity for meaningful public review of significant new information is essential "to test, assess, and evaluate the data and make an informed judgment as to the validity of the conclusions to be drawn therefrom." *Sutter Sensible Planning, Inc. v. Sutter County Bd. of Supervisors*,

44

122 Cal. App. 3d 813, 822 (1981); *City of San Jose v. Great Oaks Water Co.*, 192 Cal. App. 3d 1005, 1017 (1987). An agency cannot simply release a draft report "that hedges on important environmental issues while deferring a more detailed analysis to the final [EIR] that is insulated from public review." *Mountain Lion Coalition v. Cal. Fish & Game Comm'n*, 214 Cal. App. 3d 1043, 1053 (1989).

44 Cont.

To cure the panoply of defects identified in this letter, the Lead Agencies must obtain substantial new information to adequately assess the proposed Project's environmental impacts and to identify effective mitigation and alternatives capable of alleviating the Project's significant impacts. This new information will clearly necessitate recirculation. CEQA requires that the public have a meaningful opportunity to review and comment upon this significant new information in the form of a recirculated DEIS/EIR.

* * *

Thank you for your consideration of these comments. Please let us know if EBRPD can provide further assistance to the Lead Agencies in addressing the comments raised herein.

Very truly yours,

SHUTE, MIHALY & WEINBERGER LLP

KRISTIN B. BURFORD
MATTHEW D. ZINN

Attachments

cc: Bob Doyle, EBRPD
Brad Olson, EBRPD

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EXHIBIT 1

Reclamation Manual

Directives and Standards

Subject: Recreation Program Management

Purpose: To ensure effective management of public outdoor recreation on Bureau of Reclamation lands and waterbodies. This Directive and Standard (D&S) benefits Reclamation because it establishes the roles, responsibilities, and direction that provide consistency in planning, developing, and managing public outdoor recreation resources on Reclamation lands and waterbodies.

Authority: Reclamation Act of 1902 (ch. 1093, 32 Stat. 388; 43 USC 391 et seq.), as amended and supplemented; Economy Act of 1932 (ch. 314, 31 USC 1535), as amended; Reclamation Project Act of 1939 (ch. 418, 53 Stat. 1187; 43 USC 485 et seq.); Federal Water Project Recreation Act of 1965 (Pub. L. 89-72; 79 Stat. 213, 214; 16 USC 460*l* et seq.), as amended; Architectural Barriers Act of 1968 (Pub. L. 90-480, 82 Stat.718; 42 USC 4151 et seq.); Rehabilitation Act of 1973 (Pub. L. 93-112; 87 Stat. 355; 29 USC 701 et seq.), as amended; Reclamation Recreation Management Act of 1992 (Pub. L. 102-575, Title XXVIII; 106 Stat. 4690; 16 USC 460*l*-31-460*l*-34), as amended; Law Enforcement Authority at Bureau of Reclamation Facilities, 2001 (Pub. L. 107-69; 115 Stat. 593; 43 USC 373b); Federal Lands Recreation Enhancement Act of 2004 (Pub. L. 108-447, Div. J, Title VIII; 118 Stat. 3378; 16 USC 6801 et seq.); 43 Code of Federal Regulations (CFR) part 21, *Occupancy of Cabin Sites on Public Conservation and Recreation Areas;* 43 CFR part 24, *Department of the Interior Fish and Wildlife Policy*; 43 CFR part 420, *Off-Road Vehicles*; 43 CFR part 423, *Public Conduct on Bureau of Reclamation Facilities, Lands, and Waterbodies*; 43 CFR part 429, *Use of Bureau of Reclamation Land, Facilities, and Waterbodies*; and Reclamation project specific authorities.

Approving Official: Director, Policy and Program Services (PPS)

Contact: Land Resources Office, 84-53000

1. **Introduction.** The Federal Water Project Recreation Act of 1965 (Pub. L. 89-72), as amended, states that "there is a Federal responsibility to provide opportunities for public recreation at Federal water projects." In that Act, and other project authorizations, Congress created a variety of authorities for managing recreation at Federal water projects. As a steward of Federal lands and waterbodies for various water projects, Reclamation needs to ensure the appropriate use of those projects for recreation by planning, developing, and managing public recreation in accordance with its Reclamation Manual (RM) Policy, *Recreation Program Management*, LND P04, this D&S, applicable Federal laws, regulations, policies, Executive Orders (EO) and other D&Ss such as RM D&S, *Implementation of the Cost-Sharing Authorities for Recreation and Fish and Wildlife Enhancement*, LND 01-01. This D&S covers a wide variety of recreation programs and

activities; therefore, an alphabetized index is attached as Appendix A to assist in identifying the pages where specific recreation program topic areas are located.

2. **Applicability.**

   A. This D&S applies to the recreation management of lands and waterbodies that remain under the jurisdiction of Reclamation, including lands and waterbodies managed by a partner (i.e., non-Federal or another Federal entity).

   B. This D&S will apply to all new recreation management agreements and existing agreements, provided Reclamation and the managing entity agree and amend the existing agreement.

   C. It is important to note that this D&S provides direction that is different from LND 01-01. LND 01-01 is based on Pub. L. 89-72, as amended, which was specifically enacted to help Reclamation utilize non-Federal public entities in managing Federal land; provide a means for cost-sharing assistance with non-Federal partners; and determine when it is important to obtain a Federal partner. This D&S does, however, reference Pub. L. 89-72, as amended, and LND 01-01 to provide clarity to certain paragraphs. This D&S does not replace or amend LND 01-01.

3. **Definitions.** See Appendix B.

4. **Responsibilities.** As stated in LND P04, all Reclamation offices will ensure that recreation-related activities do not conflict with the primary purpose(s) of the authorized Reclamation project. All Reclamation offices are responsible for ensuring that Reclamation personnel involved in recreation management have completed training commensurate with their recreation responsibilities. Responsibilities for proper administration of the recreation program will be shared by different levels of the organization as follows:

   A. **Policy and Program Services.** PPS is responsible for administering the recreation program; providing interagency and intra-agency coordination; establishing recreation Policy, D&S, and guidance; participating in reviews and evaluations, as requested; and coordinating and providing recreation training opportunities for Reclamation offices. PPS will evaluate and approve or deny requests for waivers for this D&S that are submitted by Reclamation regional and area offices. See RM D&S, *Request for Waiver from a Reclamation Manual Requirement and Approval or Disapproval of the Request*, RCD 03-03.

   B. **Regional Directors.** Regional directors, or their delegate, are responsible for implementing this D&S, overseeing and coordinating the regional recreation program, and ensuring that area offices conduct appropriate reviews and evaluations of recreation sites under their jurisdiction. Regional directors, or their delegate, will review, approve, and sign or deny all management agreements with a Reclamation recreation partner.

C. **Area Managers.** Area managers, or their delegate, are responsible for the day-to-day management activities associated with administering the recreation program. Area managers, or their delegate, will negotiate and prepare recreation management agreements with potential partners and submit such agreements to the regional director for review and for signature if signatory authority has not been delegated to the area manager. If Reclamation has a managing partner, area managers will provide an appropriate level of oversight in accordance with RM requirements to ensure that a managing partner is in full compliance with the terms and conditions of the management agreement. Area managers will be responsible for conducting internal reviews and evaluations and participating in external reviews and evaluations for those recreation areas where they have oversight responsibility.

5. **Transfers.** Transfer of Reclamation lands and facilities for recreation purposes under Pub. L 89-72 or appropriate project-specific authority will be accomplished by using one of the following two methods:

A. **Management Transfer.** A transfer whereby Reclamation's operation and management responsibilities for a recreation area are transferred to a qualified government entity. For example, a local or state entity, Indian tribe, or another Federal agency can operate and maintain a designated recreation area on Reclamation's behalf through a legal, binding, written agreement. Reclamation retains jurisdiction of all lands and land resources.

B. **Jurisdictional Transfer**. A jurisdictional transfer is a transfer where Reclamation lands and appurtenant infrastructure are transferred to another Federal entity by appropriate transfer documents and appropriate legislation.

(1) Jurisdictional transfer of Reclamation lands to another Federal entity will be in accordance with Federal laws, policies, and regulations. Transfer of jurisdiction may include Reclamation acquired lands and/or withdrawn lands.

(2) Notification of a jurisdictional transfer to another Federal agency will be published in the *Federal Register.* A public notice will be used to transfer jurisdiction over acquired lands. A public land order will be used to transfer withdrawn public lands.[1] To ensure Reclamation's authorized project purposes are protected, the *Federal Register* notice will describe, in detail, Reclamation's reserved rights and privileges in using the transferred lands and appurtenant structures for Reclamation project purposes.

(3) To assist Reclamation in maintaining concise and accurate records, appropriate financial and property records will be transferred to the receiving Federal entity.[2]

[1]Contact your local recreation or land management office or the Land Resources Office, PPS, Denver, 84-53000 for guidance.
[2]Contact your local property management office or Property Management Program Office, Denver, 84-27840 for guidance.

(4) Jurisdictional transfers to a Federal agency may be accompanied by an agreement (e.g., a Supplemental Agreement to the National Memorandum of Understanding with the U.S. Forest Service will be prepared for a jurisdictional transfer to the U.S. Forest Service). These types of agreements are typically permanent in nature and have no expiration date.

6. **Acquisitions.** If there is a public demand for outdoor recreation opportunities that have been identified through an appropriate recreation planning process and the opportunities are compatible with project purposes, the responsible Reclamation manager will ensure that sufficient land and land rights are acquired to meet present and future demand. The acquisition of land for recreation purposes will occur during the development of a new water project or when an existing project feature is modified. Refer to RM D&S, *Land Acquisition*, LND 06-01, for detailed direction on acquiring land for project and program purposes. Reclamation will follow an established acquisition planning process that is commensurate with proposed development and the amount of land being acquired.

   A. **New Project Development.** If a new project is being planned, the acquisition of lands and land rights for recreation purposes will be part of the overall process of project planning and evaluation. The costs of such lands and land rights that serve recreation may be single purpose or joint recreation costs of a project and are subject to allocation for that purpose. Refer to RM Policy, *Allocation of Operation and Maintenance and Replacement Costs*, PEC P07 for further direction on how separable recreation costs will be allocated. Reclamation managers will work with their respective realty officers and recreation coordinators during the acquisition planning process to ensure: (1) sufficient land and appropriate land rights above the high water line are acquired for anticipated public use and enjoyment of project lands, (2) future recreation facility development, and (3) public access around and to the entire project area, if practical.

   B. **Modification to Existing Reclamation Features.** If existing project features are being modified, Reclamation managers will work with their respective realty officers and recreation coordinators to ensure that sufficient lands and land rights are available for relocating, protecting, or modifying existing recreation facilities for the same public recreation purposes as specified in Paragraph 6.A.

   C. **Acquisition of Lands for Recreation Purposes by Non-Federal Partners.** If Reclamation has a non-Federal recreation managing partner, the partner may acquire lands or interests in lands as part of a repayment or cost-share in kind credit pursuant to Pub. L. 89-72, as amended or other appropriate authorizing legislation; provided that such land and land rights are conveyed to the United States. Reclamation will review and approve all land acquisitions that its non-Federal partners may wish to use for any repayment obligations or in kind credits.

7. **Partner Managed Recreation Areas.** As stated in LND P04, Reclamation will continue to seek both qualified non-Federal and Federal agencies to manage facilities, lands, and waterbodies at Reclamation projects for recreation and recreation-related fish and wildlife

purposes. Fish and wildlife facilities that serve primarily recreation purposes will be considered recreation facilities for the purposes of facility planning, constructing, and managing under this D&S. If there is more than one potential managing partner, Reclamation will solicit proposals from prospective partners and select the partner with the best proposal. In the absence of project-specific recreation authority, Reclamation may provide cost sharing with a non-Federal partner pursuant to Pub. L. 89-72, as amended and LND 01-01. If Reclamation has project-specific recreation authority and has secured a non-Federal or another Federal partner to manage recreation, it may cost share for the planning, construction, and replacement of capital improvements, and operation and maintenance (O&M) of recreation facilities as provided in that authority.

A. **Non-Federal Partner.** Reclamation will continue to seek non-Federal partners to manage recreation on its lands. The proposed management agreement may or may not be a Pub. L. 89-72 agreement and may or may not involve cost sharing for planning, constructing, and managing recreation facilities, opportunities, and programs. If the Reclamation project has specific recreation authority, the level of cost-share funding, if any, will be negotiated and documented in a management agreement. Potential partners will be required to submit detailed information regarding their ability to manage and provide long-term funding for O&M activities for the recreation area prior to Reclamation agreeing to a partnership. Refer to LND 01-01 for a list of minimum prerequisite requirements that will be followed. If a potential partner does not provide sufficient evidence of its ability to manage an area, Reclamation will not enter into a management agreement with that entity.

B. **Federal Partner.** Reclamation may transfer recreation and other land management activities to a qualified Federal agency that is willing to accept management responsibility. **Note:** This is not a jurisdictional transfer as detailed in Paragraph 5.B.; it is only a transfer of the management responsibility to another Federal agency. In the absence of project-specific recreation authority, Reclamation is not authorized to provide funding to the Federal partner for recreation-related activities. If the Reclamation project has specific recreation authority, the level of cost-share funding with a Federal partner for planning, developing, and managing recreation will be negotiated and documented in a management agreement within the limits provided by that authority.

C. **Negotiation.** When negotiating with a potential non-Federal and Federal partner and once a partner is selected, Reclamation will, as appropriate, apply the pertinent principles contained in Pub. L. 89-72 and this D&S no matter what authority is used to enter into a partnership agreement (i.e., Pub. L. 89-72 or project-specific recreation authority). Again, refer to LND 01-01 for standard requirements.

8. **Reclamation Managed Recreation Areas.**

   A. **Project-Specific Authority.** When Reclamation is the sole manager of a recreation area and has project-specific recreation authority, it will plan, develop, modify, expand, operate, and maintain recreation facilities, opportunities, and programs within the limits provided by that authority.

   B. **Minimum Basic Facilities.** In the absence of project-specific recreation authority, Reclamation will be limited to providing only minimum basic facilities, except as provided for in Paragraph 12.B. In addition to the exception in Paragraph 12.B. and pursuant to the Federal Lands Recreation Enhancement Act of 2004 (REA), REA revenues collected by Reclamation shall remain available, without further appropriation, until expended. Therefore, pursuant to Paragraph 7.G.(6) of RM D&S, *Federal Lands Recreation Enhancement Act (REA) Program Management*, LND 01-02, and the limitations provided by project-specific authority and Pub. L. 89-72, the regions and PPS, as appropriate, will make REA revenues available at recreation areas managed by Reclamation until such revenues are expended.

9. **Recreation Planning.** No matter who manages an existing recreation area or who will manage an area in the future, a recreation planning process will be used to document and identify proposed recreation facilities, opportunities, and programs and to assist in balancing existing and long-term recreation needs with other land and water resource needs and project purposes.

   A. When a recreation planning process is initiated, Reclamation offices will ensure, among other things, that the health and safety of visitors, accessibility standards, potential impacts to natural and cultural resources, future O&M expenses, staffing, and project purposes are taken into consideration.

   B. A commensurate level of recreation planning will be required prior to development of any facilities and will occur subsequent to a request or project proposal from an existing or potential managing partner.

   C. In planning new water resource projects, Reclamation offices will give full consideration to the inclusion of outdoor recreation opportunities commensurate with public needs and Reclamation responsibilities and objectives. During such planning for new projects, Reclamation will ensure that specialists in the planning and management of recreation resources participate in the planning process to ensure the operational success of the proposed recreation component of any planning effort.

   D. Reclamation offices will conduct an appropriate level of public involvement and outreach during the recreation planning process to ensure that the public has sufficient opportunity to be involved in decisionmaking. Refer to Paragraph 39 for further details on public outreach and involvement.

E. As part of a recreation planning process or any comprehensive planning study conducted by Reclamation, managers will ensure that appropriate actions are taken, where appropriate, to facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat pursuant to EO 13443, dated August 16, 2007. However, Reclamation area managers have the flexibility, pursuant to 43 CFR part 423, *Public Conduct on Bureau of Reclamation Facilities, Lands, and Waterbodies*, to close an area in its entirety or limit hunting activities by designating an area as a special use area with restrictions. Refer to Paragraph 20 for additional information concerning designation of special use areas; Paragraph 21 for closure of Reclamation lands; and Paragraph 23 for hunting, fishing, and trapping on Reclamation lands and waterbodies.

10. **Development, Capital Improvement, and Expansion.** No matter who manages a recreation area, and subsequent to the recreation planning process described in Paragraph 9, each Reclamation office will establish a logical and systematic process that will be used for prioritizing any development, capital improvement, or expansion of recreation facilities on project lands.

11. **Operation, Maintenance, and Replacement.** No matter who manages the recreation area, existing recreation-related Federal laws, regulations, and policies; management and cost sharing agreements; and pertinent planning documents will be used to guide the level of management required for a specific area.

12. **Termination or Expiration of a Management Agreement.**

A. **Management Options.** In the event of a termination or expiration of a management agreement with a Federal or non-Federal entity for a public recreation area, Reclamation will exercise one of four options:

(1) Automatically begin management of the recreation area.

(2) Manage until a new managing agreement is established with the previous partner or with a new partner.

(3) Fully or partially close the recreation area to public use and entry.

(4) Any combination of the above-mentioned three options.

B. **Reclamation Management.** For areas that lack specific recreation authority and where recreation facilities have been planned, constructed, and managed by a partner but turned back to Reclamation for management, Reclamation will expend necessary funds to operate, maintain, and replace existing facilities to standards necessary to protect public health and safety and the developed capital investments. When project-specific recreation authority exists, Reclamation will operate, maintain, replace, and expand facilities within the limits of such authority.

C. **Fixed Assets.** Title to fixed assets is vested in the United States, unless otherwise stated in a management agreement and the managing partner has fully funded the development of the fixed asset. If fixed assets are located on Reclamation lands and there has been a turn back, default, termination, or expiration of a management agreement, Reclamation will determine which fixed assets, if any, will remain and which, if any, have a compensable interest. If fixed assets are cost shared using Federal funds, title will be vested in the United States and no compensation is authorized. Refer to Paragraph 12.D. below.

D. **Compensable Interest in Fixed Assets.** Compensation for any interest in fixed assets will be stated in the management agreement between Reclamation and the managing partner. If the title to fixed assets is vested with the United States and so stated in the management agreement, no compensation will be provided to the managing partner upon expiration or termination of the agreement. If title to fixed assets is not vested in the United States and so stated in the management agreement, Reclamation will compensate the managing partner for the value of the fixed assets that Reclamation determines to be useful to the successful management of the recreation area. Refer to Paragraph 12.E. below.

E. **Value of Fixed Assets.** The value of fixed assets will be determined by Reclamation and will be based on the actual cost, less depreciation. Reclamation's compensation payment to the managing partner for fixed assets that will become Federal property, will occur prior to the actual expiration or termination of the management agreement or at a time mutually agreed upon by both parties.

F. **Removal of Non-Federal Property.** If official notice has been given to Reclamation by the partner to end a management agreement, then prior to the expiration or termination of the management agreement, all fixed assets for which the United States does not hold title or does not wish to keep as part of the recreation area, and all personal property will be removed by, and at the expense of, the partner.

G. **Written Notice.** Reclamation will require each management agreement to state that the managing partner will provide Reclamation timely written notice of its intent to turn recreation management responsibility of an area, facility, or land/water area back to Reclamation. A minimum 180-day written notice to Reclamation is required.

H. **Concessions Operated by Partners.** RM D&S, *Concessions Management by Non-Federal Partners*, LND 04-02, authorizes non-Federal partners to enter into concession contracts that have been approved by Reclamation with commercial businesses to provide goods and services to the public. When there is an existing concession operating in an area at the time of a termination or expiration of a recreation management agreement, Reclamation will not stand-in-stead as directed in LND 04-02, unless an existing concession contract stated otherwise. All new concession contracts entered into after the issuance of LND 04-02, dated April 29, 2004, will terminate concurrently with the termination of the recreation partner agreement and Reclamation

will not stand-in-stead of the managing partner. The partner will ensure that the fixed assets and personal property of the concessionaire are removed prior to the date that the termination of the management agreement will be in effect. In the absence of a managing partner, Reclamation may at its discretion issue a new concession contract in compliance with RM D&S, *Concessions Management by Reclamation*, LND 04-01.

13. **Recreation Management Agreements.** Reclamation and its non-Federal or Federal partners are required to develop recreation management agreements for management of Reclamation lands. All new management agreements and modification or renewal of a management agreement between Reclamation and a partner will comply with LND P04 and this D&S. All new and renewed management agreements will not exceed 25 years, unless a waiver is submitted to and approved by PPS. Refer to RCD 03-03 for information regarding waivers. If a partner is interested in continued management, a new agreement will be renegotiated beginning 2 years prior to the expiration date. Automatic renewals of existing agreements are not authorized.

    A. **Review and Approval of Recreation Management Agreements.** To ensure compliance with LND P04 and this D&S, long-term recreation management agreements with Reclamation managing partners will be reviewed, approved, and signed by the regional director, or delegate.

    B. **Compliance with Recreation Management Agreements.** Area managers are responsible for ensuring that partners are in compliance with the terms and conditions of the long-term management agreement. Refer to Paragraph 30, Review and Evaluation, for direction on how Reclamation will conduct certain compliance activities associated with management of a recreation area.

    C. **Third-Party Agreements.** Third-party agreements issued by Reclamation's non-Federal partners will be signed by the area manager subsequent to the review and approval of the regional director, or delegate, to ensure compliance with LND 04-02, this D&S, and any applicable Federal laws, rules, and policies.

14. **Other Land Management Activities.** Reclamation has ultimate responsibility for land and resource management including the management of all natural and cultural resources and associated programs on lands and waterbodies under its jurisdiction. In addition to the transfer of the recreation resources to a recreation managing partner, as discussed in Paragraph 5, Reclamation may wish to transfer other land management responsibilities. Upon agreement of the recreation managing partner, Reclamation will assign certain responsibilities such as fire protection and suppression, fencing, trespass, soil conservation, search and rescue, cultural resource protection, garbage collection, integrated weed and pest management, or public safety needs identified by Reclamation, by clearly defining the partner's responsibilities in the recreation management agreement.

    A. **Additional Memorandums of Understanding, Memorandums of Agreement, Interagency Agreements, or Contracts.** If a recreation partner does not have the

capability or does not agree to accept additional management responsibilities other than recreation, and when Reclamation wishes to divest itself of those responsibilities, Reclamation or its partner will enter into a memorandum of agreement (MOA), memorandum of understanding (MOU), or contract with qualified entities for needed land management assistance. These types of documents will typically be short term, not to exceed 5 years, and may require some type of financial commitment by Reclamation or its partner. **Note**: An MOU and MOA are not agreements that can obligate funds to a recreation partner; rather, procurement contracts will be used.

B. **Activities Associated with Enforcing State and Local Law.** In most instances, responsibilities for enforcing state and local laws are the responsibility of the recreation managing partner and are addressed in the long-term management agreement. However, if Reclamation and its managing partner determine that additional resources are necessary to enforce state and local laws on Reclamation lands or waterbodies, Reclamation will request those services from state, county, or local law enforcement agencies. In both instances, Reclamation's Regional Special Agent will be involved in planning and implementation of any contracts or agreements. Any such contracts or agreements shall also be coordinated with the Regional Security Officer to ensure efficiency and consistency with contracts and agreements that have been made with the same entity for security of Reclamation facilities. These types of law enforcement contracts and agreements will be limited to not more than 5 years and may require some type of financial commitment by Reclamation or its partner. If additional law enforcement resources are necessary, Reclamation may assist in providing funding. Procurement contracts are the only instruments that can transfer funds to a state, county, or local law enforcement agency. These procurement contracts will be signed by Reclamation's Contracting Officer or Grants Officer after consultation and coordination with the Regional Security Officer and Regional Special Agent.

C. **Activities Associated with Enforcing Federal Law.** Enforcement of Federal law on Reclamation lands and water bodies is governed by Pub. L. 107-69, *Law Enforcement Authority at Bureau of Reclamation Facilities* and 43 CFR part 422, *Law Enforcement Authority at Bureau of Reclamation Projects*. The Reclamation Law Enforcement Administrator and Regional Special Agent will be involved in determining when additional law enforcement resources are necessary to enforce Federal laws on lands or waterbodies under Reclamation jurisdiction. An interagency agreement between the bureaus in the Department of the Interior is in place to provide cross designation of Department enforcement officers to provide law enforcement and investigative support in areas under their responsibility or control. Reclamation may enter into additional agreements to more fully detail the scope, objectives, and the range of responsibilities. Reclamation's Regional Special Agent and Regional Security Officer will be involved in planning and implementation of contracts, interagency agreements, and cooperative agreements for law enforcement services. The Law Enforcement Administrator is the Reclamation official authorized to enter into agreements which authorize law enforcement personnel of any other Federal agency that has law enforcement authority (with the exception of the Department of Defense) or law enforcement personnel of any

state or local government, including an Indian tribe, when deemed economical and in the public interest, through cooperative agreement or contract, to act as law enforcement officers to enforce Federal laws and regulations within a Reclamation project or on Reclamation lands, with such enforcement powers as may be so assigned to them by the Secretary of the Interior. The length of term for these law enforcement agreements is limited to 3 years. Subsequent to approval of the Law Enforcement Administrator, Contracting Officers and Grants Officers are the only officials that have signatory authority to sign all procurement contracts and financial assistance instruments such as cooperative agreements.

15. **Service Contracts.** In areas managed directly by Reclamation, service contracts will be used to secure goods and services on Reclamation lands in the absence of a management agreement with a partner. Service contracts may also be used by managing partners to supplement their management of the recreation resources on Reclamation land and waterbodies.

16. **Concession Contracts.** Commercial operators provide recreation facilities, opportunities, goods, and services when Reclamation or a managing partner determines demand is sufficient. The issuance and management of concession contracts on Reclamation lands will follow RM Policy, *Concessions Management,* LND P02; LND 04-01; and LND 04-02.

17. **Cooperating Associations.** When appropriate, cooperating associations will be used to supplement and enhance recreation activities and programs on Reclamation lands.

18. **Private Exclusive Recreational or Residential Use.** New private recreation and residential exclusive use, as defined in 43 CFR 429.2, is prohibited on Reclamation lands. Existing private recreation and residential exclusive use will be administered as provided in 43 CFR part 21; 43 CFR part 429; LND P02; LND 04-01; LND 04-02; and RM D&S, *Land Use Authorizations,* LND 08-01.

19. **Camping Limitations.** Pursuant to 43 CFR 423.33, the unauthorized use or occupancy of recreation sites, such as campgrounds, picnic areas, or recreational vehicle/trailer spaces, in excess of 14 days during any 30-consecutive-day period is prohibited, except as allowed by a use authorization issued under 43 CFR part 429. The 14-day camping limitation will apply to a concession managed area unless the concession agreement states otherwise.

20. **Special Use Areas.** Designation of a Reclamation special use area (an area with rules differing from Subpart C of 43 CFR part 423) will be made in compliance with Subpart E of 43 CFR part 423. Special use areas, such as wildlife, cultural, historic, recreation, or critical habitat areas, will be managed by Reclamation or its recreation partner for the purpose for which they were established and at a level that protects the facility, infrastructure, and resource. Special use areas that were in effect on April 17, 2006, remain in effect without the need for further action. To create new special use areas, Reclamation and/or managing partners must adhere to the procedures set forth in Subpart E of 43 CFR part 423 and any applicable Reclamation policies and delegations of authority. Within the parameters of

43 CFR part 423 and any other applicable laws and regulations and with Reclamation written approval, managing partners may establish their own limitations, allowances, or restrictions for the management and use of lands without the need to create special use areas.

21. **Closure of Reclamation Lands.** Reclamation offices will ensure that all Reclamation facilities, lands, and waterbodies are open to lawful public use unless they are closed to public use by an authorized Reclamation official. Lands and waterbodies managed by Reclamation can include permanent, periodic, or seasonal closures of certain areas as deemed necessary by Reclamation. Any type of closure or reopening of Reclamation lands will follow the requirements provided in Subpart B of 43 CFR part 423 and/or 43 CFR part 420, *Off-road Vehicle Use*. Consistent with, and to the extent allowed by, those regulations and any applicable Reclamation policies and delegations of authority, managing partners may open and close lands as deemed necessary and with Reclamation written approval.

22. **Off-Road Vehicle Use.** Reclamation lands will be closed to off-road vehicle (ORV) use unless, through an approved planning process, a Reclamation area is designated as limited or open to off-road vehicle ORV use and conditions of use are specifically described. The process of determining whether an area, road, or trail is designated as open to ORV use, open to limited use, closed to use, and the level of use allowed will include a combined public involvement process, National Environmental Policy Act (NEPA) process, and the development of planning documents. For more information concerning the rules, regulations, and procedures for use of ORVs on Reclamation lands, see 43 CFR part 420; EO 11644, dated February 8, 1972; and EO 11989, dated May 24, 1977.

23. **Hunting, Fishing, and Trapping.** Reclamation will provide for public use of lands in accordance with state and Federal laws and will allow public hunting, fishing, and trapping within statutory limitations pursuant to 43 CFR 423.32. Hunting, fishing, and trapping will be compatible with Reclamation project purposes and be conducted in a manner that protects the health and safety of the public and a managing entity's infrastructure and personnel. Reclamation lands are generally open to hunting, fishing, and trapping unless closed, as deemed necessary, or designated as special use areas with restrictions. Any such closures or special use area designations related to hunting, fishing, and trapping will be in consultation with appropriate state game and fish agencies and will include a public involvement and NEPA process. Refer to 43 CFR part 24, *Department of the Interior Fish and Wildlife Policy*, for further guidance on hunting, fishing, and trapping on Federal lands, 43 CFR part 423, and EO 13443.

24. **Wild and Scenic River Program.** In all planning efforts for the recreation use and development of water and related land resources and in cooperation with other Federal agencies, Reclamation will consider or evaluate potential wild, scenic, or recreation values for areas under its jurisdiction or as required by the Wild and Scenic Rivers Act of 1968, as amended. Administration of rivers in the national Wild and Scenic River Act system has been delegated to four Federal land management agencies: Bureau of Land Management,

U.S. Forest Service, National Park Service, and U.S. Fish and Wildlife Service. Although Reclamation is not one of the four primary Federal agencies responsible for the management of the rivers that have been designated as wild and scenic, it will cooperate with administering agencies in studying rivers under its jurisdiction for inclusion into the system and in protecting authorized project purposes and operations and the values for which a river has been designated.

25. **National Scenic Byways Program.** If certain roads within Reclamation projects potentially have unique and outstanding archaeological, geological, cultural, historical, natural, recreational, or scenic characteristics, Reclamation will conduct an assessment of the roads to determine if they meet the criteria which is necessary to become a National Scenic Byway. This assessment will be accomplished through an appropriate planning process in cooperation with interested parties and the Federal Highway Administration who administers the Scenic Byways program.

26. **Federal Lands Recreation Enhancement Act Pass Program.** REA established four types of interagency passes that provide access to visitors to recreation sites on Federal lands where REA fees are charged. The four types of passes (Annual, Senior, Access, and Volunteer) replace the Golden Eagle, Golden Age, and Golden Access Passports. (**Note**: The Volunteer Pass is free and will be awarded to agency volunteers that meet certain requirements.) At sites that have officially been designated as REA sites by the regional director, the implementation of REA, collection and distribution of REA fees, and the ordering, selling, and accounting of REA passes will adhere to LND 01-02.

27. **Collection and Distribution of Fees.** Appropriate and necessary user fees and entrance fees will be collected and distributed by Reclamation and its managing partners.

    A. **Entrance Fees.** Reclamation is prohibited from charging an entrance fee; however, necessary and appropriate entrance fees may be charged by a partner pursuant to their laws, rules, and regulations.

    B. **Federal Lands Recreation Enhancement Act Fees.** Only Reclamation offices with recreation areas designated by the regional director as official REA sites are authorized to collect REA standard and expanded amenity fees and fees collected from special recreation permits issued at the REA site. Non-Federal partners are prohibited from charging REA fees. The collection, disposition, and retention of REA fees will be governed by LND 01-02.

    C. **Non-Federal Lands Recreation Enhancement Act Fees.** At non-REA areas managed directly by Reclamation, it will collect necessary and appropriate user fees in accordance with Title XXVIII of Pub. L. 102-575. Reclamation will establish recreation user fees, appropriate filing fees for applications and other documents concerning use of Reclamation lands and waterbodies, and collect charges or commissions for such use. Disposition of such revenues will be in accordance with applicable laws, regulations, and RM Policies, and D&Ss. For more information, see

RM D&Ss, *Charges for Use of Federal Assets*, PEC 01-01; *Crediting of Incidental Revenues*, PEC 03-01; and *Use of the Collection Information Form for Incidental Revenues*, PEC 03-02.

D. **Indian Ceremonial or Religious Use.** Fees will not be charged to Indian tribes, Indian practitioners, and individual Indians for the use of Reclamation withdrawn or acquired lands if such use has been determined by Reclamation or its partners to be for legitimate Indian ceremonial or religious purposes. For more information, see the American Indian Religious Freedom Act of 1978 and EO 13007, Indian Sacred Sites.[3]

E. **Veterans Day Access.** Veterans and their immediate family will not be charged any standard amenity fees on Veterans Day at REA sites, or any use fees at non-REA recreation sites managed by Reclamation. This waiver of fees does not apply to expanded amenity fees at REA sites, or uses or activities that would normally be required to have a use authorization, such as group activities or recreation events. Waiver of fees for veterans does not apply to recreation sites managed by non-Federal partners. Documentation of veteran status is not required.

F. **Public Lands Day Access.** The public will not be charged any standard amenity fees at REA sites, or any use fees at non-REA recreation sites on the nationally recognized Public Lands Day. This waiver of fees does not apply to expanded amenity fees at REA sites, or uses or activities that would normally be required to have a use authorization, such as group activities or recreation events. Waiver of fees does not apply to recreation sites managed by non-Federal partners.

28. **Incidental Recreation Right-of-Way Use.** Reclamation's use of rights-of-way is limited to those activities and facilities, if any, authorized in the original conveyance agreement between Reclamation and the fee landowner. If a reserved right-of-way provision does not provide adequate authority for incidental recreation use or recreation facility construction, the recreation use will not be authorized unless additional authority is obtained from the underlying fee title owner.

29. **Recreation Use Authorizations.** Recreation use authorizations for controlled use on lands and waterbodies will be issued in agreement with approved planning documents and the appropriate management agreement if there is a partner. Recreation use examples requiring a use authorization may include, but are not limited to, boat regattas and racing, fishing and water skiing tournaments, and commercial activities such as outfitting and guiding services.

A. **Recreation Use Authorizations Issued by Reclamation.** The issuance of certain types of use authorizations are reserved by Reclamation and issued by Reclamation pursuant to 43 CFR part 429. A value for the use authorization and a revenue collection and disposition process will be determined before issuing a use authorization

[3]Contact your local staff or Reclamation's Native American Affairs Group, Washington, DC, for guidance in implementing Indian Sacred Sites (EO 13007).

for recreation. Use authorizations for certain uses that would normally be prohibited, such as fireworks, can be obtained but will be issued pursuant to Subpart D of 43 CFR part 423. Reference will be made to both Subpart D and 43 CFR part 429 to ensure that the proper authorities are used when issuing recreation use authorizations for use of Reclamation lands and waters.

B. **Recreation Use Authorizations Issued by Non-Federal Partners.** In compliance with 43 CFR 429.5, non-Federal recreation managing partners may issue limited recreation use authorizations that are not reserved by Reclamation and retain appropriate fees. Use authorizations that may be issued by a non-Federal managing partner will be outlined in the recreation management agreement. When use authorizations are issued by a non-Federal managing partner, their rules and regulations will be followed.

C. **Recreation Use Authorizations Issued by Federal Partners.**

(1) Federal recreation partners that have entered into a management agreement with Reclamation may issue recreation use authorizations that are not reserved by Reclamation and retain appropriate fees. Use authorizations that may be issued by a Federal managing partner will be outlined in the recreation management agreement. When authorized permits are issued by a Federal managing partner, their rules and regulations will be followed.

(2) Where Reclamation has transferred jurisdiction of lands to another Federal agency, that agency is responsible for issuing all land use authorizations and retaining appropriate fees pursuant to their rules and regulations.

30. **Review and Evaluation.** An appropriate number of reviews and evaluations will be conducted at all recreation areas located on lands remaining under the jurisdiction of Reclamation, regardless of who manages the area (i.e., Reclamation, Federal, or a non-Federal recreation managing partner). These reviews and evaluations do not apply to areas where jurisdiction of the land resources has been jurisdictionally transferred to another Federal agency. Reviews and evaluations of recreation areas will be comprised of local and/or external review teams comprised of technical specialists that are qualified to assess the conditions and issues associated with the recreation area, facilities, and programs. Technical specialists will include, among others, recreation planners, electrical and civil engineers, accessibility coordinators, water quality specialists, and health, safety, sanitation, and food service professionals, as well as specialists that have life safety codes credentials. The reviews and evaluations will be conducted on a 10-year cycle or at other times, as appropriate (e.g., a review and evaluation is required prior to the expiration or termination of a management agreement). Offices will make every effort to schedule the internal and external reviews and evaluations concurrently with other required reviews, whenever possible.

A. **Ten-Year Cyclical Review and Evaluation.** During any established 10-year cycle, both a local and an external review and evaluation will be conducted no matter who manages the area. A review and evaluation is not applicable to areas where jurisdiction has been transferred to another Federal agency. During the 10-year cycle, the internal review and evaluation will occur first followed by an external review that is scheduled within a reasonable timeframe that allows for correction of identified deficiencies. These types of reviews and evaluations will include, among other things, a review of business practices, O&M activities, visitor services, approved planning documents, management agreements, security plans, law enforcement requirements, health and safety requirements to include life safety items, etc. Within 90 days of the review and evaluation, a final review and evaluation report will be prepared and sent to the regional office, PPS, review participants, and managing partners, if applicable.

(1) **Local Review and Evaluation.** During each 10-year cycle, a local review and evaluation will be scheduled and conducted by the Reclamation area office directly responsible for the administration and/or oversight of the recreation area. To accommodate participants' schedules, area offices will coordinate all reviews and evaluations with their regional office and others, as appropriate. A regional office representative will attend each local review and evaluation scheduled by an area office.

(2) **External Review and Evaluation.** In addition to the local review and evaluation during each 10-year cycle, an external review and evaluation will be conducted for all recreation areas. The responsibility for the external review schedule and coordination will be the responsibility of the regional recreation coordinator in consultation with the area office staff to ensure a balanced workload over any 10-year period. Each respective regional recreation coordinator will ensure that the review and evaluation team lead is from outside the region where the review and evaluation is being conducted and that the review team includes appropriate specialists who are Reclamation employees or specialists from outside the agency (e.g., if a life safety code expert is needed and one is not available within Reclamation, the region will contract for those services).

B. **Corrective Actions.** All review and evaluation reports will include applicable recommendations and required corrective actions for deficiencies. If a field review identifies operational or administrative deficiencies, a timetable will be established to correct the deficiency. Area managers will act promptly within budgetary or other constraints to ensure that the necessary corrective measures are taken in a timely manner. To assist in prioritizing corrective actions and for budgeting purposes, review and evaluation teams will place recommendations into the following three priorities:

(1) **Priority 1.** Recommendations involving matters of great importance that address remedial action(s) that will need to be taken in a prescribed period to ensure public health or safety and/or to prevent structural failure or resource loss.

(2) **Priority 2.** Recommendations covering a wide range of important matters where action is needed to prevent or reduce further damage to a facility or resource or where action is needed to increase effective management of the area.

(3) **Priority 3.** Recommendations covering matters of less importance but believed to be sound and beneficial to the operation of a facility or area.

C. **Exceptions to 10-Year Cyclical Review and Evaluation.** At times, exceptions to a scheduled local and external review and evaluation may be warranted as follows:

(1) **Capability of the Managing Partner.** When a recreation partner manages an area, the capability and proven performance of the partner, the size and complexity of the area, and the issues will determine the level and actual frequency of a local and external review and evaluation (i.e., an area or regional office will schedule a review and evaluation as often as they determine to be necessary).

(2) **Non-Renewal of a Management Agreement.** When a management agreement is about to expire and there are no plans for renewal or a management agreement is about to be terminated, a close-out review and evaluation will be conducted within 12 months prior to the expiration or termination date and thereafter, as necessary. These types of reviews and evaluations will focus on, among other things, fixed assets owned by the partner or Reclamation, removal of fixed assets, fixed assets that will remain for the benefit of the recreating public, compensable fixed assets, restoration of disturbed lands, and agreement terms related to expiration or termination. Refer to Paragraph 12 for further details related to termination or expiration of a management agreement.

(3) **Renewal of a Management Agreement.** When a management agreement is about to expire and there are plans for renewal, a review and evaluation will be conducted 2 years prior to the expiration date. This review and evaluation will correspond to the requirement that negotiations for renewing a management agreement with a partner will begin 2 years prior to expiration. Refer to Paragraph 13 for further details. This type of review and evaluation will assist Reclamation in negotiating a new management agreement and identifying what agreement articles and stipulations may be added, deleted, or modified to match conditions in the field.

D. **Authorized Existing Private Exclusive Recreational or Residential Use**. Pursuant to 43 CFR 429.32, Reclamation is required to review all recreational or residential private exclusive use on Reclamation lands at least every 5 years to ensure compliance with certain established criteria. In addition, reviews will be conducted at least 6 months prior to the expiration of a recreational or residential private exclusive use permit. Reclamation offices will follow the direction provided in 43 CFR 429.32 when conducting these types of reviews.

E. **Coordinating Reviews and Evaluations.** Whenever possible and feasible, reviews and evaluations will be conducted concurrently with other reviews (e.g., recreation, concession, land management, accessibility, private exclusive recreational or residential use reviews, resource management plan monitoring, and Comprehensive Condition Assessment reviews, as well as environmental audits).

31. **Disputes.** Disputes between Reclamation and its managing partners will be resolved through informal negotiations and discussions. In the event that such disputes fail to reach resolution, either party may request a formal, nonbinding arbitration process. Each party will select one member for the arbitration panel and, together, these two members will select the third (neutral) panel member. The panel will treat each party equally and fairly. Recommendations must be made by a majority of the panel members. If either party disagrees with the arbiter's recommendation, he or she may file an appeal with the Secretary of the Interior under 43 CFR part 4, Subpart G. The Secretary's determination will be final and binding.

32. **Routine Site Visits.** During routine site visits to recreation areas, Reclamation employees will document and report to the proper Reclamation authority any observed health and safety violations or problems, unlawful activities or suspicious behavior, existing or potential resource or facility damage, and any other observed problems within the recreation area. Depending on the severity of the problem identified, corrective or abatement actions will be implemented as soon as possible. Refer to Paragraph 33.G. for additional information on reporting incidents and suspicious activities.

33. **Reporting Requirements.**

A. With the Federal Government's ongoing emphasis on performance and budget integration to improve planning and performance, Reclamation is required to report specific information pertaining to its recreation goals, targets, and program results.

(1) Assisting in improving upon existing recreation performance measures through the Performance Assessment Rating Tool (PART) review.

(2) Aligning budgets with the recreation program.

(3) Aligning recreation programs and performance measures with established Government Performance Results Act (GPRA) goals.

B. **Government Performance Results Act.** Pursuant to GPRA and the Department's Strategic Plan, Reclamation field offices will collect required GPRA goal data and summit quarterly reports to the regional GPRA recreation coordinator, who will then submit them to the regional GPRA coordinator.

C. **Performance Assessment Rating Tool.** PART is a systematic method of assessing the performance of program activities across the Federal Government. Field offices

will provide necessary recreation and concession information to PART managers to further Reclamation's overall effort in assessing recreation and concession program performance. To maintain the quality of Reclamation's recreation program, field offices will integrate operational decisions with strategic and performance planning.

D. **Activity-Based Costing Management.** To satisfy a commitment to the President's Management Agenda, Reclamation will link the full costs of resources to business processes and outputs through a methodology commonly referred to as Activity-Based Costing (ABC). Under ABC, Reclamation has one recreation end outcome goal which is to improve the quality and diversity of recreation experiences and visitor enjoyment on Department lands. The end outcome goal has a series of intermediate outcome strategies that will be implemented by Reclamation to achieve the end outcome goal.

E. **Comprehensive Condition Assessment.** In accordance with applicable Department requirements and Real Property EO 13327, Reclamation will conduct Comprehensive Condition Assessments (CCAs) of all constructed assets that meet the $50,000 threshold in current replacement value. For those recreation facilities identified in the initial 2004 inventory, Reclamation offices will ensure that existing and any new recreation facilities with a replacement value greater than $50,000 be inventoried on a 5-year basis. In addition, each field office will conduct an annual condition assessment of recreation facilities that have a current replacement value greater that $5,000. This brief and informal annual site review will be conducted to simply verify the continued existence of a facility and any changes in its maintenance condition. Refer to the guidelines developed by the PPS Maintenance Services Office, 84-57000, for further information on how the CCA inventories are applied to Reclamation's reserved and transferred works.

F. **Federal Real Property Profile.**

(1) In accordance with the President's Management Agenda for Real Property Assessment Management in the Federal Government, and as created by the Federal Real Property Council in response to EO 13327, Reclamation offices will submit appropriate recreation information to regional Federal Real Property Profile (FRPP) Coordinators and then to the Reclamation-wide FRPP Coordinator for entry into FRPP database. The FRPP is a Government-wide database of assets. Assets in the FRPP are all unique records that are assigned a real property unique identifier; therefore, Reclamation offices will annually report in perpetuity any assets with a real property unique identifier before the end of each calendar year. **Note:** The Office of Management and Budget is responsible for ensuring that all Federal agencies are in full compliance with the mandates and any established performance metrics that arise from these activities in the form of a real property asset management scorecard.

(2) Reclamation offices will report only those recreation sites that Reclamation has title to and that are included in the FRPP at the major asset level. Assets at the

major asset level are grouped (e.g., dam, reservoir, irrigation/drainage system, municipal and industrial system, recreation site, etc.) by feature or geographic location (site), where it is appropriate to do so. Reclamation offices will not report any assets at the component or subcomponent level because performance or cost data is not kept at this level.

G. **Incidents and Suspicious Activities**. All incidents, including those occurring on lands managed by a partner, must be reported through Reclamation's Emergency Notification System. Suspicious activities must be reported to the Regional Special Agent or the Law Enforcement Office at intel@do.usbr.gov.

34. **Statistical Data.** Pertinent information on constructed recreation facilities on Reclamation lands and waterbodies will be entered into the official real property automated data system. At the end of each calendar year, Reclamation's Recreation Use Data Report (RUDR) will be updated by the area offices and entered into the RUDR automated data system. PPS, Land Resources Office, 84-53000, is responsible for the development and maintenance of centralized and comprehensive land and recreation databases consistent with departmental needs.

35. **Signage.** Reclamation and its partners will ensure that appropriate signs and markers are located and maintained at each project to interpret, guide, inform, and protect the health and safety of visitors and employees. The nondiscretionary elements of Reclamation's Sign Guidelines (i.e., Federal Highway Administration standards, Reclamation Safety and Health Standards, U.S. Aids to Navigation System, and accessibility requirements) will be followed when planning, designing, fabricating, procuring, installing, and maintaining recreation-related signs. Signs will conform to the official common elements of Reclamation's Visual Identity Program and incorporate Reclamation's tagline, *"Managing Water in the West."* Refer to RM D&S, *Incorporation of Visual Identity into Outdoor Public Use Area Signage*, ADM 05-03, for additional requirements for signage. The placement of signs on Reclamation lands and waterbodies is limited to those that support Reclamation and its managing partners programs and services; private parties are not allowed to display signs on Reclamation lands.

36. **Recreation Internet Website.** PPS, Land Resources Office, 84-53000, will ensure that Reclamation's recreation internet homepage is updated as new information becomes available. By the end of each calendar year, regional offices will provide PPS with updates, as appropriate.

37. **Public Safety.** Reclamation and its partners will do what is reasonably possible to protect the health and safety of visitors and staff and make every effort to identify and provide reasonable safeguards against known hazards.

38. **Accessibility.** Reclamation and its managing partners will provide appropriate program and facility access to the public including those individuals with mobility, hearing, visual, and cognitive or mental disabilities.

39. **Public Outreach and Involvement.** All Reclamation offices with recreation responsibility will seek input and involvement of all parties who are interested in the assessment of recreation resource needs and the development of recreation programs (i.e., Reclamation will provide meaningful opportunities for the public to provide input for Reclamation's consideration when making decisions). Reclamation offices will distribute factual and timely recreation information to the public. Public outreach programs will be used to enhance recreational opportunities through development of cooperative efforts in planning for needed services and facilities, production of informational materials, and/or co-sponsorship of conferences or special events.

EXHIBIT 2

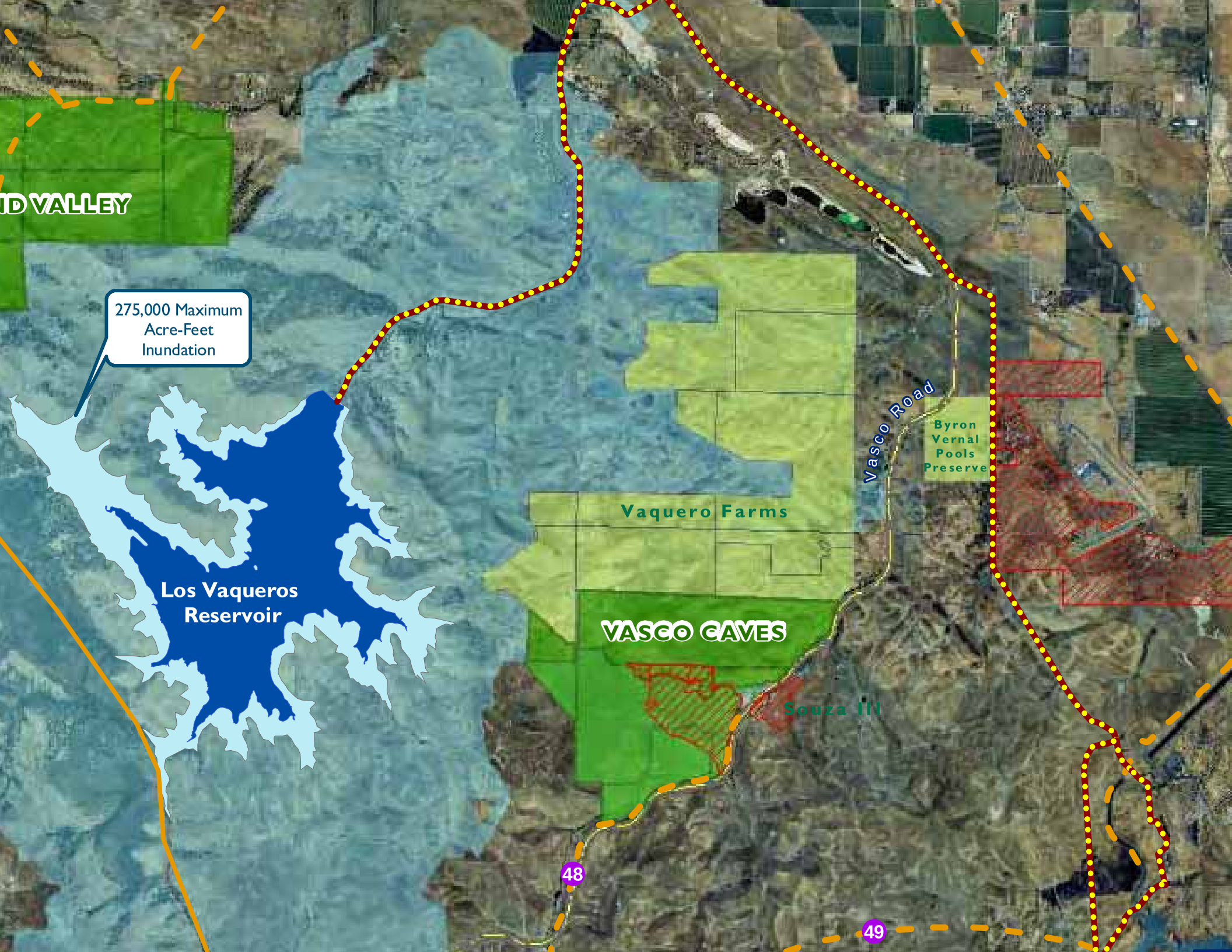

ID VALLEY
275,000 Maximum Acre-Feet Inundation
Los Vaqueros Reservoir
Vaquero Farms
VASCO CAVES
Souza III
Vasco Road
Byron Vernal Pools Preserve
48
49

EXHIBIT 3

BRAD OLSON
East Bay Regional Park District
2950 Peralta Oaks Court
P.O. Box 5381
Oakland, CA 94605-0381
(510) 544-2622
bolson@ebparks.org

Overview: Twenty-five years of professional experience planning, acquiring, restoring developing, and managing open space and parklands in northern California.

Professional History

East Bay Regional Park District, Environmental Programs Manager. 1996 to present.

Natural Resource Management:

- Developed and manage the District's Resource Enhancement Program. Work with State and federal regulators, local land use agencies, elected officials, land owners, land trusts, developers and the environmental community to protect, acquire, restore and manage plant and animal habitats in Alameda and Contra Costa counties. Secured approval for 32 Projects that acquired 2,510 acres of parkland and provided $33,000,000 in funding for acquisition, restoration and management of these lands. These include the following example projects:

  1. *Brushy Peak Preserve:* Negotiated $4,500,000 in agreements to acquire, restore and manage 800-acres of open space. Developed conservation easements and long-term land management plans for special-status species, wetlands, grasslands and public access. Developed endowments for park maintenance and habitat management. Managed construction of approximately four acres of new stock pond and seasonal wetlands that contain breeding populations of California tiger salamander and California red-legged frog.

  2. *Eastshore State Park:* Manage development of seven restoration and public access projects along the Emeryville, Berkeley, Albany and Richmond shorelines. Including creation of new wetlands and coastal habitats, special-status species management, community stewardship, public access facility development, construction management, and funding for long-term management.

  3. *Martinez Regional Shoreline:* Negotiated agreements to restore an 80-acre tidal marsh for special-status species and new public access facilities at Martinez Shoreline in Contra Costa County. Oversaw preparation of restoration, management and monitoring plans, and obtained $5,000,000 in project funding. Managed construction of new tidal wetlands and riparian habitat along Alhambra Creek, which provided new habitat for California clapper rail and saltmarsh harvest mouse.

- Represent the District on a ten-agency multi-species Habitat Conservation Plan for a 170,000-acre planning area in eastern Contra Costa County. Developed and approved Joint Powers and Implementing Agreements. Serve as District lead in land acquisition funding, resource manage plan development and long-term land management funding.

Manage District implementation of the Plan, including land acquisition and restoration project development. These include the following examples:

1. *Black Diamond Mines Regional Preserve:* Manage development of a stock pond providing breeding habitat for California tiger salamander and California red-legged frog, and manage District construction of a freshwater wetland and riparian enhancement project on a tributary of Sand Creek near Brentwood.

2. *Vasco Caves Regional Preserve:* Managed rehabilitation of stock ponds that provide breeding habitat for endangered amphibians, and manage development of a new seasonal wetland in the head waters of Brushy Creek near Byron.

Recreation Management:

- Jointly developed and implemented $10,000,000 in restoration and public access projects for the 72-acre Berkeley Meadow at Eastshore State Park. These projects provide for restoration of plant and animal habitats, and for construction of interpretive trails, fencing, gates, exhibits and benches. Manage a community stewardship program with local schools, environmental organizations and businesses to educate people about the value of the local wildlife and plants.

- Managed planning and implementation of a restoration and public access project at Martinez Regional Shoreline. The plan provided for development of a new staging area, picnic facilities, trails, boardwalk, interpretive exhibits and benches.

Environmental Compliance and Interagency Communication:

- Prepare restoration and management plans, and CEQA documents, prepare and present staff reports and resolutions, coordinate hearings before the District's elected Board of Directors at public meetings, Board committee's and interagency liaison meetings. Coordinate and staff Board committees, prepare staff reports, serve as expert witness, conduct presentations, and provide technical and policy assistance to Board members on complex and sometimes controversial proposals.
- Review documents, prepare correspondence, and provide public testimony on proposed plans, projects and programs that affect District interests. These include State and Federal regulatory agencies, land management agencies, water districts, Board's of Supervisors, and the City Council's and commissions of 33 cities and special districts.

Program and Financial Management:

- Prepare budget objectives, funding requests and accomplishment reports for the General Manager and Board of Directors on Capital projects and on-going programs. This includes development and management of forty capital projects to acquire parklands, develop infrastructure, provide public access, restore plant and animal habitats and provide management endowments.
- Collaborate with agency managers to develop strategic plans to implement the District's Master Plan objectives. This includes process mapping, capital project development, communications, and Geographic Information Systems services.

Resource Management International, Supervising Principal Consultant. 1994 to 1996.

- Managed and performed special-status species surveys, delineated jurisdictional wetlands, prepared permit applications and mitigation plans, and obtained State and Federal Regulatory permits for various developments throughout northern California. Managed and reviewed project team work products, conducted technical training, prepared scopes of works, cost estimates, and administered project budgets.
- Managed and implemented a remedial restoration plan for a failed tidal wetland restoration project on Corte Madera Creek. Established new performance goals and success criteria, and a maintenance and monitoring program. Managed a project team and contractors, prepared contracts, and completed work on-budget and on-time

Port of Oakland, Associate Port Environmental Planner. 1991 to 1994.

- Managed preparation of the $60,600,000 Oakland Airport Roadway Project in Alameda County. Prepared the scope, budget and schedule, selected and hired consultants, reviewed technical reports, and managed a multi-disciplinary team. Conducted public scoping meetings and chaired an interagency technical advisory committee.

Caltrans, District Biologist. 1987 to 1991.

- Performed surveys in serpentine communities on San Francisco Water District Lands for special-status species, identified project impacts, formulated mitigation measures and evaluated various project alternatives in San Mateo County.
- Characterized the ecology of Mt. Tamalpais, Golden Gate National Recreation Area and Muir Woods near State Route 1. Identified sensitive resources and routing alternatives to avoid resources potentially impacted by highway replacement. Coordinated studies with regulatory agencies, conservation organizations, citizens groups and elected officials.
- Performed a wetlands assessment , special-status species surveys and an inventory heritage oak trees affected by Highway 12 widening near Kenwood in Sonoma County. Coordinated with elected officials, Sonoma County Public Works and Regional Parks Departments, and conservation organizations, including the Native Plant Society.

Natural Resource Conservation Service, Soil Conservationist. 1983 to 1987.

- Conducted special-status species surveys and managed preparation of an EIR/EIS and a Biological Assessment for the Marsh Creek flood control project near Brentwood. Project studies were later used for the Los Vaqueros Reservoir project.

College Education

Bachelor of Science, Natural Resources Planning and Interpretation, Humboldt State, 1983.

Associate in Arts, General Education, Diablo Valley College, 1980.

Continuing Education and Training

- Communications in Real Estate Acquisition. International Right of Way Association.
- Jurisdictional Delineation of Wetlands: Army Corps of Engineers. Huffman Assoc.
- Revegetation and Restoration Planning. Society for Ecological Restoration.
- State of the Estuary Conferences. Various San Francisco Bay Area locations.
- Restoring Diversity: Is Reintroduction an Option for Endangered Plants?. St. Louis.
- Habitat Evaluation Procedures Certification. U.S. Fish and Wildlife Service.
- California Environmental Quality Act. Association of Environmental Professionals.
- Hazardous Materials and Waste Operators Training. Environmental Systems inc.
- Community First Aid and CPR, plus annual refresher courses. American Red Cross.
- Advanced Open Water Scuba Diving Certification. Pacific Assn. of Diving Instructors.

Professional Memberships/Affiliations

- Rare Plant Chair (1989-2001) and Rare Plant Scientific Advisory Committee (1991-2001) - California Native Plant Society, East Bay Chapter.
- Board of Directors (2000-2004) and moderator/presenter at several technical sessions at several conferences – California Society for Ecological Restoration.
- Research Affiliate (on-going) - UC Berkeley and Jepson Herbaria with research projects for Mt. Diablo, Big Creek Preserve and Serpentine Plant Communities.

Publications

- "Martinez Resource Enhancement Project" in *Ecesis*, Winter 2002 and Spring 2005.
- Contributor to Ertter and Bowerman. *Flowering Plants and Ferns of Mt. Diablo*. 2002. Jepson Herbarium.
- Contributor to *The Weed Worker' Handbook*. 2004. The Watershed Project and California Invasive Plan Council.
- *Status of Rare, Threatened and Endangered Vascular Plants in Alameda and Contra Costa Counties*, 3rd Ed. Mar. 1994. California Native Plant Society.

Honors and Awards

- Letter of Appreciation from Janet Nichols, Sonoma County Board of Supervisors, for environmental work on Highway 12 widening in Sonoma County.
- Excellence in Transportation Award for the Martinez Regional Shoreline Enhancement Project, from the California Department of Transportation
- Rare Plant Conservation Award from David Magney, President, California Native Plant Society for outstanding contributions to rare plant conservation.
- Letter of Appreciation from Charles Roberts, Port of Oakland Executive Director, for contributions to the growth and development of the Port of Oakland.
- Letter of Appreciation from John Kopchik, Executive Director of the East Contra Costa County Habitat Conservancy for contributions to the development and implementation of the East Contra Costa Habitat Conservation Plan.
- Letter of Appreciation from Steve Ritchie, Executive Project Manager of the South Bay Salt Pond Restoration Project for participation in the Stakeholder Forum for development of this 15,000 acre restoration project.

EXHIBIT 4

Vasco Road Wildlife Movement Study Report



Submitted on March 30, 2009 to:

Leigh Chavez, Environmental Planner
Contra Costa County
Public Works
Department
255 Glacier Dr., Martinez, CA 94553

Prepared By:
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Martinez, CA 94553-1145

Introduction

A nineteen-month-long study of wildlife movement was conducted along a 2.5-mile section of the Vasco Road Safety Improvement Project (Stations 245+00 thru 370+00). The East Contra Costa County Habitat Conservation Plan and the Natural Community Conservation Plan (ECCC HCP/NCCP) require that a wildlife movement study of at least twelve months be performed for this project. This report outlines the methods employed and provides the final update on the animal movement trends observed in this study.

Methods & Trends

Condor Country Consulting staff has employed several methods to obtain a clear picture of what vertebrate species move across this section of road, where and when they are moving, and which landscape features are most often used. The four general methods employed were scented track stations, road mortality surveys, trapping using modified box minnow traps, and remotely-triggered camera stations. Because San Joaquin kit fox (*Vulpes macrotis mutica*; SJKF), California tiger salamander (*Ambystoma californiense*; CATS), and California red-legged frog (*Rana draytonii*; CRLF) are the special status species of greatest local concern according to the East Contra Costa County Habitat Conservation Plan, the above methods were designed to detect movement of these species. The movement patterns of other vertebrates in the study area were also recorded and are included.

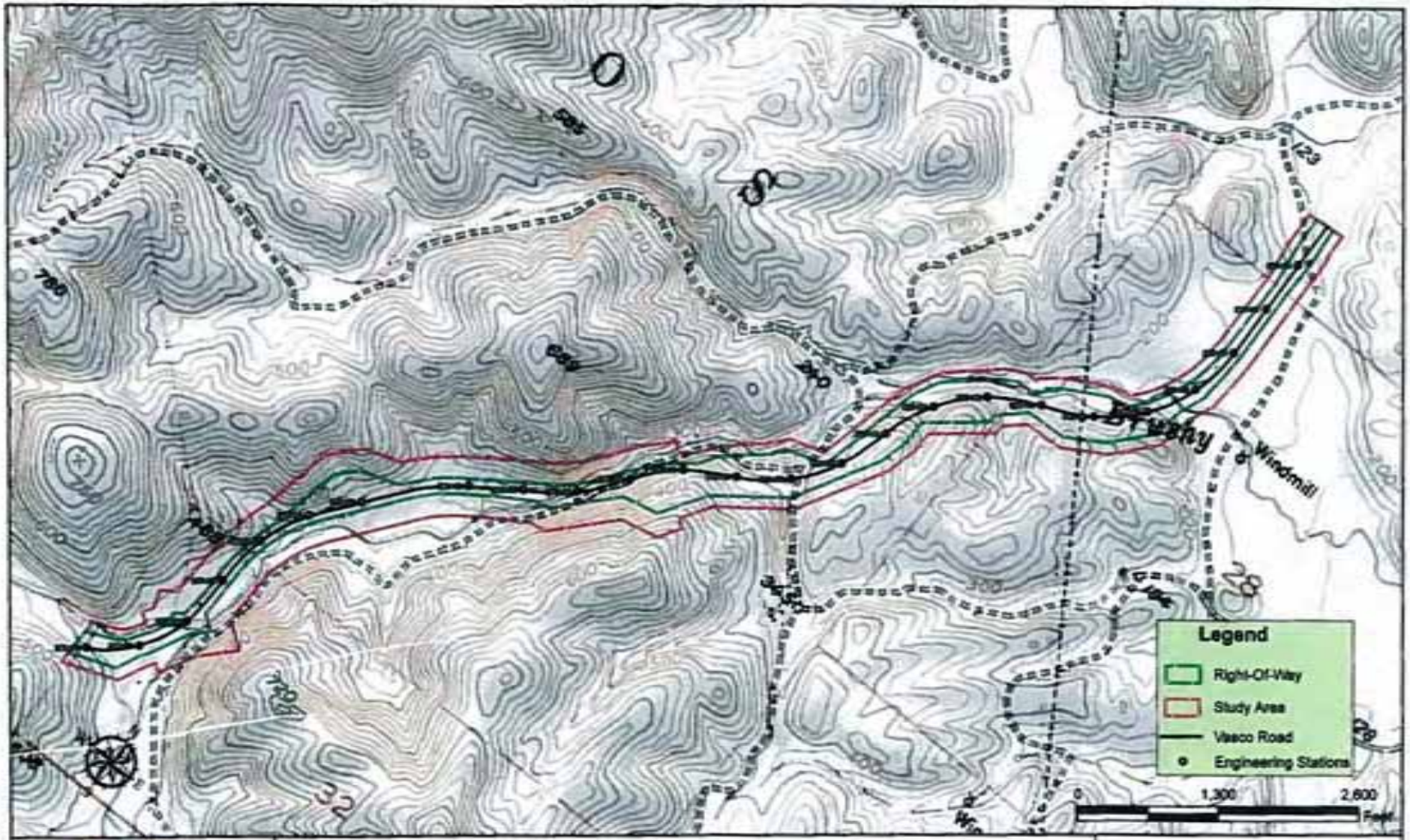
A few obstacles encountered in the study design forced revisions to the methods, as discussed below. However, the study design revisions were effective and the results gathered were sufficient to complete the study.

Study Area

The study area is defined as encompassing the road, the existing rights-of-way, and a 100 to 200 foot buffer beyond the rights-of-way for a 2.5-mile stretch of Vasco Road (Figure 1). The study area begins north of a passing lane at engineering station 370+00 and extends southward through the valley where Brushy Creek and an unnamed tributary meet, terminating at engineering station 240+00. From stations 370+00 to 300+00 the buffer area extends 100 feet beyond the rights-of-way, increases to 200 feet between stations 300+00 and 246+00, then narrows to 100 feet between stations 246+00 and 240+00.

Approximately 14 miles southeast of Mount Diablo, the study area lies one mile north of Brushy Peak, and two miles southeast of Los Vaqueros Reservoir. Land uses adjacent to the road include cattle ranching, watershed protection, outdoor recreation, and wind energy production. The study area generally consists of flat to rolling, hilly topography dominated by grasslands dotted with both large and small rock outcrops. Brushy Creek and its unnamed tributary run generally parallel to Vasco Road within the study area. Brushy Creek crosses under the road in two locations within the study area while the unnamed tributary crosses in one location. Riparian vegetation is associated with both creeks.

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Legend
Right-Of-Way
Study Area
Vasco Road
Engineering Stations
0
1,300
2,600
Feet
Windmill
CONDOR COUNTRY
Vasco Road Wildlife Movement Study
Study Area
Figure 1
Contra Costa County
Public Works
Department

When Vasco Road was originally constructed in 1995, several features were incorporated into the construction to facilitate wildlife movement under the road. Within the study area, these features include two culverts (VCU15 and VCU16) specifically installed as wildlife passage at both ends of the study area. In the north, CATS fence ties into the north side of culvert VCU0. In the south, CATS fencing was installed on both guard rails that border a small portion of the south end of the study area. This fencing terminates at the north end of the guard rail within the study area. The terminus of the south end extends outside the study area and it has not been determined whether the south terminus meets an undercrossing.

Surveys

The data included in this summary encompasses information gathered from July 2007 to February 20, 2009. Each sampling method (track stations, road mortality surveys, trapping, camera stations) yielded important information, contributing toward an overall picture of how, when, and where wildlife cross Vasco Road.

Tracking Surveys

Methodology

The tracking surveys were designed to detect wildlife use of and movement within the study area, and were adapted from carnivore activity studies (Linhart and Knowlton 1975, Conner et al. 1983, Lyren et al. 2006) to specifically detect San Joaquin kit fox. Condor Country Consulting installed four one-kilometer long transects, two on each side of Vasco Road, consisting of five stations each spaced approximately 250 meters apart, for a total of 20 tracking stations. Transects were placed at locations where there was evidence of existing animal traffic (e.g., wildlife trails, fresh scat, active burrows) and to cover potential crossing locations other than culverts or bridges. Because lures were used, stations were established some distance from the road, whenever possible, to avoid luring animals into harm's way. At each station, a one-meter square patch of ground was cleared of vegetation and debris, and then dusted with gypsum powder. The chief adaptation of the methods cited above was the scented lure. A puree of cod liver oil and mackerel, known to attract San Joaquin kit fox (USFWS 2002, Harrison et al. 2002), was used, rather than commercially available carnivore lures. The use of the scent lure was otherwise the same, i.e., placed upon a rock which was then centered in each station.

Condor Country Consulting ran three sampling sessions in the summer of 2007 (July, August and September), for five consecutive days each. The sampling period commenced by opening the transects: ensuring the meter-square stations were smooth, clear of vegetation, and covered in gypsum powder, and fresh-scented lure was placed at every station. Both gypsum and lure were refreshed whenever necessary during the sampling session, typically daily. Once the stations were "open" (powdered and scented), Condor Country Consulting checked each station first thing every morning to detect, identify (to species when possible), and record wildlife tracks (e.g., footprints, tail drags, and scat). If the gypsum powder had been disturbed, it was redistributed / replenished so that the station was ready to record new information.

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Table 1. Species observed on scented track stations along Vasco Road (VE = east side of road, VW = west side of road) between July-September 2007.

	Track Station																				
Species*	VE1-1	VE1-2	VE1-3	VE1-4	VE1-5	VE2-1	VE2-2	VE2-3	VE2-4	VE2-5	VW1-1	VW1-2	VW1-3	VW1-4	VW1-5	VW2-1	VW2-2	VW2-3	VW2-4	VW2-5	Total
COYO	1	1		3		2		3	3	4	1	4	3	4	2	2	4	4	2	3	46
STSK					4	6	4	5	4	2	3	6		1	6	1			2		44
UNK MOUSE	1	1	1	3	1	2	2	1	7	3	3	5	2	5	1				2	1	41
UNK LIZARD	1					2	2	1	1		9	7	1	2	1	4			1		32
DECO			3	1			4					6				8					22
UNK BIRD			1	1		2	1		2			4		1	2	1		1	1	1	18
RACC					4	4								1			1		4		14
BOBC	1	1	1			2	2	1				1	2							1	12
DCAT						2	1	2	1		1		1							1	9
GRSQ					1						1					2			1		5
OPOS					3	1													1		5
BADG				**2**									**1**						**1**		**4**
UNK SNAKE									1			1		1		1					4
HUMA																1		1			2
Grand Total	4	3	6	10	13	23	16	13	19	9	18	34	10	15	12	20	5	6	15	7	258

* Special status species in **BOLD**

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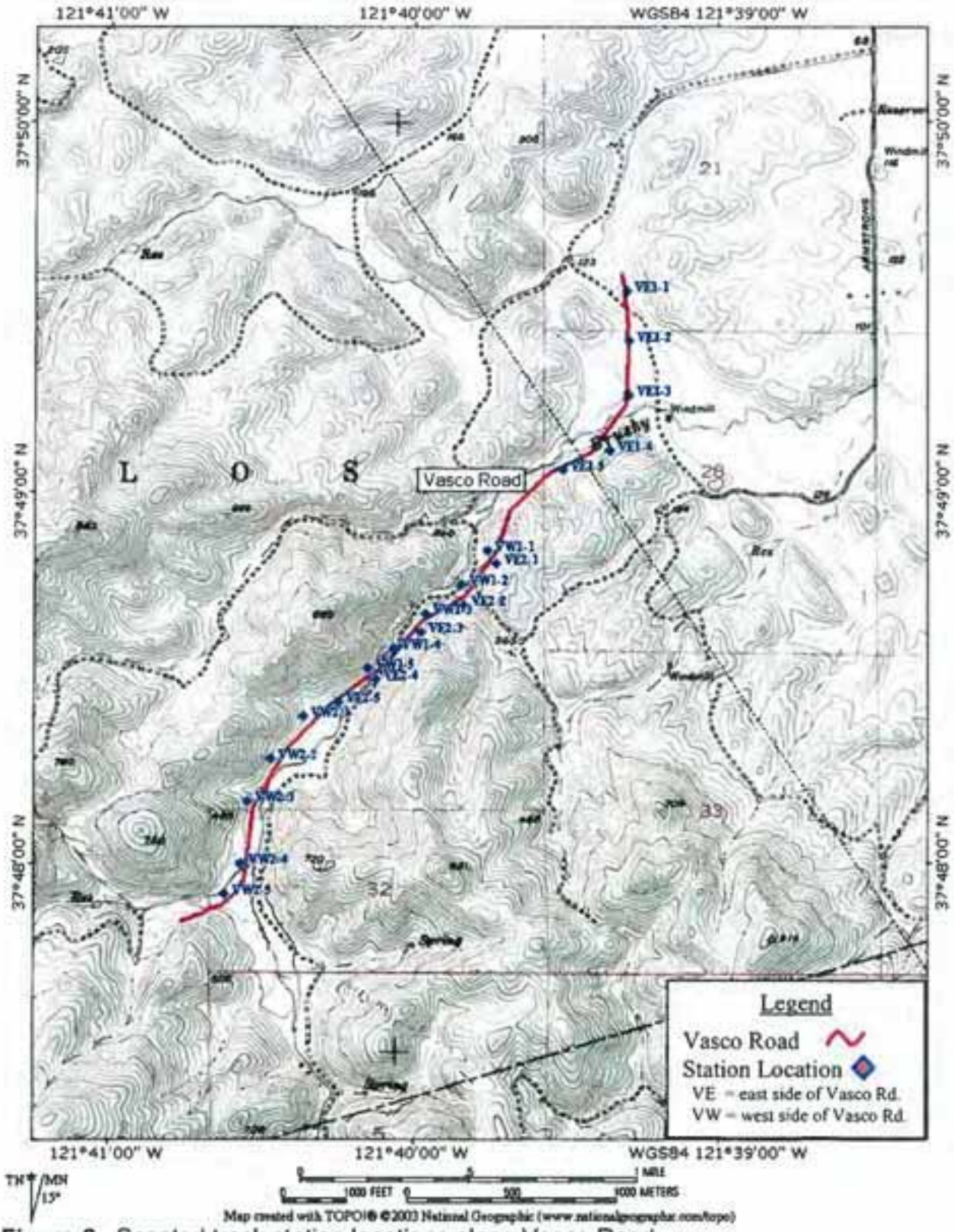


Figure 2. Scented track station locations along Vasco Road.

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Results

Results of the tracking station surveys are summarized in Table 1. Species codes, common names, and scientific names can be found in Appendix 1. Track station locations and names are depicted in Figure 2.

Mortality Study

Methodology

Mortality surveys were performed from November 11, 2007 through February 18, 2009. These surveys were designed to determine which terrestrial vertebrate species use the road and to define areas with high-volume vertebrate mortality. During the wet seasons (November through April), a survey was performed each night that rain started before 7:30 p.m. and on each morning following a night with rain forecast (according to NOAA's weather.gov website) to be 30% chance or greater. Mortality surveys were performed throughout the week, including weekends. The November through April mortality surveys were designed to detect amphibians using the road as passage between breeding and upland aestivation habitat and coincided with trapping (see below).

The May through October 2008 dry season mortality surveys were conducted twice weekly, in conjunction with the camera station monitoring (see below). These dry season surveys were intended to detect terrestrial mammals and reptiles. However, all identifiable roadkill were recorded during all mortality surveys.

Each mortality survey consisted of two people walking the 2.5-mile length of Vasco Road's shoulder within the study area, against traffic, in both directions. All vertebrate roadkill discovered in the traffic lanes, median, or shoulders were recorded to species and age class when possible. GPS coordinates were taken for every roadkill observed. Condor Country Consulting removed all roadkill after recording to avoid double-counting individuals. Binoculars and flashlights were used to assist with these surveys. Upon discovering a live animal attempting to cross the road, when safe for personnel, the animal was moved off the road to safety. Specifically, California tiger salamanders and red-legged frogs were moved to the nearest refugium sufficient to protect them, as requested and authorized by USFWS and CDFG representatives.

Methodology Revisions

Several revisions to the original methodology were made for safety and in response to field conditions and suggestions from agency representatives. During weeks between November and April when the forecast chance for precipitation was under 30%, Condor Country Consulting conducted a once per week mortality survey in order to ensure at least weekly coverage of roadkill. For safety reasons, it was determined that bridges would only be crossed in a vehicle, not on foot.

At night in inclement weather, a safety modification to the walking methodology was made such that one person walked (with the flow of traffic on the shoulder) while the other person drove slowly on the shoulder behind the walker, with a flashing light bar and flashing chevrons to warn

other drivers. This method was used at night due to the significant increase in surveyors' visibility to other vehicles by use of the flashing light bar to warn other drives, and the utilization of the safety vehicles' headlights increased the probability of detecting roadkill at night.

Another modification to the original methodology was that Condor Country Consulting recorded roadkill observed incidentally (temporally) outside of the formal surveys, which enabled us to detect one species (red fox; not presented in Table 2) otherwise not detected by the mortality surveys.

Table 2. Number of each species detected during mortality surveys along Vasco Road, 11/11/07 - 2/18/09.

Species*	Total Dead	Total Alive	Species*	Total Dead	Total Alive
AQGS	1		RACC	2	
ARSA	5		ROPI	2	
BADG	**5**		SALZ	5	
BLRA	1		SAVS	1	
BNOW	1		SJPM	20	
BUOR	2		SLSA	1	
BUOW	**2**		STSK	5	
CAPM	5		TOWA	1	
CATS	**50**	1	UNK AMP	52	
CAVO	6		UNK BIRD	12	
CLSW	6		UNK CANIS	2	
COYO	6		UNK FROG	3	
CRLF	**120**	8	UNK MAML	41	
DCAT	2		UNK MOUSE	150	
DDOG	1		UNK RABBIT	6	
DECO	38		UNK SNAKE	4	
DEMO	114		UNK SPARROW	1	
FLIZ	53		UNK VERT	19	
GCSP	1		WCSP	7	
GOSN	84		WEKI	1	
GRSQ	25		WEME	4	
HOMO	4		WERA	24	1
KISN	37	1	WESJ	1	
LTWE	1		WESK	3	
MUSK	1		WETO	175	3
NISN	9		WHRM	8	
NORA	2		WTSW	2	
PATR	138	8	YBRA	2	
PRFA	**1**		Grand Total	1339	23

*Special Status Species in **Bold**

Finally, at the request of USFWS and CDFG Condor Country Consulting gathered historic roadkill data from Contra Costa County's Animal Control department. The County's animal

control officers do not regularly patrol Vasco Road, responding only to calls of injured or dead animals in the area. These supplemental data have contributed to our general understanding of the relative frequency of mortality by species (Appendix 2).

Results

Table 2 presents the results of the road mortality surveys from November 11, 2007 to February 18, 2009. Species codes, common names, and scientific names are listed in Appendix 1. Information on animals discovered outside the official survey area or survey times is available upon request.

Live animals listed in Table 2 are incidental detections recorded during the mortality survey. These observations, although not part of the sampling protocol, are reported since they are detections of live, focal species (see CRLF and CATS numbers). However, since these observations were not a part of the formal survey, they are not discussed. More information on these observations is available upon request.

Analysis

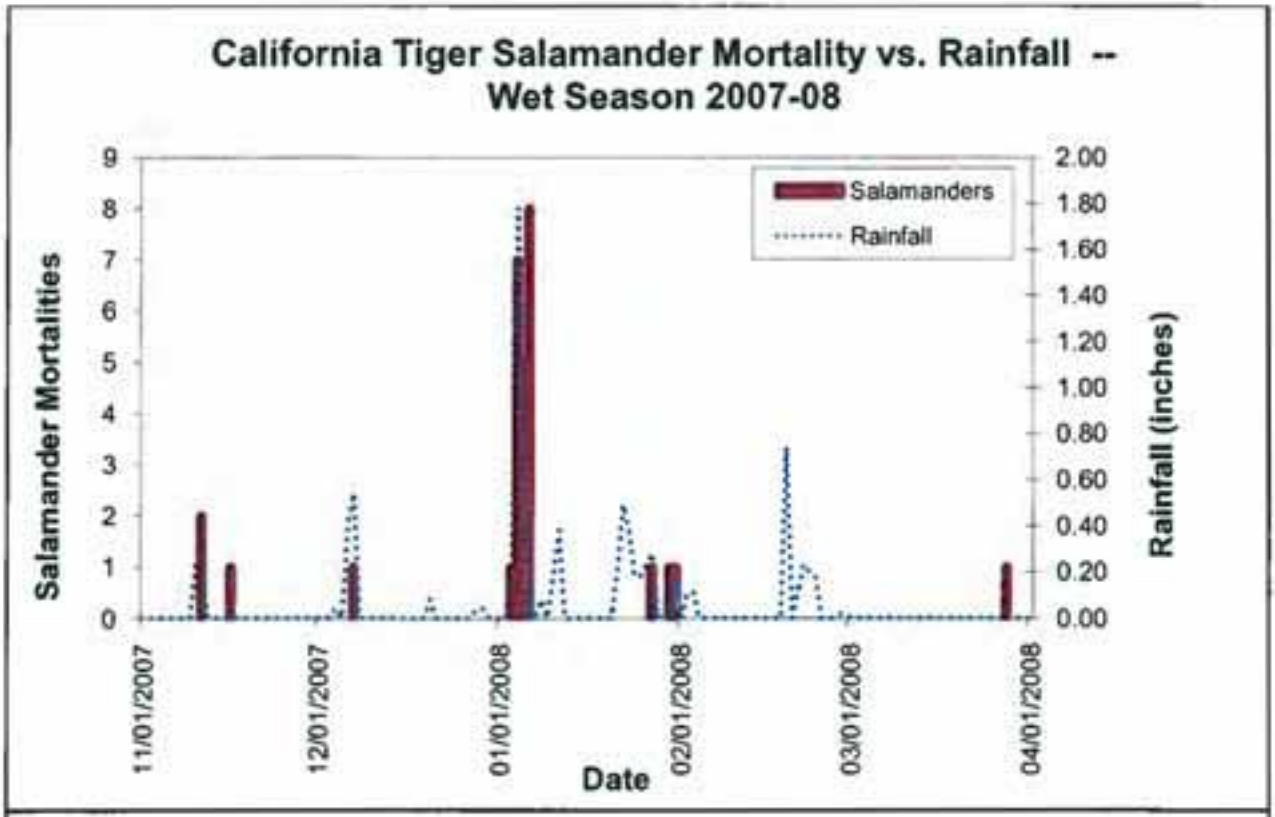
In general, large numbers of amphibians have been killed in the wet months, and large numbers of reptiles and small mammals have been killed in the dry months. Although the number of medium and large mammals killed within the study area and period is small, it may be significant that badgers (5) and coyotes (6), both carnivores, are killed in proportionally greater numbers than other medium to large mammals, and specifically more frequently than other carnivores (e.g., bobcat [0]) that are commonly detected in the area by remote sensing cameras. At the end of the winter rains, amphibian detections dropped markedly and reptile and mammal detections increased. Peak detections of roadkill occurred during the spring. Some interesting patterns in California tiger salamander and California red-legged frog mortality were noted: California tiger salamanders appear to be more active (or at least killed by vehicles in higher numbers) during rainfall events (Figure 3) as do California red-legged frogs (Figure 4). One tiger salamander was encountered in June, and this occurrence was associated with a dry lightning storm that moved through the area.

Statistical analysis of the mortality distribution data for CATS (Figure 5) and CRLF (Figure 6) yielded no statistically significant pattern. Engineering stations were used to divide the linear study area into quadrats one thousand feet long (e.g. 240+00 through 250+00) for this analysis. A total of 13 quadrats resulted. Conclusions were derived by calculating the index of dispersion ($I = s^2/$) (s^2 = variance, = mean) and using it to derive chi-square values ($\chi^2 = I\,(n - 1)$) (Krebs 1989). The chi-square value was then compared with Figure 3.5 in Krebs (1989) to determine the spatial pattern, and Poisson 95% confidence intervals (6.686 - 20.848 for 12 degrees of freedom; Rohlf and Sokal 1995) for statistical significance. The chi-square for California tiger salamanders (x^2 = 13.75) fell within the confidence interval for the Poisson distribution, suggesting that California tiger salamander road mortalities were distributed in a random pattern along Vasco Road. The same test performed on CRLF data also found mortalities distributed randomly along the road (χ^2 =18.54).

As apparent in Figures 5 and 6, mortality locations for both species were spread throughout the entire study area. However, clusters of mortalities are evident for both species in two locations. Both locations are associated with constructed barriers. One barrier to amphibian movement is the CATS fencing on the guardrails on the south end of the study area. The other is a retaining wall associated with bridge VB2. The retaining wall supports the northwest abutment of the bridge. Where each barrier ends, CATS and CRLF moving along the barrier moved onto the road and were struck. Although these clusters were not statistically significant, they are biologically significant, representing the effectiveness of barriers in directing amphibian movement.



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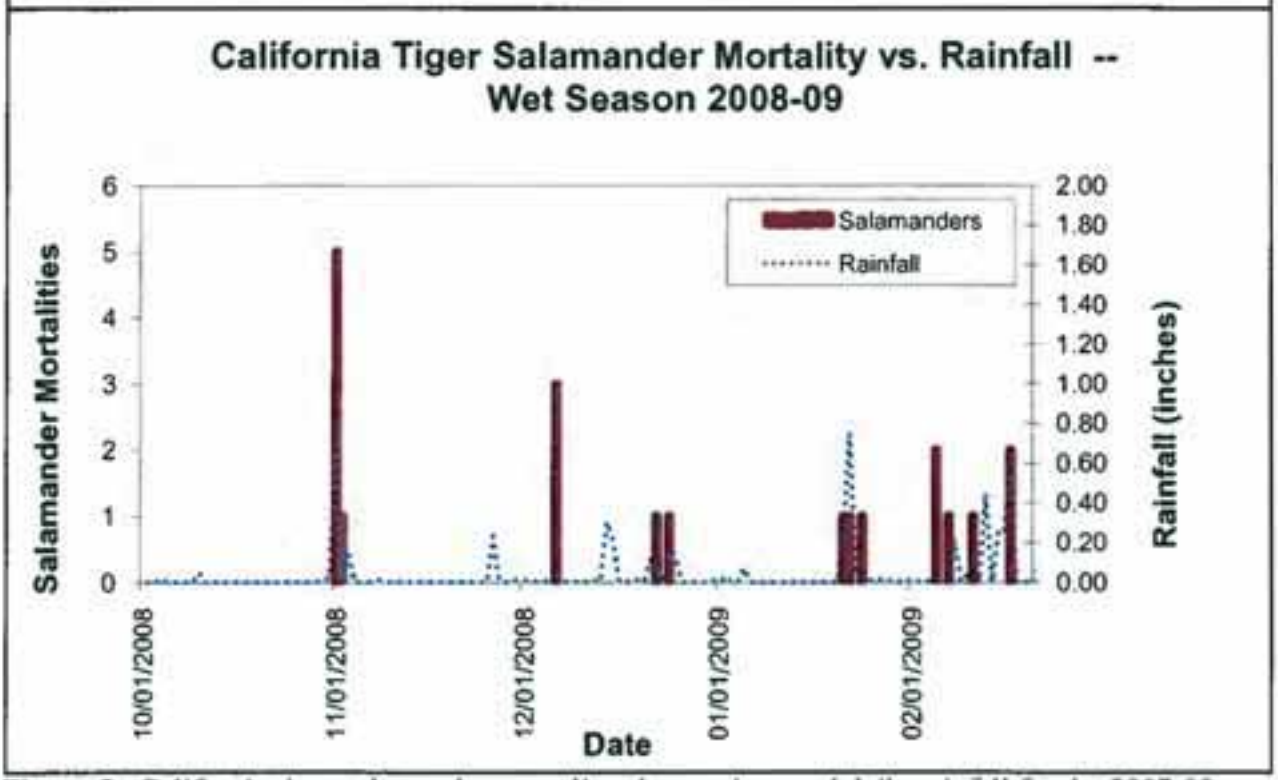
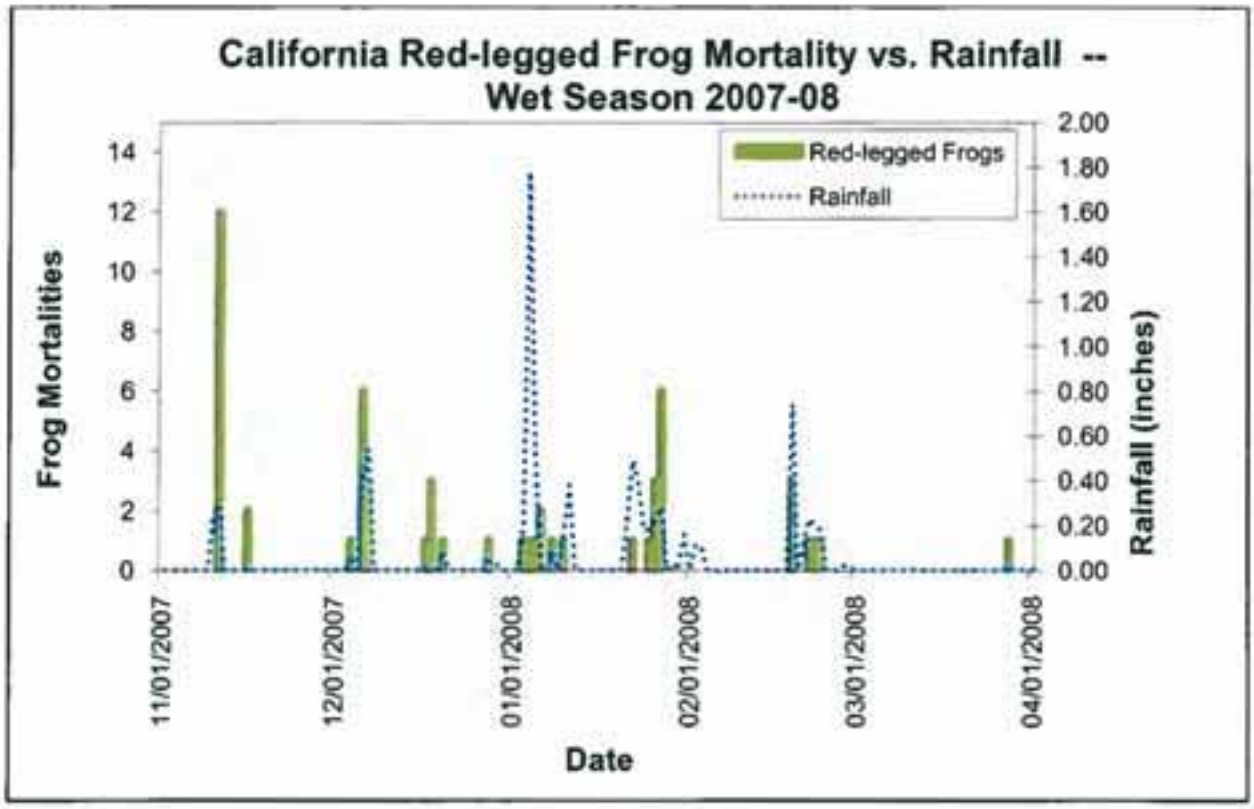


Figure 3. California tiger salamander mortality observations and daily rainfall for the 2007-09 wet seasons.

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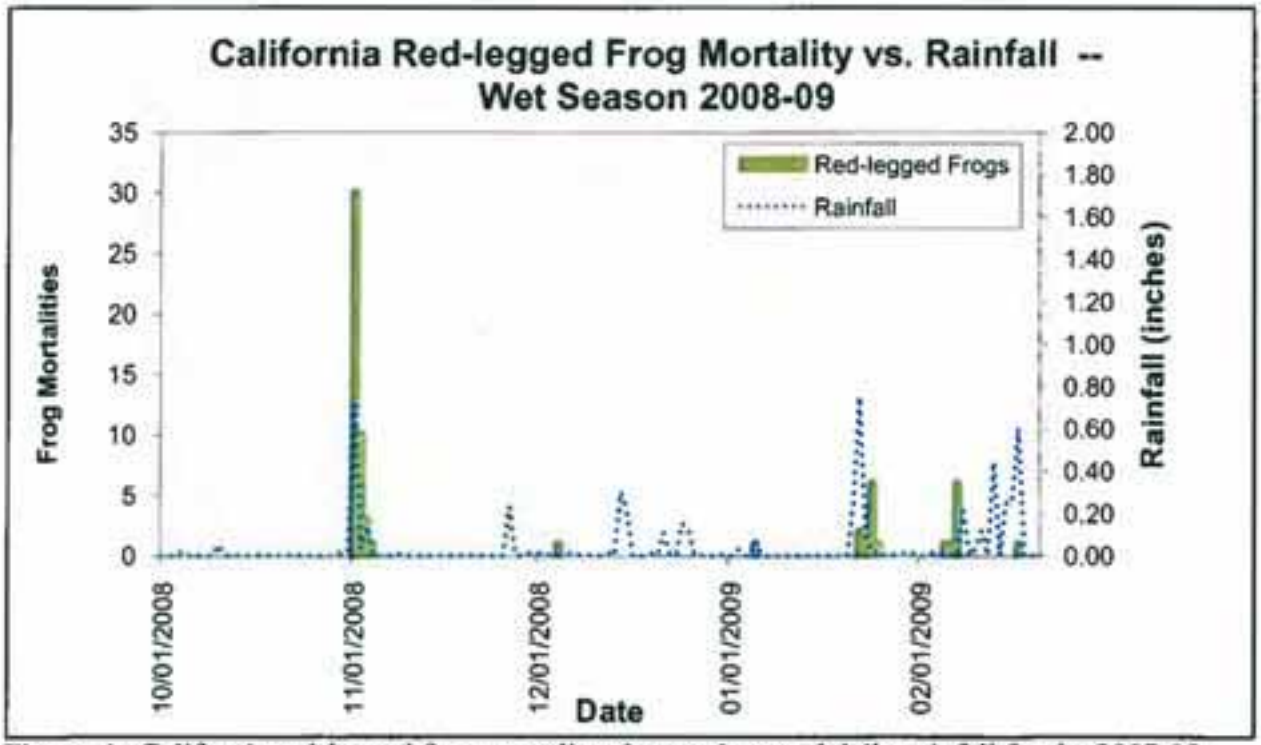


Figure 4. California red-legged frog mortality observations and daily rainfall for the 2007-09 wet seasons.

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Trapping

Methodology

Originally, three trapping arrays were installed at three culverts in the study area to detect amphibian movement during rain events. Of the four detection methods employed, trapping was expected to yield the most information on red-legged frog movement. In November 2007, coinciding with the first road mortality survey, an array with drift fence and five modified box minnow traps was installed at the end nearest breeding habitat of each of three accessible culvert undercrossings. Drift fences formed a triangular shape for the culvert arrays, with three traps targeting animals exiting the culvert and two traps targeting those headed toward the culvert opening.

Traps were activated on nights between November 2007 and April 2008, and November 2008 through February 18th, 2009, whenever the forecast reported a 30% chance of rain or better (NOAA), in conjunction with mortality surveys (see mortality survey section). Condor Country Consulting checked traps in the morning, starting just before or at dawn, recorded the species, sex, age class, and reproductive condition information when possible, released the animals, and closed the traps.

Methodology Revisions

Installation of more culvert trapping arrays was planned, but the design of the culvert openings (e.g., steep slope, concrete apron, etc.) precluded all but the three culverts mentioned above. In some cases, the features of the culvert openings precluded use by wildlife (e.g., severely eroded slopes, large vertical drop from culvert ending to apron).

Therefore, in early January 2008, at the request of USFWS and CDFG representatives, an additional eight linear arrays with four traps each were installed on the east side of Vasco Road. Each of these eight arrays consisted of a straight line of drift fence, parallel to the road, with a trap on both sides of the fence at both ends (four traps), and targeting animals traveling to or from Vasco Road.

To further supplement the culvert arrays, and also at the request of the agencies, Condor Country Consulting shortly thereafter installed a final two arrays near the southern end of the study area with two traps each. The traps were installed along the pre-existing metal mesh salamander fences, which were built during the construction of Vasco Road to direct animals away from the road. One of these two arrays was located at the northern end of the salamander fence, attached to the guard rail support posts on the west side of Vasco Road, and the other array was located on the east side. This expansion of trapping arrays increased the probability of detection as wildlife attempt to cross Vasco Road. The final total number of traps was 51 (see Figure 7).

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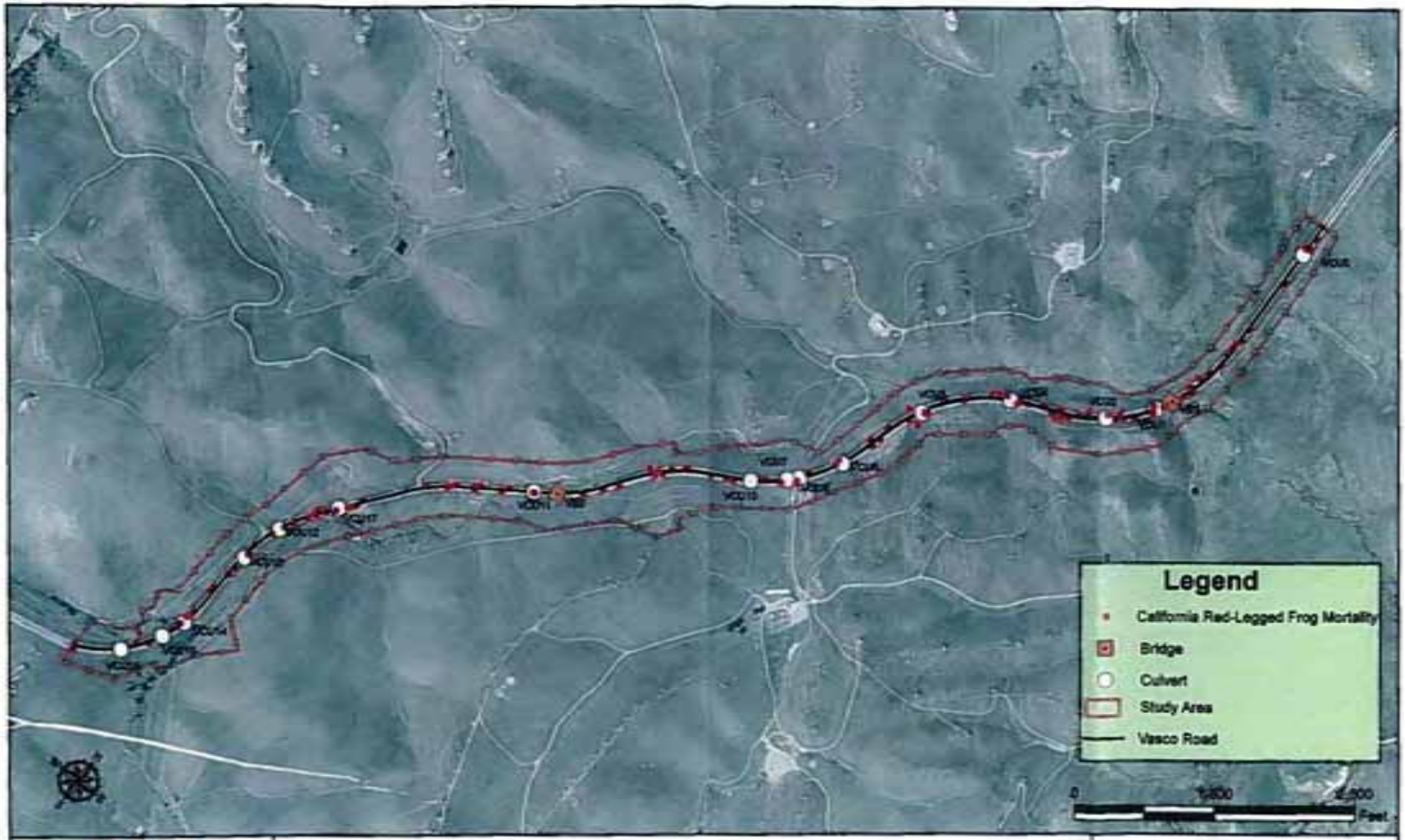
CONDOR COUNTRY

Vasco Road Wildlife Movement Study

California Tiger Salamander Mortality Locations

Figure 5

Contra Costa County Public Works Department



CONDOR COUNTRY CONSULTING, INC.

Vasco Road Wildlife Movement Study

California Red-Legged Frog Mortality Locations

Figure 6

Contra Costa County Public Works Department

Results

Summary results of the trapping surveys are presented in Table 3. Species codes, common names, and scientific names are listed in Appendix 1. Trap site locations are shown in Figures 1 and 7.

The trapping arrays detected fewer California tiger salamanders (7) and California red-legged frogs (15) than did the road mortality surveys (51 [1 alive] and 128 [8 alive], respectively). Small mammals made up the majority of captures in traps, accounting for 514 of the 586 total animals captured. The Pacific treefrog (*Pseudacris regilla*) made up the majority of the other captures (38 of 62).

Table 3: Species captured during trapping surveys November 11, 2007 to February 18, 2009. Special status species in **BOLD**.

	Species (number of individuals)																
Array	CAPM	**CATS**	CAVO	**CRLF**	DEMO	HOMO	ORSH	PATR	SJPM	SLSA	UNK MAML	UNK MOUSE	UNK SHREW	VASH	WETO	WHRM	Grand Total
VC1W			1	**5**	40			32				1				6	85
VC2W		**1**	2	**3**	24			1		1						11	43
VC3W			4		61		2	2			2	1	3		1	22	98
VF2E		**4**		**1**	4					1						4	14
VF1W		**1**	2		27										1	3	34
VL1E	1				28							1				12	42
VL2E				**1**	19			2				1				18	41
VL3E				**1**	29			1	1			1		1	1	13	48
VL4E	1				42	1					2	1				3	50
VL5E			1		28					1			2			5	37
VL6E			1	**1**	14					3						3	22
VL7E		**1**	2	**1**	20					2						6	32
VL8E				**2**	20		1			1		2				13	39
Unk Array			1														1
Grand Total	2	**7**	14	**15**	356	1	3	**38**	1	9	4	8	5	1	3	119	586

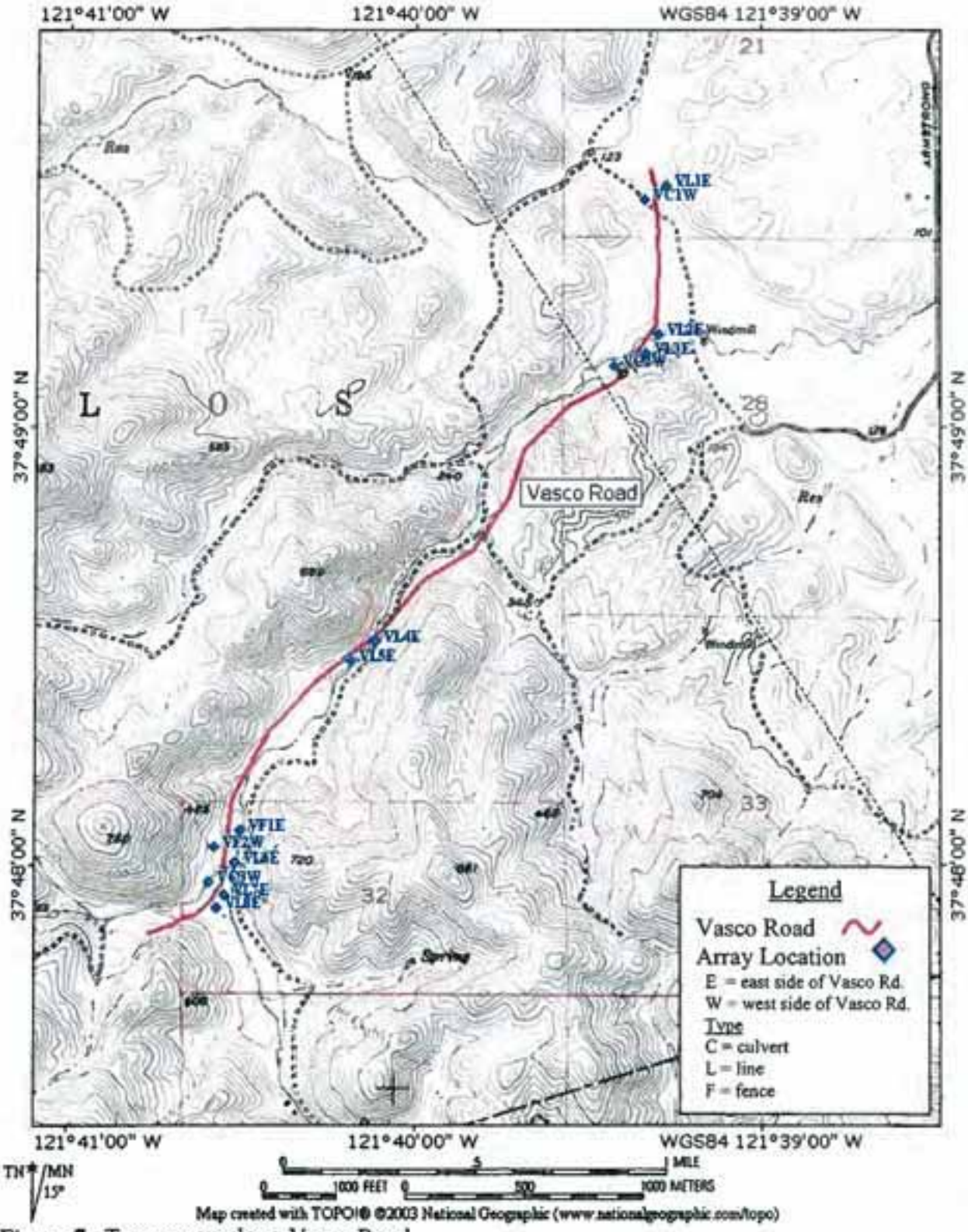


Figure 7. Trap arrays along Vasco Road.

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Camera Stations

Methodology

Condor Country Consulting proposed using remotely-triggered camera stations to detect primarily San Joaquin kit fox and other mammal movement through existing undercrossings within the Vasco Road study area. In fall of 2007, each undercrossing was categorized as either a culvert or bridge, photographed, recorded by location (GPS), and any unusual features were noted. Originally, seven culverts in the study area were to receive two cameras each, for a total of fourteen cameras. Condor Country Consulting then selected and ordered the wildlife remote camera setups (Camtrakker's Digital Ranger model), along with solar panel setups to power each camera. These cameras operate under either a passive-infrared (triggered by a combination of motion and heat) or time-lapse (with 5, 10, and 15 minute intervals) setting. Cameras were checked twice per week to ensure appropriate operation to collect data.

Methodology Revisions

It was determined after the start of this project that more undercrossings were present than originally observed on aerial photos. Condor Country Consulting documented 16 culverts (including one that accommodates vehicle passage) and two bridges. After reviewing research methodologies in recent literature (Lyren et al. 2006), speaking with colleagues (USGS, pers. comm.), and considering the cost of each setup, Condor Country Consulting decided to use a single camera on one end of the 15 smaller culverts. The drive-through culvert and both bridges would have two cameras each. This resulted in a total of 21 camera stations. Due to the difficulty in resetting cameras after data collection (see below) it was determined that data collection would only occur once per week. Because the number of photographs taken by each camera during each week was well below the maximum capacity of the camera's memory cards, weekly collection was sufficient.

Camera Set-up Difficulties

Initial camera deployment had been planned in the late winter of 2007-2008, ahead of the majority of mammal movement, and in an attempt to capture amphibians moving back to their aestivation sites during the wet season. However, unforeseen obstacles delayed the deployment of cameras considerably.

The final shipment of custom-made cameras and solar panels was not received until late February 2008. Solar panels were installed on posts; camera brackets and power cables were installed to prepare for camera deployment. Upon initial testing of the remote-camera systems in the field, it was determined that the camera lens would not stay open to take photos.

After considerable testing in the field and office, with little help from the camera manufacturer, the problem was identified and corrected. There were other problems with the fit of the camera in the housing that also caused units to fail. Only about one-fifth of the cameras functioned well enough to be deployed. Those five cameras were installed in mid-April, 2008. The cameras were set in the amphibian detection (time-lapse, TL) mode, in which a photo was taken every five minutes throughout the day and night.

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Results

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VC2W		**1**	2	**3**	24			1		1						11	43
VC3W			4		61		2	2			2	1	3		1	22	98
VF2E		**4**		**1**	4					1						4	14
VF1W		**1**	2		27										1	3	34
VL1E	1				28							1				12	42
VL2E				**1**	19			2				1				18	41
VL3E				**1**	29			1	1			1		1	1	13	48
VL4E	1				42	1					2	1				3	50
VL5E			1		28					1			2			5	37
VL6E			1	**1**	14					3						3	22
VL7E		**1**	2	**1**	20					2						6	32
VL8E				**2**	20		1			1		2				13	39
Unk Array			1														1
Grand Total	2	**7**	14	**15**	356	1	3	38	1	9	4	8	5	1	3	119	586

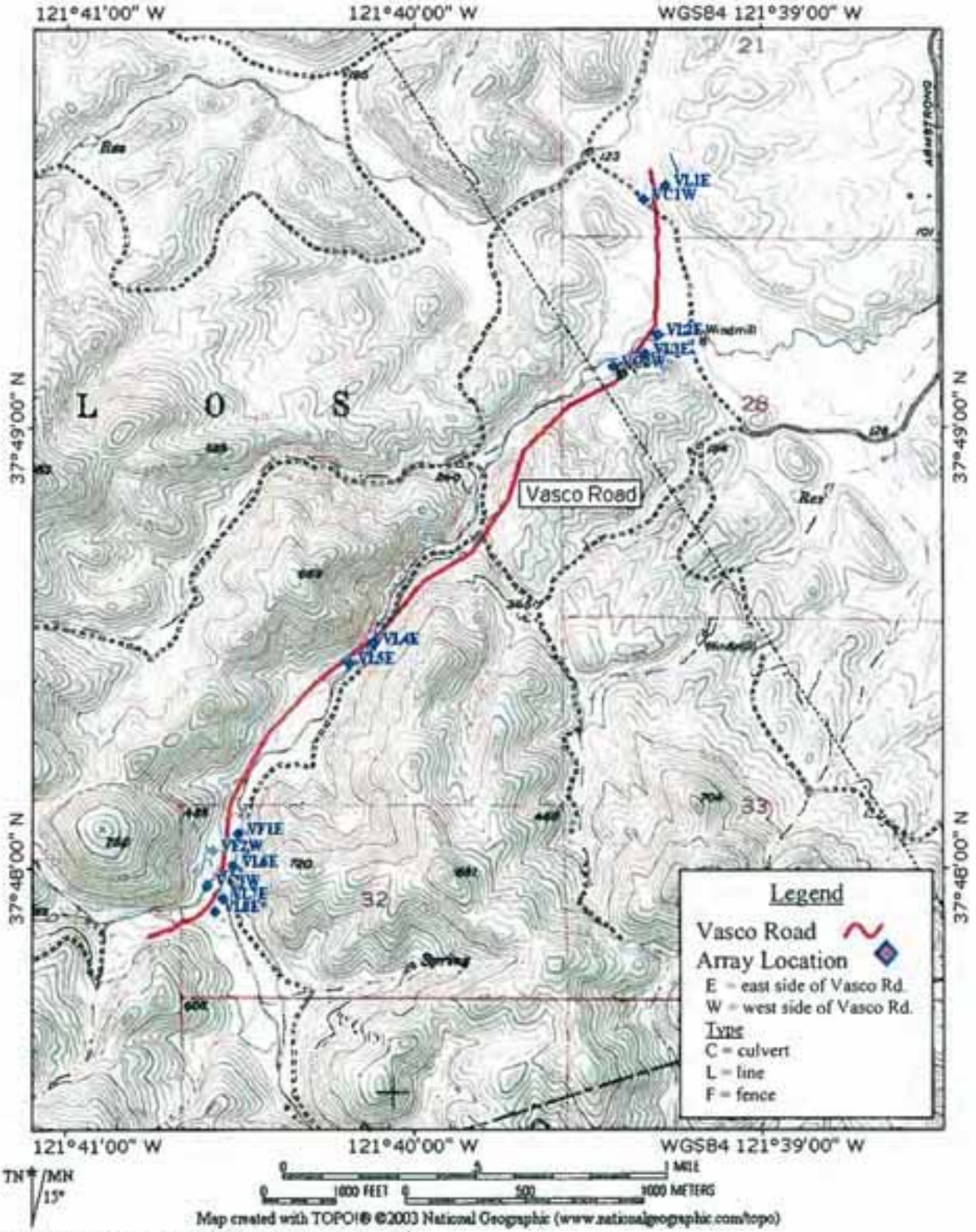


Figure 7. Trap arrays along Vasco Road.

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Camera Stations

Methodology

Condor Country Consulting proposed using remotely-triggered camera stations to detect primarily San Joaquin kit fox and other mammal movement through existing undercrossings within the Vasco Road study area. In fall of 2007, each undercrossing was categorized as either a culvert or bridge, photographed, recorded by location (GPS), and any unusual features were noted. Originally, seven culverts in the study area were to receive two cameras each, for a total of fourteen cameras. Condor Country Consulting then selected and ordered the wildlife remote camera setups (Camtrakker's Digital Ranger model), along with solar panel setups to power each camera. These cameras operate under either a passive-infrared (triggered by a combination of motion and heat) or time-lapse (with 5, 10, and 15 minute intervals) setting. Cameras were checked twice per week to ensure appropriate operation to collect data.

Methodology Revisions

It was determined after the start of this project that more undercrossings were present than originally observed on aerial photos. Condor Country Consulting documented 16 culverts (including one that accommodates vehicle passage) and two bridges. After reviewing research methodologies in recent literature (Lyren et al. 2006), speaking with colleagues (USGS, pers. comm.), and considering the cost of each setup, Condor Country Consulting decided to use a single camera on one end of the 15 smaller culverts. The drive-through culvert and both bridges would have two cameras each. This resulted in a total of 21 camera stations. Due to the difficulty in resetting cameras after data collection (see below) it was determined that data collection would only occur once per week. Because the number of photographs taken by each camera during each week was well below the maximum capacity of the camera's memory cards, weekly collection was sufficient.

Camera Set-up Difficulties

Initial camera deployment had been planned in the late winter of 2007-2008, ahead of the majority of mammal movement, and in an attempt to capture amphibians moving back to their aestivation sites during the wet season. However, unforeseen obstacles delayed the deployment of cameras considerably.

The final shipment of custom-made cameras and solar panels was not received until late February 2008. Solar panels were installed on posts; camera brackets and power cables were installed to prepare for camera deployment. Upon initial testing of the remote-camera systems in the field, it was determined that the camera lens would not stay open to take photos.

After considerable testing in the field and office, with little help from the camera manufacturer, the problem was identified and corrected. There were other problems with the fit of the camera in the housing that also caused units to fail. Only about one-fifth of the cameras functioned well enough to be deployed. Those five cameras were installed in mid-April, 2008. The cameras were set in the amphibian detection (time-lapse, TL) mode, in which a photo was taken every five minutes throughout the day and night.



During the first two weeks of operation, similar camera problems occurred with the five "functioning" units. All cameras were returned to the manufacturer for repair in early May after having switched the cameras into heat and motion (HM) mode. In HM mode a photo is triggered when the camera's sensors picked up the movement of heat within its range. This switch from TL to HM corresponded with our seasonal shift from amphibian to mammalian movement.

Receiving cameras back from the manufacturer in waves, as many as 14 (of a total 21) cameras were deployed in HM mode by the end of May, when the first theft incident occurred. The cameras and some solar panels were stolen from five camera stations over Memorial Day weekend, 2008. The thieves circumvented the security measures that were in place to protect the cameras. Then, in the first week of June, equipment from an additional six camera stations were stolen. All remaining equipment was immediately removed from the study area.

For several weeks, Condor Country Consulting staff consulted with colleagues and technical experts on how to better secure the cameras and solar panels in the field. By August, a multi-level security design was finalized. On August 15, 2008, after receiving a prototype of the metal box, a single camera setup was deployed to test the new security measures. Photos from the camera were downloaded for several weeks while the remainder of the metal boxes were being fabricated.

In the beginning of September, a Contra Costa Water District employee reported spotting a San Joaquin kit fox within a mile or two of the northern end of the study area. In an attempt to capture this individual in a photograph, another camera was deployed at the northernmost culvert (VCU0) without a metal box, but attaching it with security hardware. Over the next couple weeks, after receiving all of the metal boxes, the remaining cameras were installed and a metal box was added to the setup at VCU0. By the end of September 2008, all 14 cameras that remained in our possession were deployed (11 of the original 25 cameras were stolen). See Figure 8.

Upon deployment, cameras were set to take photos when triggered by HM, from the end of September until November 1, 2008. After then, they were set to take photographs every five minutes, TL mode, with the goal of detecting amphibians during the rainy season (winter). The cameras were set to take photographs at the highest resolution (7 megapixels). Each camera was checked once weekly for maintenance and data collection. The cameras functioned well from October 2008 through February 2009, with only occasional malfunctions, and one instance where the camera was returned to the manufacturer for repair.



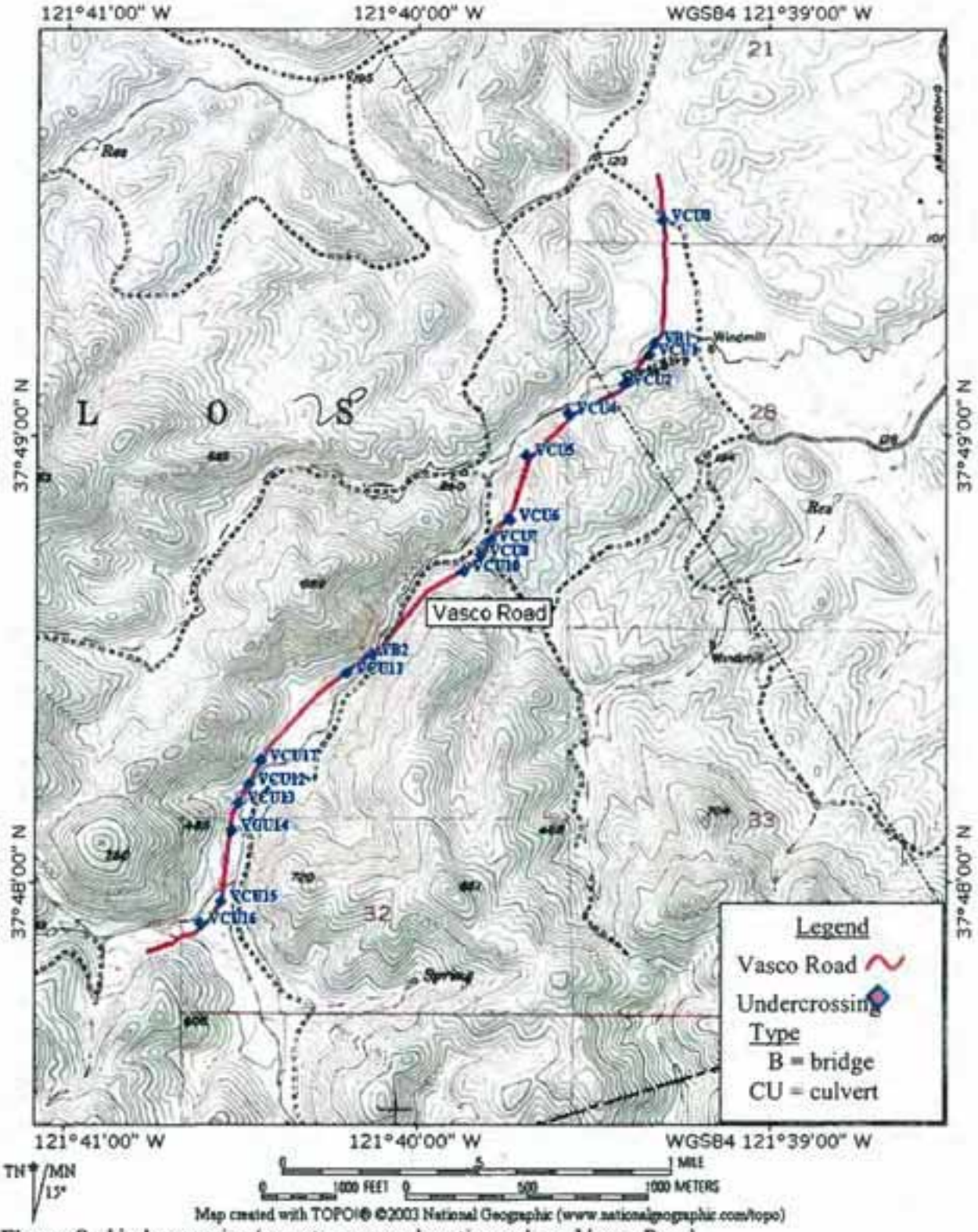


Figure 8. Undercrossing/remote camera locations along Vasco Road.

Results

Camera station results are summarized in Table 4 with species codes, common names, and scientific names found in Appendix 1. A map of camera station locations within the study area can be found in Figures 1 and 8. Nine-hundred eighty seven animal photographs from the remote camera stations were collected through February 20, 2009. Staff was able to identify 71 percent of animals photographed to species level. The remaining 29 percent of the resulting photos were blurry, dark, or otherwise insufficiently clear to identify the animal to the species level. However, many within the 29% were identified to group (hawk, mouse, etc.), and a few were identified to a finer level (e.g., sparrow, wren, alligator lizard *(Elgaria sp.)*), to contribute to the understanding of which species or groups travel near or through which features.

The remote cameras have detected a number of species utilizing the culverts and bridge undercrossings (Table 4). Two separate calculations describe minimum and maximum number of species detected at each camera site. "Total species categories" are all those individual species photographed and identified at each site plus all the unknown types (categories) of animals photographed at each site. The "Total species categories" minus any unknown animal categories which potentially overlap with known, equals the "minimum number of species." For example, VCU5 has a total of two "total species categories": opossum and unknown vertebrate. The "minimum number of species" detected at that site is one, since an opossum is also a vertebrate.

Some of the species the cameras detected, such as the bobcat, were not detected during the road mortality surveys. Spotted skunks were not detected by either the mortality survey or the tracking stations, and are considered species sensitive to the effects of habitat fragmentation and isolation. Some photographs of both bobcats and spotted skunks have been collected which offer irrefutable evidence of species presence; whereas track identification skills can always be questioned. Bobcats appeared at nine of the camera stations, and spotted skunks appeared at four.

By February 20th, 2009, eight of the camera stations detected seven or more species. Six of the remaining nine camera stations detected five or more species. No kit foxes have been detected. Gray fox, domestic cat, bobcat, and coyote have been detected, however, so this method can detect mid- to large-sized carnivores.

All 11 camera stations that functioned through the end of the study have produced wildlife photographs. All cameras were inactive while security was being improved from early June through mid-September. Ten camera locations were inactive from mid-December through the end of the study because stolen equipment was not replaced. Four of the eight inactive stations have not produced photos (stations VCU6, VCU7-E, VB2L, and VCU12), while the other six inactive stations had produced photos prior to the theft incidents (VB1L, VCU2, VCU5, VCU8, VCU10, and VCU13).

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Table 4. Species detections at remote camera stations May 1, 2008 to February 19, 2009.
Undercrossing name (approximate diameter in feet)

Species/ taxonomic categories	VB1L* (100 ft)	VB1U (100 ft)	VB2U (100 ft)	VCU0 (4 ft)	VCU1 (1.5 ft)	VCU2* (1.5 ft)	VCU4 (4 ft)	VCU5 (4 ft)	VCU7-W (21 ft)	VCU8* (4 ft0	VCU10 (2 ft)	VCU11 (4 ft)	VCU13* (1.5 ft)	VCU14 (10 ft)	VCU15 (4 ft0	VCU16 (4 ft0	VCU17 (1.5 ft)	Total stations
BLPH		X	X						X	X	X			X		X		7
BOBC				X	X	X				X	X		X		X	X	X	9
CAPM												X				X		2
CLSW														X				1
COYO		X					X		X						X	X		5
CRLF			X	X	X													3
DCAT		X			X	X			X									4
DCTL									X						X	X		3
DECO	X	X					X						X			X		5
DEMO				X	X		X					X	X		X	X	X	8
FLIZ	X	X			X	X						X	X		X		X	8
GOSN														X				1
GFOX		X																1
GRSQ	X	X	X	X	X	X	X						X			X	X	10
HOMO				X	X						X							3
HUMA		X							X									2
MODO	X																	1
NOHA	X																	1
OPOS			X	X	X	X		X			X	X						7
POGO															X			1
POSS VERT		X	X	X	X		X		X	X	X	X		X	X	X		12
RACC				X							X					X		3
ROPI		X																1
ROWR		X			X						X							3
RTHA		X																1
SALZ									X									1
SAPH																X		1
SJPM															X			1
SLSA					X													1

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SOSP					X													1
SPSK				X	X		X				X							4
STSK		X	X	X	X		X		X	X	X	X	X			X	X	12
UNK AMP			X															1
UNK BIRD	X	X	X						X			X		X	X			7
UNK CANIS							X									X		2
UNK FROG							X											1
UNK HAWK		X																1
UNK LIZARD									X									1
UNK MAML	X	X		X			X		X		X	X				X		8
UNK MOUSE		X	X	X		X	X		X			X	X		X	X	X	11
UNK RODENT		X																1
UNK SKUNK				X														1
UNK SPARROW									X					X				2
UNK VERT	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	15
UNK WREN		X																1
WCSP		X							X									2
WEKI		X																1
WEME	X																	1
WTSW	X																	1
YRWA									X									1
Total species categories	10	22	10	14	15	6	12	2	16	4	11	10	8	7	11	16	7	
Minimum # species	5	15	6	10	13	6	7	1	10	3	8	6	6	4	8	11	5	

* indicates a camera which was stolen, so only operated for a portion of the time period described

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Although the cameras were deployed somewhat sporadically over a period of six months, the dataset is comprehensive enough to detect patterns in mammalian use of undercrossings during the warmer, drier months of 2008. The camera data, combined with the roadkill data, clearly show that bobcats are using multiple undercrossings to safely move from one side of the road to the other, and domestic cats, ground squirrels, opossums, and spotted and striped skunks have successfully done so many times as well.

Camera data suggest that bobcats are avoiding the larger undercrossings, preferring culverts 1.5 to 4 feet in diameter. Bobcats have been documented using nine different culverts, with diameters as small as 18 inches and no greater than 48 inches. This finding contradicts Haas' (2000) study, that,

1) found that undercrossing use by bobcats in his study increased as undercrossing height, width, and/or openness increased, and;
2) suggests that large mammal (including bobcats) activity through undercrossings less than one meter in height is highly unlikely.

The cameras have documented coyotes using the largest-sized undercrossing (100 foot bridge span), the drive-through culvert (20 feet diameter), and three culverts 48 inches in diameter. There are no instances of coyotes being detected in smaller culverts. These results support those of Haas (2000), who never recorded coyotes using undercrossings less than one meter in height.

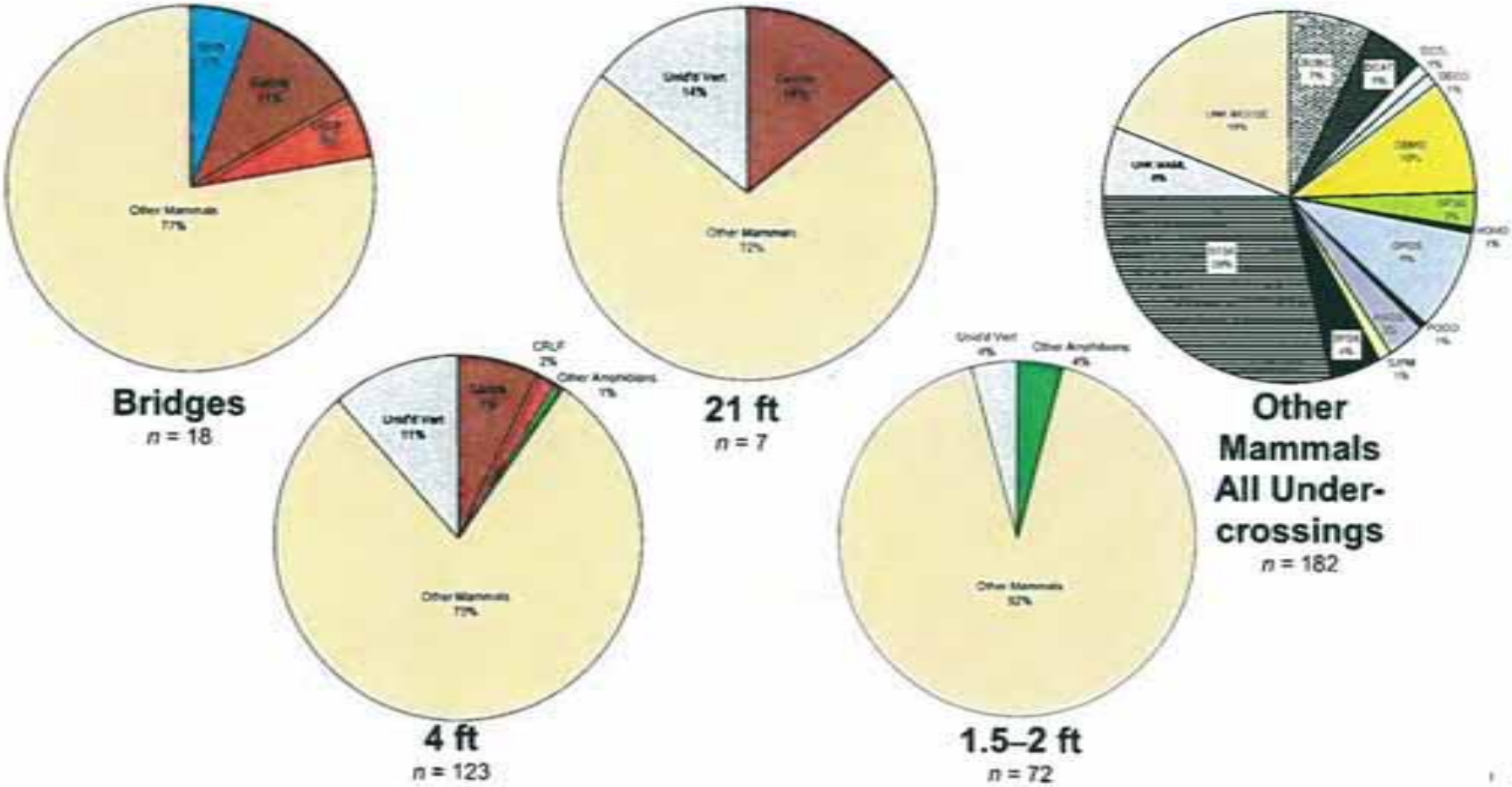
As of November 3, 2008 a second attempt to detect amphibian movement through culverts was initiated by converting the cameras to the time-lapse mode, with 5 minute intervals. This method is relatively untested with amphibians, but it was hoped that it would detect amphibian traffic through the culverts, if they were using them to a significant degree. The attempt to capture amphibian movement was successful.

The cameras photographed two amphibian species using three different culverts. California red-legged frogs were photographed in a 100-foot bridge undercrossing (VB2U), a culvert four feet in diameter (VCU0), and another culvert 18 inches in diameter (VCU1). These detections occurred between December 23 2008 and February 14, 2009. The second amphibian species we detected was a slender salamander in VCU1, an eighteen inch culvert, from November 19, 2008, through January 24, 2009.

Review of remotely triggered images indicate that species use of undercrossings varies by the size of the undercrossing. Chart 1 depicts the percentage of each species grouping crossing through an undercrossing. Of particular interest is the fact that both canids (coyotes, grey foxes, and unidentified canids) and CRLF were only using culverts four feet in diameter and larger. Given the small sample size, these pie charts may not fully represent the entire size range of undercrossings canids and CRLF will use within the study area. However, it is generally true that as diameter increases, the diversity of species that can use the culvert increases. This may not have been the case at VCU14. The 10'X10' box culvert has standing water during all times of year which seems to reduce its usefulness as a wildlife crossing. The only vertebrate



Chart 1. Percentage of Species Groups Crossing through Various Sizes of Undercrossings within the Study Area[1]



[1] Notes: The following caveats apply to these pie charts: 1) only the first of a series of consecutive photos of the same individual were counted; 2) only photos of animals crossing through the undercrossing were included; 3) each photo with an animal detection counted as one photo, even when there was more than one individual in the frame; 4) groups were defined as follows: CRLF formed its own group, separate from the group containing all other amphibians, all Canidae members were combined into one group, the rest of the mammals into another group, all birds together, all reptiles together, and all unidentified vertebrates into a final group; 5) we excluded "possible vertebrate" occurrences since they could not be confirmed as vertebrate detections; and 6) there was no vertebrate crossing detected by the cameras for VCU14, the 10-foot box culvert.

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categorized as crossing this feature was a gopher snake. In addition, this culvert harbors a nesting colony of cliff swallows, and although many images of this species were gathered, none were determined to be crossing. For informational purposes, a pie chart showing the percentage of those mammal species lumped under the "Other Mammals" category that crossing through the undercrossings Each is listed by its species code.

As expected, the HM (summer) technique captured a higher percentage of mammals (warm, fast moving animals) than did the TL (winter) mode, with mammals dominating at almost 90% of the animals detected. The TL mode apparently samples across a more evenly distributed variety of wildlife species groups—again, though, the difference in season is also an important factor.

When comparing large undercrossings (20+ feet) and the two techniques, with HM mode, 33% of the animals detected were canids, 67% were birds. With TL, the same undercrossings show birds at 61%, canids dropped to 0%, other mammals weighed in at 24%, and reptiles were 4% of all detections. There were canids detected via TL, but the proportion of canids relative to other species detected is so low it drops out of the chart. Nevertheless, if the priority is to capture canid presence, clearly HM is the more effective of the two means. If detecting amphibians is the priority, TL is the method called for.

For mid-sized undercrossings (4 to 10 feet in diameter), canids comprise 21% of detected species when using HM (summer) mode, other mammals are 72%, and birds make up the remainder of detected animals (7%). When time-lapse is used in these same undercrossings, canids drop to only 2% of detected animals, other mammals are 73%, reptiles appear at 3%, birds drop to 2%, CRLF appears at 1%, and other amphibians are 1% of the detected animals.

Finally, for the smallest undercrossings (1.5 to 2 feet in diameter), the familiar pattern appears. For HM mode, other mammals comprise 89% of individuals detected, reptiles are 9%, and birds are 1%. Canids are not detected in the smallest undercrossings at all, although carnivores are represented (see BOBC in Table 4). For TL mode, other mammals are 69% of species observed, other amphibians jump up to 15%, CRLF are 2% (so total amphibians are 17% of detections), birds comprise 4%, and reptiles are 2% of individuals detected using these smallest undercrossings.

Conclusions

After 19 months of collecting data, a strong dataset that allows for the development of recommendations on the most effective measures for allowing wildlife to safely cross Vasco Road has been collected. Wildlife moving across Vasco Road were observed by various means and with varying degrees of success. The compilation of all datasets, in combination with individual species' life history requirements, and an analysis of the effectiveness of varying types of crossings and fencing, is currently being conducted to formulate recommendations for improving animals' ability to move safely across Vasco Road, even after it has been widened and a median barrier has been installed. The recommendations will include the number, size,



placement, and spacing of undercrossings in addition to fencing and maintenance recommendations.

Several basic observations regarding the data can be made. In general, wildlife mortalities on Vasco Road occurred throughout the entire study area, regardless of undercrossing location. Large numbers of California red-legged frogs (120) and California tiger salamanders (50) were found killed on Vasco Road, frequently associated with early-season rain events. Wildlife frequently use the road surface rather than existing undercrossings, despite Vasco Road having been designed specifically to facilitate safe passage of frogs, salamanders, and kit fox.

It appears that for most species, continuous fencing between existing undercrossings is necessary to reduce mortality levels. Undercrossings of specific sizes may also need to be added to reduce mortality for particular species. Given the existing mortality levels for California red-legged frog and California tiger salamander, the installation of additional fencing and undercrossings, even with the proposed road-widening and median barrier installation, has the strong potential to improve the survivorship of animals attempting to pass from one side of Vasco Road to the other.

Although a relatively new approach to documenting amphibian movement, this study's success in using cameras to document undercrossing utilization by amphibians is promising for further researchers' efforts.

Finally, mortality surveys provide valuable, specific information to measure the success, or lack thereof, of wildlife crossing. Few other techniques provide the sort of concrete information these surveys do; they detect what species are being killed, how many, where, when, and in association with what features (and other variables). Mortality surveys and remote cameras combine to provide invaluable, at times incontrovertible, feedback regarding which species are moving and where.

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Appendix 1. Species list with code, common name and scientific name.

Code	Common Name	Scientific Name
AMCR	American crow	*Corvus brachyrhynchos*
AMKE	American kestrel	*Falco sparverius*
AQGS	Aquatic garter snake	*Thamnophis atratus*
ARSA	Arboreal salamander	*Aneides lugubris*
BADG	Badger	*Taxidea taxus*
BLPH	Black phoebe	*Sayornis nigricans*
BLRA	Black rat	*Rattus rattus*
BNOW	Barn owl	*Tyto alba*
BOBC	Bobcat	*Felis rufus*
BUOR	Bullock's oriole	*Icterus bullockii*
BUOW	Burrowing owl	*Athene cunicularia*
CAPM	California pocket mouse	*Chaetodipus californicus*
CATS	California tiger salamander	*Ambystoma californiense*
CAVO	California vole	*Microtus californicus*
CLSW	Cliff swallow	*Petrochelidon pyrrhonota*
COYO	Coyote	*Canis latrans*
CRLF	California red-legged frog	*Rana draytonii*
DCAT	Domestic cat	*Felis domesticus*
DCTL	Domestic cattle	*Bos taurus*
DDOG	Domestic dog	*Canis lupus familiaris*
DECO	Desert cottontail	*Sylvilagus audubonii*
DEMO	Deer mouse	*Peromyscus maniculatus*
FLIZ	Western fence lizard	*Sceloporus occidentalis*
GCSP	Golden-crowned sparrow	*Zonotrichia atricapilla*
GFOX	Gray fox	*Urocyon cinereoargenteus*
GOSN	Gopher snake	*Pituophis catenifer*
GRSQ	California ground squirrel	*Spermophilus beecheyi*
HOMO	House mouse	*Mus musculus*
HUMA	Human	*Homo sapiens*
KISN	Common kingsnake	*Lampropeltis getula*
LTWE	Long-tailed weasel	*Mustela frenata*
MODO	Mourning dove	*Zenaida macroura*
MUSK	Muskrat	*Ondatra zibethicus*
NISN	Night snake	*Hypsiglena torquata*
NOHA	Northern harrier	*Circus cyaneus*
NORA	Norway rat	*Rattus norvegicus*
OPOS	Opossum	*Didelphis virginiana*
ORSH	Ornate shrew	*Sorex ornatus*
PATR	Pacific treefrog	*Pseudacris regilla*
POGO	Botta's pocket gopher	*Thomomys bottae*
POSS VERT	a vertebrate animal was possibly observed, but could not be confirmed (used in photo ID)	

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Code	Common Name	Scientific Name
PRFA	Prairie falcon	*Falco mexicanus*
RACC	Raccoon	*Procyon lotor*
RFOX	Red fox	*Vulpes vulpes*
ROPI	Rock pigeon	*Columba livia*
ROWR	Rock wren	*Salpinctes obsoletus*
SALZ	Southern alligator lizard	*Elgaria multicarinata*
SAPH	Say's phoebe	*Sayornis saya*
SAVS	Savannah sparrow	*Passerculus sandwichensis*
SJPM	San Joaquin pocket mouse	*Perognathus inornatus*
SLSA	Slender salamander	*Batrachoseps attenuatus*
SOSP	Song sparrow	*Melospiza melodia*
SPSK	Spotted skunk	*Spilogale gracilis*
STSK	Striped skunk	*Mephitis mephitis*
TOWA	Townsend's warbler	*Dendroica townsendi*
UNK AMP	Unknown amphibian	
UNK BIRD	Unknown bird	
UNK CANID	Coyote or Fox	*Canidae* family
UNK CANIS	Coyote or Domestic dog	*Canis latrans* or *Canis familiaris*
UNK FROG	Unknown frog	
UNK HAWK	Unknown hawk	
UNK LIZARD	Unknown lizard	
UNK MAML	Unknown mammal	
UNK MOUSE	Unknown mouse species	
UNK RABBIT	Unknown rabbit	*Sylvilagus audubonii* or *S. bachmani* or *Lepus californicus*
UNK RODENT	Unknown rodent	
UNK SHREW	Unknown shrew	
UNK SKUNK	Unknown skunk	*Mephitis mephitis* or *Spilogale gracilis*
UNK SNAKE	Unknown snake	
UNK SPARROW	Unknown sparrow	
UNK VERT	information on animal not conducive to identification even to vertebrate class	
UNK WREN	Unknown wren	
VASH	Vagrant shrew	*Sorex vagrans*
WCSP	White-crowned sparrow	*Zonotrichia leucophrys*
WEKI	Western kingbird	*Tyrannus verticalis*
WEME	Western meadowlark	*Sturnella neglecta*
WERA	Western rattlesnake	*Crotalus oreganus*
WESJ	Western scrub-jay	*Aphelocoma californica*
WESK	Western skink	*Eumeces skiltonianus*
WETO	Western toad	*Bufo boreas*
WHRM	Western harvest mouse	*Reithrodontomys megalotis*
WTSW	White-throated swift	*Aeronautes saxatalis*
YBRA	Western yellow-bellied racer	*Coluber constrictor*
YRWA	Yellow-rumped warbler	*Dendroica coronata*

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APPENDIX 2

Contra Costa County Animal Services Department
Wild animal impounds from Vasco Road, Byron, CA
Year 2000 through January 25, 2008

Condor Country Consulting, Inc.
411 Ferry St., Ste. #6, Martinez, CA 94553
http://www.condorcountry.com tel:(925) 335-9308

Contra Costa County
Animal Services Department
4800 Imhoff Place Martinez, CA 94553
(925) 335-8300 www.ccasd.org

Wild animal impounds from Vasco Road, Byron, CA

		DEAD	STRAY
2000	COYOTE	6	0
	MUSKRAT	1	0
	OPOSSUM	0	1
	RABBIT SH	2	0
	RACCOON	3	0
	WILD	1	0
	Total	**13**	**1**
2001	COYOTE	11	0
	OPOSSUM	3	0
	PRAIRIE DOG	1	0
	RABBIT SH	4	0
	RACCOON	3	0
	SQUIRREL	1	0
	Total	**23**	**0**
2002	COYOTE	7	0
	FOX	1	0
	RACCOON	6	0
	SQUIRREL-GROL	3	0
	Total	**17**	**0**
2003	BOBCAT	1	0
	COYOTE	6	0
	OTTER RIVER	1	0
	Total	**8**	**0**
2004	COYOTE	9	1

		DEAD	STRAY
2004	DEER	1	0
	OPOSSUM	1	0
	OWL	0	2
	SKUNK	4	0
	Total	**15**	**3**
2005	COYOTE	6	0
	DEER	1	0
	RABBIT SH	1	0
	RACCOON	1	0
	Total	**9**	**0**
2006	BARN OWL	1	0
	COYOTE	10	1
	OPOSSUM	3	0
	OTTER	1	0
	RABBIT SH	2	0
	RACCOON	1	2
	SKUNK	4	0
	Total	**22**	**3**
2007	BADGER	2	1
	COYOTE	17	1
	DEER	1	0
	HAWK	1	0
	OWL	2	0
	RABBIT SH	1	0
	RACCOON	2	0
	SKUNK	2	0
	Total	**28**	**2**
2008	COYOTE	1	0
	Total	**1**	**0**
Total		**136**	**9**

-----Original Message-----
From: Los Vaqueros [mailto:lvstudies@hotmail.com]
Sent: Tue 4/21/2009 5:07 PM
To: Andrea Nocito
Subject: FW: LV Expansion DIES/EIR comments



_____

To: lvstudies@hotmail.com
Subject: LV Expansion DIES/EIR comments
From: AFate@cd.cccounty.us
Date: Tue, 21 Apr 2009 16:58:12 -0700

Hi Marguerite -

Attached please find comments from the East Contra Costa County Habitat Conservancy.

Abby

****

Abigail Fateman
Contra Costa County
Department of Conservation and Development
651 Pine Street
4th Floor, North Wing
Martinez, CA 94553
(925) 335-1272
(925) 335-1299 (fax)

EAST CONTRA COSTA COUNTY HABITAT CONSERVANCY

City of Brentwood
City of Clayton
City of Oakley
City of Pittsburg
Contra Costa County



April 21, 2009

Marguerite Naillon
Special Projects Manager
Contra Costa Water District
P.O. Box H2O
Concord, CA 94524
Attn: Los Vaqueros Reservoir Expansion Project DEIS/EIR

Re: Los Vaqueros Resrvoir Expansion Draft EIS/EIR

Dear Ms. Naillon:

The East Contra Costa County Habitat Conservancy (ECCCHC) appreciates the opportunity to respond to the Draft Environmental Impact Report (DEIR) for the proposed Los Vaqueros Reservoir Expansion. The ECCCHC is a Joint Exercise of Powers Authority formed by the Cities of Brentwood, Clayton, Oakley and Pittsburg and Contra Costa County to implement key conservation measures of the East Contra Costa County Habitat Conservation Plan / Natural Community Conservation Plan (HCP/NCCP or Plan). The HCP/NCCP is intended to provide an effective framework to protect and restore natural resources in eastern Contra Costa County, while improving and streamlining the environmental permitting process for impacts on endangered species. The Plan sets forth requirements for land acquisition, habitat restoration and habitat enhancement and management to benefit species and natural communities. The HCP/NCCP inventory area is located in the eastern portion of Contra Costa County and includes areas that will be impacted by the proposed reservoir expansion. 1

The ECCCHC is cooperating with the East Bay Regional Park District (EBRPD) in their acquisition of a 190-acre property located at 6100 Armstrong Road (Property) adjacent to the Byron Airport Habitat Management Lands (See Figure A: Local Vicinity Map). EBRPD entered into a Purchase and Sale Agreement for the Property on March 8, 2008 and EBRPD and the ECCCHC have executed an agreement for cooperating in EBRPD's purchase of the Property. EBRPD intends to assume title to the Property by June 30, 2009. The Property will become part of the HCP/NCCP Preserve System. 2

The Property is being purchased for existing on-site biological resources as well for its potential to support a significant wetland restoration project. The North Fork of Brushy Creek runs across the property. There are also a number of wetlands on site (a delineation of existing wetlands has been performed and is available upon request). The ECCCHC and EBRPD have developed detailed constructions plans and specifications for the restoration of wetlands and parts of the creek on the northern part of the Property (See Figure B: Restoration Project Overview.) With the cooperation of the ECCCHC, EBRPD intends to solicit bids and award a construction contract for this project in summer of 2009.

The Draft EIS/EIR identifies Armstrong Road as the proposed alignment for a potential new Transfer-Bethany Pipeline that would be constructed under Alternatives 1 and 2 in the DEIR. Wetland and wildlife resources exist on both sides of the Armstrong Road in this area. The Property lies on the west side of Armstrong Road and existing wetland resources are located immediately adjacent to the road where a berm protects the road from flooding. The creek and wetland restoration project planned for construction this summer on the Property will have features located throughout the property, but the greatest concentration of restored features will be located along the lowest part of the Property, the eastern edge adjacent to Armstrong Road. The Byron Airport Habitat Management Lands on the eastside of the road contains a number of restored and preserved wetland features, including a linear pond feature which parallels Armstrong Road on the east. Impacts to existing and planned wetland resources in this vicinity should be avoided and minimized. Any impacts that cannot be avoided and minimized should be fully mitigated. 3

We would be happy to discuss this potential conflict with the Contra Costa Water District and other concerned parties to explore opportunities for avoiding and minimizing impacts to resources on the Property.

Thank you for you consideration of these comments.

Sincerely,

John Kopchik
Executive Director

Figure A. 6100 Armstrong Road, Byron CA Vicinity Map

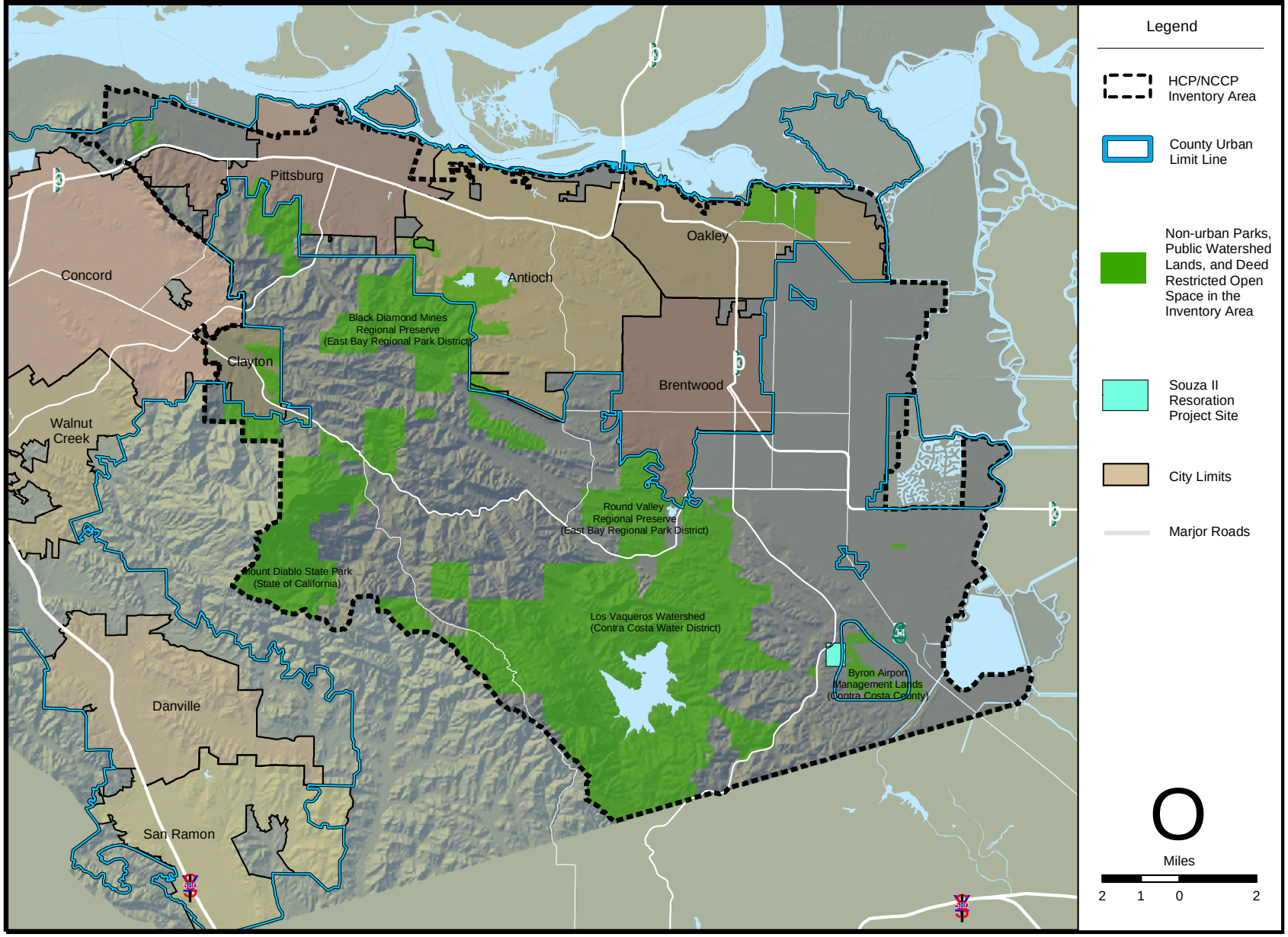
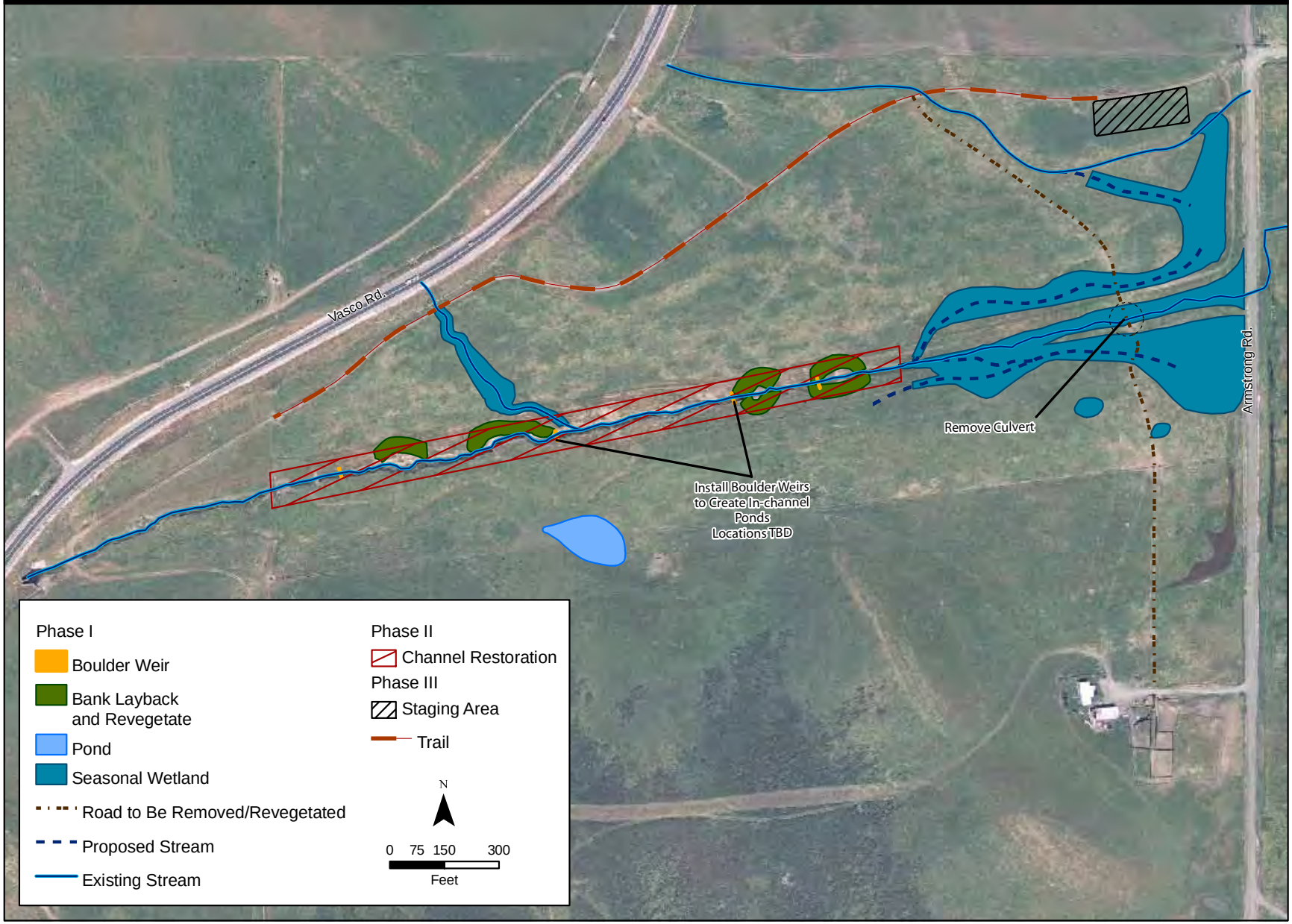


Figure B. Restoration Project Overview





Subject: Los Vaqueros EIR
Date: Mon, 20 Apr 2009 09:07:05 -0700
From: Craig_Murray@ci.richmond.ca.us
To: wmoore@mp.usbr.gov
CC: axharris@sbcglobal.net; lvstudies@hotmail.com

Louis Moore
Bureau of Reclamation
2800 Cottage Way, MP-700
Sacramento CA 95825

In regards to expanding the subject Reservoir over two and a half times its current size, please find comments below:

* Develop bicycle and trail access from the south visitor area to the north visitor area;
* Develop a paved multi-use path that is open to the public;
* Consider placing lights and benches and tables for visiting public;
* Develop bicycle-able connections to neighboring parks;
* Develop Reservoir with Green features

1

2

Regards,

= Craig K. Murray =

Craig K. Murray, SR/WA

Development Project Manager II

Richmond Community Redevelopment Agency

1401 Marina Way South

Richmond, CA 94804

Bus: (510) 307-8140

Direct: (510) 621-1262

Fax: (510) 307-8149

Craig_Murray@ci.richmond.ca.us

Windows LiveT: Life without walls. Check it out.
<http://windowslive.com/explore?ocid=TXT_TAGLM_WL_allup_1b_explore_042009>

P.O. Box 262
1540 Discovery Bay Blvd., Ste. "A"
Discovery Bay, CA 94514

Office: 925-634-2351
Fax: 925-634-2089
Web: www.rd800.org

RECEIVED
MAY 07 2009
ASST.GEN.MGR.

May 5, 2009

Greg Gartrell
Assistant General Manager
Contra Costa Water District
P.O. Box H20
Concord, CA 94524-2099

Re: Los Vaqueros Expansion Project – Comments on Draft Environmental Impact Report

Dear Mr. Gartrell:

For the past fifteen years, Reclamation District No. 800 (Byron Tract) (RD 800) has enjoyed a very cooperative agreement with Contra Costa Water District (CCWD), which has benefited both of our districts and all of the residents of Contra Costa County. In the spirit of that cooperative relationship, our District very much appreciates the opportunity to comment on the Draft Environmental Impact Report for the expansion of Los Vaquerous Reservoir (Draft EIR) and we have the following comments.

As I mentioned above, RD 800 and CCWD have had a very cooperative agreement over the past fifteen years. Because of that relationship, RD 800 assumes that any work that CCWD may need to undertake within the boundaries of RD 800 will be treated as if it were subject to our 1994 agreement. That agreement, as you know, generally requires that CCWD facilities built on land held by RD 800 to meet our District's construction standards and not interfere with our District's operations. Moreover, in the event that CCWD's construction activities, operational activities, or maintenance activities have an adverse effect on or create liability for RD 800 or its residents/landowners, the 1994 agreement requires CCWD to repair the damage or otherwise make RD 800 or its residents/landowners whole for the damage or adverse effects. RD 800 proposes that all of the activities that are part of the Los Vaqueros expansion project be subject to these assurances, which would be memorialized by another amendment to the 1994 agreement. 1

RD 800's engineers, Kjeldsen, Sinnock and Neudeck, Inc., have reviewed the Draft EIR and have a number of technical comments, which are attached to this comment letter and incorporated herein by reference.

Thank you again for the opportunity to comment on the Draft EIR. Please feel free to call if you have any questions regarding these comments.

We look forward to the completion of the project and the continuation of the cooperative relationship between RD 800 and CCWD.

Very truly yours,

Jeffrey D. Conway
District Manager

cc: Board of Trustees

995593.2

KJELDSEN, SINNOCK & NEUDECK, INC.
CIVIL ENGINEERS AND LAND SURVEYORS

STEPHEN K. SINNOCK
CHRISTOPHER H. NEUDECK

KENNETH L. KJELDSEN
RETIRED

711 NORTH PERSHING AVENUE
POST OFFICE BOX 844
STOCKTON, CALIFORNIA 95201-0844

TELEPHONE (209) 946-0268
FAX (209) 946-0296
E-MAIL ksn@ksninc.com

0855-0420
04-001

April 9, 2009

Mr. David Aladjem
Downey Brand
621 Capitol Mall, 18th Floor
Sacramento, CA 95814

Re: Review of the Draft EIR/EIS, February 2009, for the
Los Vaqueros Reservoir Expansion Project
Reclamation District 800 – Byron Tract

Dear Mr. Aladjem:

On behalf of RD 800, KSN has performed a review of the referenced Draft EIR/EIS. A list of technical comments and/or concerns is as follows:

- **Impact 4.2.1 – Deliveries of Water to Other Users**: The EIR/EIS acknowledges that "each of the alternatives would alter the quantity, location, and timing of water diversions from the Delta to varying degrees" and states that the "analysis addresses the potential for these changes to affect deliveries of water to other users". However, it appears that the EIR/EIS only addresses changes to Central Valley Project (CVP) and State Water Project (SWP) annual exports. It does not include effects on agricultural diversions to local Delta farmers nor to the water borne community of Discovery Bay. Furthermore, the EIR/EIS does not clearly provide information regarding proposed CCWD diversions from the Old River (existing and new) and AIP pump stations and compare them with current levels. Specifically, it would be useful to know the total annual export volume, timing of exports throughout the year, and maximum flow rates from the above-mentioned pump stations for both the proposed and current conditions in order to fully understand the effects on water deliveries to other users. 2

- **Impacts 4.2.2 & 4.2.3 – Changes to Delta Water Quality**: Table 4.2-16 of the EIR/EIS is intended to "present the number of days of standards violations in the Existing and Future Without Project conditions, and the changes in the number of days that standards could be violated under the project alternatives". However, it is unclear as to exactly what the listed days represent. Do the listed days refer to the number of days per year that a standards violation will occur? If so, most of the listed days exceed the number of days in a year. Furthermore, many of the listed changes from existing condition appear to be significant (up to a 12% change), contrary to the text which states that "statistical analysis confirms that no statistically significant changes exist in the numbers of potential violations". Additional clarification regarding Table 4.2-16 needs to be provided. Also, the EIR/EIS does not address impacts to water quality at the tidal bays and interior lake 3 4

circulation waters of Discovery Bay. These waters are extremely sensitive to any sort of degradation of water quality due to the lack of any natural inflow and the sole reliance on tidal flows to flush out these waters. 4 Cont.

- **Impact 4.2.4 – Delta Water Levels**: The EIR/EIS states that "Delta water users have a substantial interest in maintaining Delta water levels so that their siphons and pumps, installed at fixed elevations, can continue to divert water onto Delta islands for agricultural irrigation". According to Table 4.2-19, it appears that maximum water level decreases are generally less than 0.1' with the exception of Alternative No. 3. A larger water level decrease as indicated with Alternative No. 3 could conceivably lead to devastating results for a farmer if the decrease occurred in the middle of a watering cycle and disrupted the operability of the siphon. Further information regarding quantities and timing of CCWD diversions would be useful in order to fully understand the effects on Delta water levels (see comments to Impact 4.2.1). 5

- **Impact 4.5.6 – Risks Associated with Dam Failure**: The EIR/EIS states that "Contra Costa County has prepared a current emergency evacuation plan that reflects the inundation scenario associated with the existing facility" and that "this inundation map would be updated and submitted as part of the design process". However, the potential flooding of an urban area such as Discovery Bay in the event of a dam failure is a significant impact which merits careful analysis and mitigation at this point in the planning process. The EIR/EIS needs to include a plan of the probable path that floodwaters will flow in the event of a dam failure along with a discussion of structural protective measures (e.g. additional levees) that may be required to contain floodwaters and protect populated areas. An updated inundation map and emergency evacuation plan needs to be developed now in order to identify necessary mitigation measures. 6

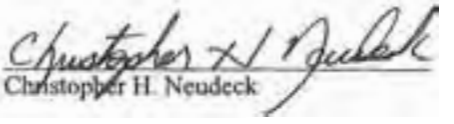
- **Impact 4.5.6 – Risks Associated with Levee Failure**: The EIR/EIS states that "a new setback levee would be constructed" and "construction activities for the new intake… would not be initiated until after completion of the setback levee". It goes on to state that "CCWD would be required to design and construct levee modifications with input and approval of RD 800". RD 800 acknowledges that the EIR/EIS adequately emphasizes the importance of not interfering with RD 800 flood protection operations. Also, RD 800 expects that CCWD will adhere to the same ongoing mitigation strategy that has been in place since 1994 as impacts to RD 800 facilities continue to be addressed. 7

- **Impact 4.8.1 – Temporary Impacts to Farmland**: The EIR/EIS states that CCWD will "ensure that the existing drainage systems at proposed project sites needed for farming activities function as necessary to avoid disrupting agriculture". Near the locations of the existing and proposed Old River pump stations are drainage facilities that serve the majority of Byron Tract and not just farming activities solely. RD 800 would like the EIR/EIS to emphasize the importance of not interfering with any of RD 800 drainage operations. Also, RD 800 expects that CCWD will adhere to the same ongoing mitigation strategy that has been in place since 1994 as impacts to RD 800 facilities continue to be addressed. 8

In summary, the main concern of RD 800 is the lack of information detailing the projected total volumes, timing, and maximum flow rates of CCWD diversions from Old River

and comparing them to current conditions. Without this information, it is difficult to fully understand and determine the adverse effects that the Los Vaqueros Reservoir Expansion Project will have on beneficial Delta uses.

Sincerely,
KJELDSEN, SINNOCK & NEUDECK, INC.



Christopher H. Neudeck

cc. Jeffrey D. Conway, gen. mgr

From: Diane Moore [mailto:DMoore@valleywater.org]
Sent: Tuesday, April 21, 2009 9:53 AM
To: 'lvstudies@hotmail.com'
Cc: Marguerite Naillon; 'wmoore@mp.usbr.gov'; Kellye Kennedy; Sandy Oblonsky
Subject: Comment Letter on LVE Draft EIS/EIR

Dear Ms. Naillon and Mr. Moore:
Enclosed please find the Santa Clara Valley Water District's Comment Letter on the LVE Draft EIS/EIR.
A hard copy will be sent to each of you in addition to the electronic document.
If you have any questions, please contact Kellye Kennedy at (916) 447-1534 or (408) 202-2561.

Sincerely,

Diane Moore
Project Coordinator
Santa Clara Valley Water District



Santa Clara Valley Water District SM

5750 ALMADEN EXPWY
SAN JOSE, CA 95118-3686
TELEPHONE (408) 265-2600
FACSIMILE (408) 266-0271
www.valleywater.org
AN EQUAL OPPORTUNITY EMPLOYER



April 21, 2009

Marguerite Naillon
Contra Costa Water District
P.O. Box H2O
Concord, CA 94524

Louis Moore
Bureau of Reclamation
2800 Cottage Way, MP-700
Sacramento, CA 95825-1898

Subject: Los Vaqueros Reservoir Expansion Project Draft Environmental Impact Statement/Environmental Impact Report

Dear Ms. Naillon and Mr. Moore:

The Santa Clara Valley Water District (District) thanks you for this opportunity to provide comments on the subject Draft Environment Impact Statement/Environmental Impact Report (Draft EIS/EIR). The District is identified as one of three South Bay water agencies who may benefit from the Los Vaqueros Expansion Project (LVE Project) Project through improved water supply reliability and water quality. The Draft EIS/EIR states that the evaluation of benefits of this report is intended to provide information to potential project participants. After our review of the document we are concerned that the estimated fishery and water supply reliability benefits may be overstated and believe that the Draft EIS/EIR is deficient because it does not include an evaluation of the Los Vaqueros Expansion Project (LVE Project) within the context of current and developing understanding of Delta risk factors (e.g. seismicity), nor does it contemplate any relationship to the Bay-Delta Conservation Plan (BDCP) and Delta Habitat Conservation and Conveyance Plan (DHCCP) processes. Our comments related to these issues and others are as follows:

1. Fishery Benefits or "Environmental Water"

It is our understanding that fishery benefits are achieved when State Water Project (SWP) supplies are delivered to the SBA contractors through Banks Pumping Plant under no project conditions, but, with the project, would instead be diverted through Contra Costa Water District's (CCWD) positive-barrier fish screens. The Central Valley Project (CVP) and State Water Project (SWP) Delta export pumping would be reduced correspondingly. CCWD estimates 100

1

The mission of the Santa Clara Valley Water District is a healthy, safe and enhanced quality of living in Santa Clara County through watershed stewardship and comprehensive management of water resources in a practical, cost-effective and environmentally sensitive manner.

to 150 TAF per year of water would qualify as "environmental water" under Alternative 1. Dedicated storage for environmental water is an additional component under Alternative 2. This is storage to be used for delta fish protection, refuge delivery, in-stream flows, or other environmental purposes. We question the actual benefit to fish by diverting SBA deliveries through the LVE facilities instead of Banks Pumping Plant.

Since the State and Federal pumps will already be constrained by Old and Middle River (OMR) flow restrictions imposed by the biological opinions, it would seem the actual benefits would be minimal. Because the maximum State and Federal pumping limits will already correspond to a level that the U.S. Fish and Wildlife Service and the National Marine Fishery Service consider safe for covered species, it is unlikely that further reduction in pumping provided by the LVE Project would provide significant added benefits.

Page 4.3-89 through 4.3-94: According to the particle tracking analysis, there is very little change in percent entrainment for particles released at most locations in the Delta when comparing the with and without project alternatives. At a particular point strongly subject to the influence of CCWD and SWP and CVP pumps (Middle River at Empire Cut) Table 4.3-23 indicates that entrainment under alternatives may be reduced by up to 10% for buoyant, passively drifting particles in the spring. It appears that this reduction is at least partially due to the assumption that a portion of the particles do not pass through CCWD's Old River and AIP screens (see pg. C7-38, screen exclusion efficiency calculation); however, this method does not determine the ultimate fate of the larvae that are not entrained in the AIP intake. These excluded larvae could be impinged or entrained in other diversion facilities, reducing the anticipated benefits of the project. The EIR/EIS does not address this issue.

1 Cont.

The analysis of reduction in entrainment index associated with the alternatives (see Table 4.3-22 and Appendix C-7) appears to exaggerate the percent reduction because it does not compare the reduction to entrainment caused by total CVP and SWP pumping, but instead limits the comparison to CCWD pumping and CVP and SWP pumping for SBA contractors only (see pg 4.3-88). The analysis should compare the reduction in entrainment index associated with the alternatives relative to the total entrainment of both CCWD and total CVP and SWP pumping without the proposed project. Doing this would result in substantially lower and potentially insignificant reductions and would be a more accurate representation of the potential benefits provided.

Appendix C: As indicated on page C3-13 and Tables C4-3, C4-8, C4-13, and C4-18, additional water diverted for environmental purposes under Alternative 2 would take place in a manner similar to water diverted to restore Delta supply to SBA contractors (described below). About the same increase in pumping (20 thousand acre-feet (TAF)/month, or 330 cubic feet per second (cfs)) would occur during periods of restricted OMR flow, and, as discussed below, these diversion will likely impact the CVP and SWP's ability to meet OMR flow constraints. Diversions at the SWP and CVP pumps could be reduced to compensate for CCWD's increased diversions. This would constitute an impact on the SWP and CVP, and on the District as a contractor of both projects.

2. Water Supply Reliability Benefits

In the Draft EIS/EIR, CCWD envisions that direct diversions and additional water supplies stored in an expanded Los Vaqueros Reservoir would partially restore delivery reductions to the SBA contractors that are occurring due to regulatory restrictions at the SWP and CVP Delta export pumps. This would be water over and above what CCWD is estimating would be delivered to the SBA contractors in the absence of the project and constitutes about 20 TAF/yr (see Table 4.2-4). This water is anticipated to be supplied through additional diversions during Delta "excess" conditions for either direct delivery or for storage in Los Vaqueros Reservoir for later release (page C3-13). These additional diversions are also anticipated to increase CCWD's deliveries by about 3 TAF per year during extended droughts.

Our review of the modeling analysis in Appendix C shows that CCWD's analysis assumes that CCWD is not subject to Old and Middle River ("OMR") flow constraints imposed annually from December through June by the USFWS biological opinion. That is, when limits are set on reverse OMR flows that constrain pumping at Banks and Jones pumping plants, CCWD assumes it can divert water without consideration of these OMR constraints. Tables C4-3, C4-8, C4-13, and C4-18 show that under both Alternatives 1 and 2, additional diversions of approximately 20 TAF per month, totaling approximately triple those under the no-project scenario, occur December through June and are presumed to be unconstrained by restrictions placed on OMR reverse flows during this period. We believe this assumption is problematic. CCWD's diversions from the Old River and Victoria Canal intakes will contribute to OMR reverse flows; consequently, any increase in CCWD's diversions when OMR reverse flows are restricted could result in an impact to the SWP and CVP. The existing biological opinion currently limits OMR reverse flow to -1250 to -5000 cfs from December through June; CCWD's estimated increase in diversions of approximately 20 TAF per month corresponds to an increased diversion rate of 330 cfs, which is substantial when compared to these flow restrictions.

CCWD contemplates diversion of water under its Los Vaqueros water rights as well as diversion of water under its CVP contract. CCWD's water rights for Los Vaqueros Reservoir are junior to the SWP and CVP rights; the EIS/EIR states that "CCWD's separate Los Vaqueros water rights are subject to permit terms and conditions to ensure they do not adversely affect the CVP and SWP operations under the water rights held by Reclamation and DWR." (Page 4.2-9). If indeed CCWD were allowed the diversions projected in the EIR/EIS during periods of OMR restriction, there is a substantial risk that diversions at the SWP and CVP pumps would be reduced to compensate for those diversions. We believe this would constitute an impact on the SWP and CVP.

2

3. Dry year storage and increased emergency water storage

We understand that an expanded Los Vaqueros Reservoir is anticipated to provide additional water to SBA contractors and CCWD during dry years and would help these agencies to ameliorate shortages caused by natural disasters and other emergencies. CCWD's modeling results indicate that approximately 60% of its increased diversions under Alternatives 1 and 2 would occur when OMR flow restrictions apply. As explained in the prior paragraph, we find this assumption problematic. Therefore, we believe the quantity of additional water that could be stored, and consequently provide dry year and/or emergency water benefits, is likely overestimated.

3

4. Impact analysis (p. 4.2-43 through 4.2-54) is insufficient:

The evaluation of whether project alternatives would adversely alter deliveries of water to other users is based on a comparison of CALSIM model results to "no project" conditions.

a. The analysis bases its evaluation of impacts to SWP and CVP exports on a comparison of average annual total exports in various hydrologic year types, which is consistent with the limitations of the CALSIM modeling tool. However, the impact of additional diversions under Alternatives 1 and 2 will be felt most keenly during periods when OMR flows are restricted. For instance, diversions for the LVE project of approximately 300 cfs, as modeled, could result in significant reductions in SWP and CVP exports when OMR flows are moderately to severely restricted. Water diverted into the LVE project would be pulled from Victoria Canal, which draws directly from Middle River, and also from Old River-Diversions for the LVE project could very well increase reverse flows on Old and Middle Rivers. Consequently, there is a risk that those reverse flow increases would need to be offset by reductions in SWP and CVP pumping to satisfy OMR restrictions. If this occurs during a hot June, for instance, when San Luis Reservoir is being drawn down at its maximum rate and exports are insufficient to meet immediate demands for water, a reduction in SWP and CVP pumping caused by CCWD diversions would be a significant impact, even if more water were exported later in the year such that the total amount of water pumped over the course of the year is unaffected. The point here is that a simple comparison of total annual exports is insufficient to evaluate the real impacts of this proposed project on other water users. The document should provide a discussion of how actual CVP and SWP real-time operational decision-making could be affected by the proposed project, preferably through consultation with DWR and CVP project operators.

4

b. Many of the comparisons in Tables 4.2-9 through 4.2-14 show *increases* in CVP and SWP exports over no-project conditions; this is strange, given that the CVP and SWP exports shown in Tables 4.2-9 through 4.2-14 do not include "delta supply restoration" deliveries to SBA contractors in Alternative 1. The EIS/EIR states that deliveries increase under the alternatives but does not evaluate how this could possibly be the case. Alternatives 1 and 2

divert more water from the delta for CCWD's proposed project – how could this translate into increased annual exports by the CVP and SWP? The lack of both explanation and apparent rationale for this result suggests that the CALSIM model may be overestimating CVP or SWP deliveries under the alternatives, or that the percent change from existing conditions estimated by the model is within the range of model error. Please provide some explanation for these values.

c. Table 4.2-12 indicates that annual CVP exports could be decreased by approximately 18.5 TAF in below-normal years under 2005 level of development (LOD) if Alternatives 1 and 2 are implemented. Notwithstanding our concerns about the accuracy of these CALSIM results, an 18.5 TAF reduction in below normal years is substantial, particularly if this occurs during a multi-year drought. Similarly, annual SWP exports are projected to drop 21.7 TAF under the 2030 LOD under severe fishery restrictions for Alternative 1 (Table 4.2-12). Again, this is a significant and unacceptable reduction in below-normal years.

4 Cont.

5. Impact analysis of project alternatives on Old and Middle River reverse flows is inadequate.

On page 4.3-85, the EIS/EIR states that project alternatives "could cause small positive and negative changes in the net flow. The changes attributable to the project alternatives are generally very small, rarely greater than 200 cfs." However, as shown on Tables 4.3-20 and 4.3-21, the OMR flow values shown are long-term monthly averages; the use of long term averages masks large impacts in individual months and years and hydrologic year types. The analysis should provide the maximum reverse flows and frequencies as well as increases in reverse flows by year type. Even with the dampening effect of long-term averages, an increase in reverse flows of nearly 200 cfs constitutes an increase in reverse flows of nearly 90% in May (2005 LOD). Looking at percentage increase above the baseline, other substantial increases in reverse flows can be seen in Tables 4.3-20 and 4.3-21 (approximately 40% increase in March under moderate fishery restrictions, 50% increase in May under 2030 LOD severe restrictions, and 20% increase in March under 2030 LOD with moderate restrictions, to name a few examples). On page 4.3-85, the EIS/EIR concludes that these increases in reverse flows are insignificant on the basis of a comparison to maximum approach velocities at fish screens to avoid entrainment of delta smelt. This comparison seems inappropriate because it compares the effect of increasing reverse flows (larger is worse for fish) to required flows moving (typically downstream) across fish screens (larger is better for fish). The rationale for this comparison is unclear.

5

The impact of the project alternatives on OMR flows is relevant in that the State and Federal project operators will likely respond to those impacts by reducing exports to SWP and CVP contractors during periods when OMR reverse flow restrictions are limiting exports. For example, an increase in reverse flows of -200 cfs in a month could result in a commensurate decrease in SWP or CVP exports of 200 cfs, or a water cost of 12,000 acre-feet. This is a

substantial amount of water, particularly in drier years when every acre-foot of water is both valuable and scarce. The EIS/EIR does not convincingly evaluate the proposed project's potential for significantly impacting the water supply of SWP and CVP contractors.

5 Cont.

6. Coordination with the BDCP and DHCCP

We recommend evaluating an LVE Project in coordination with the BDCP and DHCCP planning efforts and in addition, evaluating a new LVE Project alternative that could be integrated with potential outcomes and facilities now under investigation in the BDCP and DHCCP planning efforts. The Draft EIS/EIR implies that the BDCP was not included in the cumulative impact analysis because it does not meet the criteria of a "reasonably and foreseeable" project. While that may be the case for the Draft EIS/EIR, it is reasonable to assume that the development of the BDCP will be far enough along that it should be analyzed and included in the final LVE Project EIS/EIR.

The BDCP is a planning and environmental permitting process being conducted pursuant to the Endangered Species Act and is expected to result it take permits for the SWP and CVP as part of a comprehensive habitat conservation/natural communities conservation plan. The LVE Project as described in the Draft EIS/EIR will require very closely coordinated operations with both the SWP and CVP. It's imperative that the decision makers for the LVE Project understand how this project will work in coordination with the BDCP and such information is not included in the EIS/EIR.

6

7. Specific Comments on the Executive Summary

Page ES-2, 3rd paragraph: The sentence about the advisory vote is misleading. There's no mention of the constraints imposed by the ballot measure (though they are appropriately included later on page ES-7).

7

Page ES-3, 2nd bullet under Purpose & Need: It's not "insufficient quantities of water"; it's "insufficient access to available water supplies in the system" that's been more of a problem in recent years. There have been significant limitations in the amount of water able to be pumped by the SWP/CVP over the last two years because of operating constraints imposed by the Endangered Species Act.

8

Page ES-7, Last sentence: We agree that the LVE Project planning and potential implementation is independent of Delta Vision planning efforts; however, we disagree with the statement that decisions on how to proceed with an LVE Project are not tied to the implementation of the Delta Vision Strategic Plan. The District, one of the local agencies identified as a potential participant, is considering the BDCP in our decision making process and believe Reclamation, DWR and the other SBA Contractors are doing the same. This paragraph should be modified to reflect how the LVE Project will be coordinated with the parallel planning efforts of the Delta Vision Strategic Plan and BDCP.

9

Page ES-31, "Delta Sustainability": The last sentence states that the LVE Project can be coordinated with the long-term (Delta) solutions as they are developed. As previously stated, we believe the BDCP and other efforts underway need to be recognized as reasonably foreseeable solutions and the document should describe and analyze how these efforts would be coordinated.

9 Cont.

In conclusion, we request CCWD and Reclamation redo the modeling analysis to address the concerns expressed in this letter. We continue to have many questions regarding the operations, financial feasibility of the LVE Project and the proposed cost allocation but understand that these issues are being addressed in the draft feasibility report scheduled to be available for public review later this year. We encourage Reclamation and CCWD to coordinate closely with the District and other CVP and SWP Contractors in their financial assessments of the proposed LVE Project.

10

Again, thank you for this opportunity to provide comments on the Draft EIS/EIR and we look forward to further discussions of these issues in the near future.

Sincerely,

Sandy Oblonsky

Sandy Oblonsky
Assistant Officer
Office of Water Utility Enterprise Planning

Cc: Zone 7 Water Agency, Attn: Kurt Arends; Alameda County Water District, Attn: Eric Cartwright

Bcc: G. Zlotnick, J. Maher, C. Kao, F. Brewster; A. Fowler, B. Cabral, E. Cote



------ Forwarded Message
From: Los Vaqueros <lvstudies@hotmail.com>
Date: Tue, 21 Apr 2009 13:10:58 -0700
To: Andrea Nocito <a.nocito@circlepoint.com>
Conversation: Comments on the Draft EIS/EIR SRCSD
Subject: FW: Comments on the Draft EIS/EIR SRCSD

Subject: Comments on the Draft EIS/EIR SRCSD
Date: Tue, 21 Apr 2009 11:57:27 -0700
From: brennanv@sacsewer.com
To: lvstudies@hotmail.com
CC: wmoore@mp.usbr.gov

Attached is a comment letter from the Sacramento Regional County Sanitation District on the Draft EIS/EIR for the Los Vaqueros Reservoir Expansion Project. Please contact me if you have questions or desire more information.

Vicki Brennan
Secretary to Stan Dean
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Sacramento Area Sewer District
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Wastewater Treatment



April 21, 2009

Marguerite Naillon, Special Projects Manager
Contra Costa Water District
Attn: Los Vaqueros Reservoir Expansion Project DEIS/EIR
P.O. Box H2O
Concord, CA 94524

Subject: Comments in Response to the Draft Environmental Impact Statement and Environmental Impact Report for the Los Vaqueros Reservoir Expansion Project

Dear Ms. Naillon:

Sacramento Regional County Sanitation District (SRCSD) appreciates the opportunity to offer comments on the Draft Environmental Impact Statement/Environmental Impact Report (Draft EIS/EIR) prepared to evaluate the environmental impacts of expansion of Los Vaqueros Reservoir (Los Vaqueros Expansion Project). The expansion project and the associated environmental evaluation are of interest to SRCSD.

SRCSD provides wastewater collection and treatment services to 1.3 million residents of the greater Sacramento area. SRCSD designed and operates its treatment system in accordance with its National Pollutant Discharge Elimination System (NPDES) permit, issued by the State of California, providing protection of beneficial uses of the Sacramento River and Sacramento-San Joaquin Delta. We are very concerned with sustainability of the Delta and believe that any changes to the hydrology of the Delta must carefully evaluate environmental impacts of those changes to ensure a healthy ecosystem. SRCSD's comments relate to the cumulative impacts analysis of the Draft EIS/EIR and the water quality related impacts of diverting additional water on the fisheries and aquatic resources of Old River and the Delta.

The Draft EIS/EIR analyzes the cumulative water quality impacts to which the Project may contribute by considering "a list of reasonably foreseeable future projects and actions affecting Future Without Project conditions." (Draft EIS/EIR at p. 4.1-5.) The list of reasonably foreseeable future projects, however, does not include either SRCSD's 2020 Master Plan, which calls for improvement and expansion of the Sacramento Regional Wastewater Treatment Plant (SRWTP), or the Bay Delta Conservation Plan (BDCP), which proposes measures aimed at conservation and management of aquatic ecosystems and natural communities affected by diversions of water from the

San Francisco Bay Delta. The Draft EIS/EIR explains that the BDCP "is in the early stages of planning, and quantitative information available from that planning process is insufficient for inclusion in this cumulative impacts analysis." (Draft EIS/EIR at p. 4.2-69.) Our comments on these two areas are discussed in more detail below.

SRCSD's 2020 Master Plan contemplates increasing SRWTP discharge to the Sacramento River to 218 million gallons a day, monthly average dry weather flow. While SRCSD has found that the proposed improvement and expansion of SRWTP facilities would have no significant effect on water quality in the Sacramento River or the Delta, Contra Costa Water District (CCWD) has alleged several potential water quality impacts associated with the 2020 Master Plan. This is of course a subject of current litigation, but it remains true that increased discharge from the SRWTP is reasonably foreseeable both as to increases beyond current flows to the permitted flow of 181 mgd, and to flows of up to 218 mgd. If CCWD continues to maintain that the 2020 Master Plan will affect Delta water quality in the coming years, then the 2020 Master Plan needs to be included in the list of reasonably foreseeable future projects considered in the cumulative impacts analysis of the Draft EIS/EIR. 1

Although the BDCP is in the planning stage, over the past few months the BDCP Steering Committee has released drafts of conveyance alternatives, water operations conservation measures, habitat restoration measures, "other stressors" conservation measures, and several other documents that indicate the likely direction of the BDCP and its effect on Delta diversions. These documents are available from the California Department of Water Resources at http://resources.ca.gov/bdcp/current_documents_and_working_drafts.html. Even assuming the BDCP may have been too speculative for inclusion in the cumulative impacts analysis at the time of the release of the Notice of Preparation for the Los Vaqueros Expansion Project, the BDCP has developed substantially in recent months. Because the BDCP will undoubtedly have substantial effects on the physical configuration of the Delta, Delta pumping operations and Delta hydrology, the Draft EIS/EIR should consider the draft BDCP measures in its cumulative impacts analysis. 2

Neither the Delta Fisheries and Aquatic Resources (Draft EIS/EIR section 4.3) nor the Delta Hydrology and Water Quality (Draft EIS/EIR section 4.2) sections of the Draft EIS/EIR specifically examine the potential impacts of diverting additional water on the water temperature, dissolved oxygen (DO), and other important water quality conditions in regimes of the Old River and downstream water bodies and the associated potential impacts on aquatic biological resources (e.g., direct physiological effects, thermal/DO barriers). Given the highly impacted condition of the Delta with regards to fish populations, we feel that such an assessment is necessary for any project that proposes to divert additional water from Delta water bodies. 3

SRCSD appreciates the opportunity to provide these comments on the Draft EIS/EIR. Please advise SRCSD when the Final EIR and responses to comments are available and include SRCSD on the mailing and notice list for receipt of notice of any hearing on the Project and EIR. Pursuant to CEQA, Public Resources Code section 21092.2, please provide SRCSD with a copy of any Notice of Determination filed for the Project. Please contact me at 916 -875-9101, if you have any questions.

Sincerely,

Stan R. Dean
District Manager

cc: Louis Moore, Bureau of Reclamation
Mary Snyder, SRCSD



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-----Original Message-----
From: Los Vaqueros [mailto:lvstudies@hotmail.com]
Sent: Tue 4/21/2009 11:02 AM
To: Andrea Nocito
Subject: FW: Los Vaqueros Reservoir Expansion Project Draft EIS/EIR Comments

---

Subject: Los Vaqueros Reservoir Expansion Project Draft EIS/EIR Comments
Date: Tue, 21 Apr 2009 10:41:36 -0700
From: ADvorak@swc.org
To: lvstudies@hotmail.com; wmoore@mp.usbr.gov
CC: terlewine@swc.org; mnaillon@ccwater.com

Please see the attached SWC letter regarding the Los Vaqueros Reservoir Expansion Project Draft EIS/EIR. Please let me know if you have any questions or comments.

Cheers!

Allison Dvorak
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April 21, 2009

Marguerite Naillon
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RE: Los Vaqueros Reservoir Expansion Project Draft EIS/EIR

Dear Ms. Naillon:

The State Water Contractors (SWC) submits these comments regarding the Draft Environmental Impact Statement/Environmental Impact Report (DEIS/EIR) for the Contra Costa Water District (CCWD) and US Bureau of Reclamation (Reclamation) Los Vaqueros Reservoir Expansion Project (reservoir expansion project). As described in the DEIS/EIR, CCWD and Reclamation propose through the reservoir expansion project to enlarge the existing reservoir, build a new intake and pump station and conveyance facilities, provide modified and new power supply facilities, and replace and enhance recreation facilities. Implementation of the reservoir expansion project is intended to develop water supplies for environmental water management for Delta fisheries and improve water supply reliability and water quality for urban users in the San Francisco Bay Area.

The SWC is an organization representing 27 of the 29 public water entities[1] that hold contracts with the California Department of Water Resources (DWR) for the delivery of water from the State Water Project (SWP). Collectively, the members of the SWC provide all, or a part, of the water supply delivered to approximately 25 million Californians, roughly two-thirds of the State's population, and to over 750,000 acres of irrigated agriculture. The members of the SWC provide this water to retailers, who, in turn, serve it to consumers throughout the San Francisco Bay Area, the San Joaquin Valley, the Central Coast, and Southern California.

The SWP supply delivered through the Sacramento-San Joaquin Delta constitutes a significant portion of the supplies available to SWC members. As a result, the SWC is very interested in matters affecting the quantity and quality of water supplies in the Delta. Additionally, the South Bay water agencies identified as potential beneficiaries of water supply reliability and water quality improvements are SWC member agencies (i.e., South Bay Aqueduct (SBA) contractors: Alameda County Flood Control and Water Conservation District, Zone 7 (Zone 7), Alameda County Water District (ACWD), and Santa Clara Valley Water District (SCVWD)).

[1] Alameda County Zone 7 Water Agency, Alameda County Water District, Antelope Valley-East Kern Water Agency, Casitas MWD on behalf of the Ventura County Flood Control District, Castaic Lake Water Agency, Central Coast Water Authority on behalf of the Santa Barbara FC&WCD, City of Yuba City, Coachella Valley Water District, County of Kings, Crestline-Lake Arrowhead Water Agency, Desert Water Agency, Dudley Ridge Water District, Empire West-Side Irrigation District, Kern County Water Agency, Littlerock Creek Irrigation District, The Metropolitan Water District of Southern California, Mojave Water Agency, Napa County FC&WCD, Oak Flat Water District, Palmdale Water District, San Bernardino Valley MWD, San Gabriel Valley MWD, San Gorgonio Pass Water Agency, San Luis Obispo County FC&WCD, Santa Clara Valley Water District, Solano County Water Agency, and Tulare Lake Basin Water Storage District.

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SWC
FOUNDED IN 1922

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Joan Maher
Santa Clara Valley Water District

Dan Masnada
Castaic Lake Water Agency

David Okita
Solano County Water Agency

Ray Stokes
Central Coast Water Authority

General Manager
Terry Erlewine

As described in the DEIS/EIR, diversions from the CCWD Old River and Victoria Canal intakes would be used to fill the enlarged reservoir, make direct deliveries to the SBA contractors, and/or make direct deliveries to CCWD. Currently, the Central Valley Project (CVP) and SWP Delta exports are regulated under the US Fish and Wildlife Service (FWS) Operations Criteria and Plan (OCAP) Biological Opinion (BO) during the period of December through June based on allowable Old and Middle River (OMR) reverse flows. Hydrodynamically, diversions from the CCWD Old River and Victoria Canal intakes contribute to reverse flows in OMR, impacting the ability of the SWP and CVP to export Delta water supply. It appears from the description in the DEIS/EIR that the effect of CCWD Old River and Victoria Canal diversions on OMR reverse flows and the subsequent potential effect on SWP and CVP water supply were not considered in the DEIS/EIR water supply analysis. If the reservoir expansion project may potentially affect SWP and CVP water supply, an additional consideration for inclusion in the analysis would be CCWD's water right permit D-1629. Consideration of the effects of CCWD Old River and Victoria Canal diversions on Old and Middle River flows and constraints imposed on these diversions under CCWD's water right permit D-1629 will likely affect the water supply benefits identified in the DEIS/EIR.

Due to the hydrodynamic characteristics of the Delta, OMR flows are difficult to estimate in the context of a modeling analysis. The analysis included in the DEIS/EIR relied on an average of three methods used to estimate OMR flow: a DWR method and two US Geological Survey (USGS) methods. In its Calsim and CalLite modeling, DWR now uses an OMR flow estimation method developed by Paul Hutton (MWD) (Attachment 1). The method developed by Hutton to estimate OMR flow has been shown to more accurately predict OMR flows given hydrologic conditions and may alter the water supply affects demonstrated in the DEIS/EIR.

As previously stated, the CVP and SWP Delta exports are currently regulated under the FWS OCAP BO. Additionally, the National Marine Fisheries Service (NMFS) OCAP BO will be released June 2, 2009 and may include additional Delta hydrologic constraints. The analysis in the DEIR/EIS included consideration of interim OMR flow constraints, but did not include consideration of the operational constraints outlined in FWS OCAP BO which are currently regulating CVP and SWP Delta export operations. Consideration of the FWS OCAP BO and NMFS OCAP BO operational constraints would likely alter the identified effects of the reservoir expansion project.

Based on the observations described above, the SWC believes the water supply reliability benefits demonstrated in the DEIS/EIR are questionable and likely over-stated. To more accurately reflect the effects of the reservoir expansion project, the analysis should be revised to include the following: (1) consideration of CCWD Old River and Victoria Canal diversion effects on OMR flow, (2) compliance with CCWD's water rights permit D-1629, (3) use of the Hutton OMR flow equation, (4) use of operational constraints as outlined in the FWS OCAP BO, and (5) consideration of additional hydrologic constraints in the NMFS OCAP BO.

1

In addition to concerns with the water supply analysis, the SWC has concerns regarding the Delta fishery analysis. A proposed benefit of the reservoir expansion project is identified as a fishery benefit associated with changing the diversion location of a portion of SBA contractor water supply from CVP and SWP Delta export pumps to the CCWD Old River and Victoria Canal diversions with improved fish screens relative to those at the CVP and SWP Delta export pumps. The particle tracking modeling used in the DEIS/EIR analysis appears to unrealistically assume that 100% of particles entering the CCWD Old River and Victoria Canal diversions are at the same time screened from entrainment at those diversion locations and also prevented from entrainment at other diversion locations. This analysis approach leads to an overestimation of the fishery benefits associated with the changed diversion location.

2

Due to these concerns, the SWC believes the fishery benefits identified in the DEIS/EIR are likely over-stated. To more accurately reflect the effects of the reservoir expansion project, the analysis should be revised to: (1) address effects of the CCWD Old River and Victoria Canal diversion on movement of

Delta fish species and (2) utilize screen efficiencies in the particle tracking modeling so that particles are not removed from the system when they encounter the CCWD Old River and Victoria Canal diversions.

2 Cont.

Finally, the Bay Delta Conservation Plan (BDCP) and the Delta Vision are current efforts to develop a long-term solution for Delta water supply and ecosystem conditions. Although these efforts are still in the planning process, information from these efforts suggests that the Delta infrastructure, hydrologic and hydrodynamic regime, and ecosystem conditions may be substantially changed from the current condition. These changes would likely alter the proposed operations and benefits of the reservoir expansion project identified in the DEIR/EIS. Due to the potential changed conditions in the Delta, the analysis of project effects should include an analysis of how the reservoir expansion project would operate in coordination with the BDCP and Delta Vision efforts.

3

We appreciate your consideration of our comments. If you have any questions, please feel free to contact me at (916) 447-7357.

Sincerely,

Terry L. Erlewine
General Manager

cc: Louis Moore, US Bureau of Reclamation

Attachment 1

A Model to Estimate Combined Old & Middle River Flows

By

Paul Hutton, Ph.D., P.E.
Metropolitan Water District of Southern California



FINAL
April 2008

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Executive Summary

Introduction

The abundances of Delta smelt (*Hypomesus transpacificus*) and other pelagic fish species have declined dramatically over the last several years. These population declines are thought to be influenced by chemical pesticide exposure, food-web alterations, and water project entrainment. Studies are ongoing by the Interagency Ecological Program and others to define and understand the nature of these population declines (Armor and Sommer 2006). One such study found a correlation between Delta smelt salvage at the CVP-SWP export pumps and combined Old and Middle River flows near Bacon Island (Smith et.al. 2006). This correlation was a motivating factor to limit upstream (reverse) flows in Old and Middle Rivers (NRDC vs. Kempthorne 2007).

The current configuration of the Delta relies on Old and Middle Rivers to convey water from the Sacramento River to the CVP-SWP export pumps, a pathway that results in reverse flows. Since regulation of these reverse flows can have significant impacts on water project operations, accurate methods are needed to forecast Old and Middle River (OMR) flows.

This report reviews the hydraulics of OMR flows, evaluates the performance and limitations of existing empirical models to predict OMR flow, and documents the development of a new model of OMR flow. The new model was designed as a long-term planning tool that can be incorporated into CALSIM; however, the model also has applicability to short-term operations planning.

Hydraulics of OMR Flow

The USGS gauges tidal flows in Old and Middle Rivers at Bacon Island. Several hydraulic forces determine the volume and direction of flows at these locations. These hydraulic forces, as described in Section 2, may contribute to downstream (positive) flow or may contribute to upstream (reverse) flow. See Figure ES-1.

Performance of Existing Empirical Models of OMR Flow

Currently available empirical OMR flow models can produce widely different estimates. These differences motivated an effort to evaluate the performance and limitations of existing models and to explore methods of addressing these limitations. See Section 3 for details on the evaluation of existing models.

New Empirical Model of OMR Flow

The new empirical OMR flow model presented in Sections 4 through 6, herein referred to as the MWD model, is founded on a simple control volume or water balance. The model is calibrated with data generated by DWR's Delta Simulation Model (DSM2) and validated with field observations. Many, but not all, of the water balance terms are

routinely measured or are estimated though currently available methods. Statistical methods were used to estimate unknown water balance terms.

Water Balance. If the influence of tides is ignored, the following south Delta water balance can be defined to describe OMR flow in term of other riverine flows and diversions:

OMR flow = San Joaquin River flow @ Vernalis
+ Indian Slough flow @ Old River
– San Joaquin River flow downstream of HOR
– Clifton Court Forebay diversions
– Jones Pumping Plant diversions
– CCWD Old River Intake diversions
– South Delta net channel depletion

Indian Slough flow is defined in the above water balance to be positive when flowing upstream (east) into Old River. The assumed sign convention is opposite that used in the DSM2 model. Indian Slough is tidally influenced, so net flows may be positive or negative. Net channel depletion is defined to be positive when depletions exceed accretions. Net channel depletions may be negative in the winter when local precipitation and drainage returns are greater than channel diversions. Table ES-1 summarizes the water balance by month for the period 1998-2006. CCWD's Old River diversion became operational in late 1997; therefore, data prior to 1998 were excluded from the table.

Estimating Unknown Water Balance Terms. The above water balance provides a foundation for the MWD model. Since most of the water balance terms are measured in the field or estimated through currently available methods, these terms are defined as independent variables in the MWD model. Two key water balance terms, Indian Slough flow at Old River and San Joaquin River flow downstream of the head of Old River (HOR), are not measured in the field or estimated through currently available methods. Therefore, regression equations were developed with DSM2 data to predict these terms. Table ES-2 summarizes regression equations and statistics for predicting San Joaquin River flow downstream of HOR. The final MWD model form and coefficients are summarized in Table ES-3.

Model Uncertainty. Model uncertainty was quantified by computing safety factors or "buffers" needed to avoid exceeding an OMR flow objective with 95% confidence. These buffers are summarized in Table ES-4 and key observations are highlighted below:

- Longer flow averaging periods can be forecasted with greater certainty, and therefore can rely on smaller buffers to meet OMR flow objectives. Buffers required to meet 7-day averaged flow objectives are approximately twice as large as buffers required to meet 14-day averaged flow objectives.
- Three-day forecasts can be estimated with greater certainty than 5-day forecasts, and therefore can rely on smaller buffers. Buffers required for a 5-day forecast are approximately 50% greater than those required for a 3-day forecast.

The current OMR flow objective is generally specified as a 7-day average; therefore, buffers for 7-day averaged flows are most applicable for short-term forecasting. Buffers for 14-day averaged flows serve as reasonable proxies for long-term planning studies. The 7-day buffers are overly conservative, given that much of the 7-day uncertainty is due to tidal effects that can be anticipated by operations planners.

Findings and Conclusions

Model Development & Application. The following findings and conclusions relate to MWD model development and application:

- The model, which was formulated as a water balance and calibrated with DSM2 data, provides (1) superior validation to observed data and (2) more robust sensitivity to key hydrologic variables. The model should be adopted as a planning tool for predicting OMR flow. Model performance as a short-term forecasting tool could be enhanced by including a tidal influence term.
- Clifton Court Forebay diversion is a better measure than Banks Pumping in predicting OMR flow. This consideration is important for short-term forecasting. For long term planning, the distinction is less important.

Potential Control Measures. The following findings and conclusions relate to potential measures to control OMR flow:

- Comparison of model estimates with observed OMR flows was used to develop planning "buffers" to account for estimate uncertainty.
    - Longer flow averaging periods can be forecasted with greater certainty, and therefore can rely on smaller buffers to meet OMR flow objectives. Buffers required to meet 7-day averaged flow objectives are approximately twice as large as buffers required to meet 14-day averaged flow objectives. The 7-day buffers are overly conservative, given that much of the 7-day uncertainty is due to tidal effects that can be anticipated by operations planners.
    - 3-day forecasts can be estimated with greater certainty than 5-day forecasts, and therefore can rely on smaller buffers. Buffers required for a 5-day forecast are approximately 50% greater than those required for a 3-day forecast.
- The only south Delta agricultural barrier that has a significant impact on OMR flow is the Grant Line Canal. This finding seems reasonable given that the Grant Line Canal barrier provides the greatest flow restriction. Therefore, any future Delta smelt protections should focus on operation of this barrier.
- Water savings will result from delaying or prohibiting installation of HOR and Grant Line Canal barriers. Studies are needed to determine if delayed installation would require export curtailments to meet south Delta water levels.
- Measures that increase San Joaquin River flows at Vernalis would be effective in controlling OMR flow. Such measures would be even more effective if the Paradise

Cut weir operation was modified to allow more San Joaquin River water into the south Delta.

References

Armor, C.S., and T.R. Sommer (2006). Pelagic Organism Decline 2005-2006: Overview of Program and Progress, 4th Biennial CALFED Science Conference 2006, October 23-25, 2006, Sacramento Convention Center.

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Table ES-1
Monthly Average South Delta Water Balance (cfs): 1998-2006

Month	Old & Middle Rivers	San Joaquin River @ Vernalis	Indian Slough @ Old River	South Delta Net Channel Depletions	San Joaquin River d/s HOR	Clifton Court Forebay Diversions	Jones Pumping Plant Diversions	CCWD Diversions @ Old River	Water Balance [1]	Difference (9) – (1)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Jan	-5850	4034	377	185	-1554	-5125	-3642	-98	-5824	26
Feb	-4275	6307	268	356	-2520	-4560	-3895	-139	-4183	92
Mar	-3043	8288	181	41	-3589	-4311	-3598	-99	-3085	-43
Apr	-718	8681	-14	-163	-3856	-2932	-2238	-144	-665	53
May	1271	8873	-193	-392	-4574	-1116	-1205	-116	1276	5
Jun	-2361	7503	6	-719	-3396	-2700	-2894	-191	-2392	-31
Jul	-7496	4785	294	-926	-2120	-5209	-4209	-154	-7539	-43
Aug	-9298	2621	440	-671	-1168	-6082	-4326	-135	-9320	-23
Sep	-8962	2368	476	-383	-1105	-5918	-4291	-118	-8971	-10
Oct	-7403	2633	414	-252	-1434	-4455	-4220	-94	-7407	-4
Nov	-6639	2490	388	-184	-1284	-4099	-3912	-74	-6675	-36
Dec	-5927	2246	359	-103	-741	-4378	-3266	-35	-5917	10

[1] Sum of Columns (2) thru (8)

Table ES-2
Regression Analysis Results:
Statistical Model of San Joaquin River Flow Downstream of Head of Old River

$$Q_{SJR\ d/s\ HOR}\ (cfs) = A * Q_{Vernalis}\ (cfs) + B * Q_{South\ Delta\ Diversions}\ (cfs) + C$$

HORB	GLC Barrier	Vernalis (cfs)	N	A	B	C	R2	SEE (cfs)	Comments
Out	Out	< 16,000	7167	0.499	-0.0312	-161	0.996	112	
Out	Out	16000-28000	622	0.276	0	3128	0.991	84	Weir allows flow in Paradise Cut
Out	Out	> 28000	214	0.327	0	1677	0.983	180	Weir allows flow in Paradise Cut, but at a lower rate
Out	In	All	2055	0.554	-0.0168	-45	0.918	127	
In (Spring)	Out/In	All	586	0.916	0	-146	0.978	219	
In (Fall)	Out/In	All	1251	0.747	-0.0109	-24	0.961	109	

N= number of observations; R2=coefficient of determination; SEE=standard error of estimate

Table ES-3
MWD OMR Flow Model Coefficients

$$Q_{OMR}\ (cfs) = A * Q_{Vernalis} + B * Q_{South\ Delta\ Diversions} + C$$

Where: $Q_{South\ Delta\ Diversions} = Q_{CCF} + Q_{Jones} + Q_{CCWD} + Q_{South\ Delta\ NCD}$

HORB	GLC Barrier	Vernalis (cfs)	A	B	C
Out	Out	< 16,000	0.471	-0.911	83
Out	Out	16,000-28,000	0.681	-0.940	-3008
Out	Out	> 28,000	0.633	-0.940	-1644
Out	In	All	0.419	-0.924	-26
In (Spring)	Out/In	All	0.079	-0.940	69
In (Fall)	Out/In	All	0.238	-0.930	-51

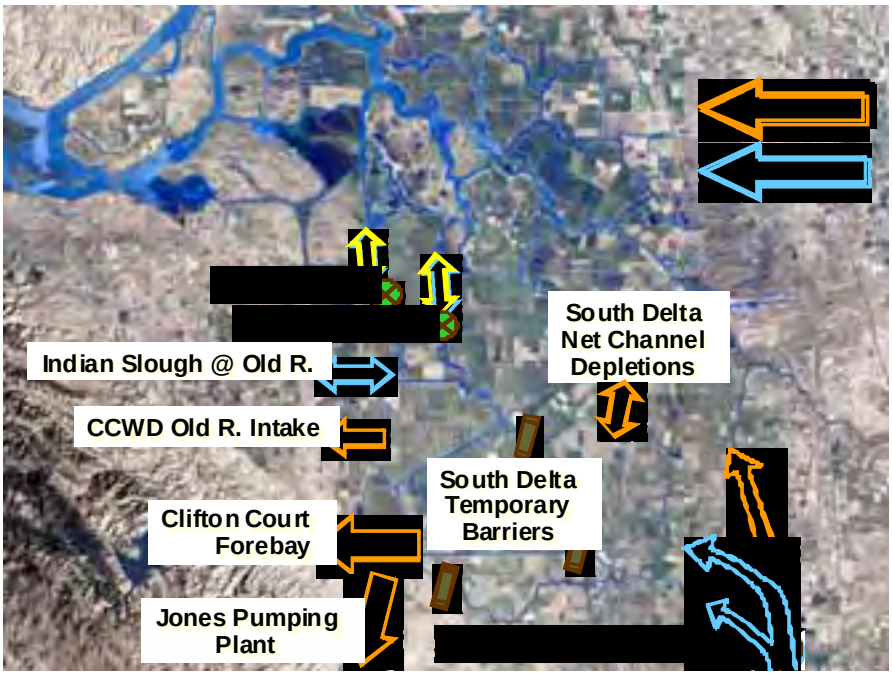
Table ES-4
OMR Flow Buffers with 95% Confidence (cfs)

Month	14-Day Averaged OMR Flow			7-Day Averaged OMR Flow		
	3-Day Forecast	5-Day Forecast	≥ 14 Day Forecast	3-Day Forecast	5-Day Forecast	≥ 7 Day Forecast
Dec	300	450	700	600	850	1000
Jan	250	350	450	500	700	800
Feb	250	350	500	500	700	850
Mar	200	300	300	350	550	600
Apr	300	450	700	600	900	1050
May	300	450	850	600	950	1200
Jun	250	350	700	450	650	850
12 Months	300	400	750	550	850	1000

Notes on USGS Observed Data Used to Develop Buffers:
1) 24-hour averages were computed from raw 15-minute data
2) 24-hour data were filled based on correlations between Old and Middle Rivers
3) The period Jan 1, 1990 thru Sep 30, 2006 were used to develop buffers except as noted below:
    a. Events when OMR flow was > 0 cfs were excluded from buffer calculations
    b. The period Jun 1, 2004 thru Dec 31, 2004 were excluded from buffer calculations (Jones Tract levee failure)

Other Note:
1) ≥14 Day and ≥7 Day forecasts assume no knowledge of antecedent conditions.

Figure ES-1
Hydraulic Forces Contributing to OMR Flow



Several hydraulic forces determine the volume and direction of flows in Old and Middle Rivers. These forces may contribute to downstream (positive) flow or may contribute to upstream (reverse) flow.

Section 1
Introduction

The abundances of Delta smelt (*Hypomesus transpacificus*) and other pelagic fish species have declined dramatically over the last several years. These population declines are thought to be influenced by chemical pesticide exposure, food-web alterations, and water project entrainment. Studies are ongoing by the Interagency Ecological Program and others to define and understand the nature of these population declines (Armor and Sommer 2006). One such study found a correlation between Delta smelt salvage at the CVP-SWP export pumps and combined Old and Middle River flows near Bacon Island (Smith et.al. 2006). This correlation was a motivating factor to limit upstream (reverse) flows in Old and Middle Rivers (NRDC vs. Kempthorne 2007).

The current configuration of the Delta relies on Old and Middle Rivers to convey water from the Sacramento River to the CVP-SWP export pumps, a pathway that results in reverse flows. Since regulation of these reverse flows can have significant impacts on water project operations, accurate methods are needed to forecast Old and Middle River (OMR) flows.

This report reviews the hydraulics of OMR flows, evaluates the performance and limitations of existing empirical models to predict OMR flow, and documents the development of a new model of OMR flow. The new model was designed as a long-term planning tool that can be incorporated into CALSIM; however, the model also has applicability to short-term operations planning.

References

Armor, C.S., and T.R. Sommer (2006). Pelagic Organism Decline 2005-2006: Overview of Program and Progress, 4th Biennial CALFED Science Conference 2006, October 23-25, 2006, Sacramento Convention Center.

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Section 2
Background

This section identifies hydraulic forces that determine OMR flows and discusses relative influences and control of these hydraulic forces. This section also provides a brief introduction to existing models of OMR flow.

Hydraulics of OMR Flow

The USGS gauges tidal flows in Old and Middle Rivers at Bacon Island. Several hydraulic forces determine the volume and direction of flows at these locations. These hydraulic forces, as described below, may contribute to downstream (positive) flow or may contribute to upstream (reverse) flow. See Figure 2-1.

San Joaquin River Inflows to Old and Middle Rivers. The San Joaquin River provides downstream flow to Old and Middle Rivers at the confluence of the San Joaquin and Old Rivers; this location is typically referred to as the Head of Old River (HOR). Under high flow conditions, the San Joaquin River also provides downstream flow through Paradise Cut. San Joaquin River flows upstream of the Delta are influenced by several factors, including reservoir releases along the Stanislaus River (New Melones), the Tuolumne River (New Don Pedro) and the Merced River (McClure). Total contributions from the San Joaquin River to Old and Middle Rivers are strongly influenced by physical structures such as an overflow rock weir at Paradise Cut and seasonal installation of a fish barrier at the Head of Old River. Total contributions from the San Joaquin River are also influenced (but to a lesser degree) by south Delta water levels, which are in turn influenced by seasonal installation of agricultural barriers, tides, and water diversions from the south Delta. Typically 60 to 80% of the San Joaquin River flow volume diverts into Old River and contributes to downstream OMR flows when the fish barrier at the HOR is not installed. The remaining volume flows past Stockton through the main stem of the San Joaquin River.

Water Diversions from the South Delta. Net flow in Old and Middle Rivers is upstream when south Delta water diversions exceed contributions from the San Joaquin River. South Delta water diversions include the SWP Clifton Court Forebay Intake, the CVP Jones Pumping Plant, the CCWD Los Vaqueros Intake on Old River, and local agricultural diversions. All south Delta water diversions contribute equally, on a per unit basis, to OMR reverse flows.

Indian Slough hydraulically bypasses the Old River gauging station at Bacon Island. Under high flow conditions, this bypass results in unmeasured net downstream flow at Old River. Under low flow conditions, this bypass results in unmeasured net upstream flow at Old River. The practical implication of Indian Slough is that, under low flow conditions, south Delta water diversions have less than a 1-to-1 effect on gauged OMR reverse flows. If this bypass did not exist, a 1-to-1 effect would exist (ignoring the influence of south Delta water diversions on the HOR flow split), i.e. an additional 100

cfs south Delta diversion would result in 100 cfs of additional reverse flow measured in Old and Middle Rivers.

Tides. The tide is another hydraulic force that determines the volume and direction of flows in Old and Middle Rivers. Flood and ebb tides influence flows within a day; spring and neap tides influence flows within a month. Numerical filtering of OMR flow data can remove much, but not necessarily all, of the influence associated with tides.

Relative Influence of Hydraulic Forces That Determine OMR Flows

In relative terms, south Delta water diversions have the largest influence on OMR flows. San Joaquin River inflows have a large, but smaller, influence on these flows. As discussed above, numerical filtering (e.g. 14-day averages) reduces the influence of tides on OMR flows.

Table 2-1 shows that, of the primary south Delta water diversions, the Clifton Court Forebay and Jones diversions are the largest and have been of similar magnitude in recent years. CCWD and local agricultural diversions are smaller; however, agricultural diversions can be significant during the irrigation season. The table also shows that San Joaquin River inflow is a large hydraulic force in determining OMR flows.

Control of Hydraulic Forces That Determine OMR Flows

Given the above discussion, reverse flows on Old and Middle Rivers may be effectively controlled through manipulation of water diversions and San Joaquin River inflows. Both the CVP and SWP play major roles in manipulating these hydraulic forces. In fact, the CVP plays an even greater role than the SWP.

While the SWP and CVP have similar control of reverse flows on Old and Middle Rivers through their respective operations of Clifton Court Forebay and Jones Pumping Plant, the CVP plays a much greater role in controlling San Joaquin River inflows to the south Delta. Both projects participate in operation of the HOR barrier, a structure that influences inflow to the south Delta (see above discussion). However, the CVP has additional control of inflow through its operation of New Melones and Millerton Reservoirs.

Existing Empirical Models of OMR Flow

Although physics-based models have been available for several years to predict OMR flows, empirical models were developed as easy to use and understand alternatives. The utility of such models is even greater now that water project operations are controlled by OMR flow objectives.

DWR developed several regression equations to estimate daily OMR flow (DWR 1986). The empirical model currently used by DWR relates OMR flow to (1) combined SWP-

CVP exports and (2) San Joaquin River flow at Vernalis. SWP export data represent flows at Clifton Court Forebay intake rather than pumping at Banks Pumping Plant.

USGS also developed a set of regression equations to fill missing OMR flow data (Ruhl et.al. 2006). In addition to combined SWP-CVP exports and San Joaquin River flow at Vernalis, this empirical model also relates OMR flow to south Delta temporary barrier installation. However, the model does not distinguish between installation of the HOR barrier (HORB) and installation of the three agricultural barriers.

The empirical OMR flow models developed by DWR and USGS have been used by the author and others to assess water supply impacts of proposed Delta smelt protective actions. The DWR empirical model has also been used in recent months for water project operations planning. The author has noted that these models can produce widely different impact estimates, depending on hydrology and operations.

Physics-based hydrodynamic models, such as DWR's Delta Simulation Model (DSM2), the Fischer Delta Model (FDM), and the Resources Management Associates (RMA) Delta Model, necessarily provide high-frequency estimates of flow in Old and Middle Rivers. Of the existing hydrodynamic models, this report focuses on DSM2 in subsequent evaluation of performance and limitations.

Proposal to Develop New Empirical Model

The differences noted above motivated an effort to evaluate the performance and limitations of existing empirical models of OMR flow, and to explore methods of addressing these limitations. While this effort has a special focus on developing a new planning model that can be used within CALSIM and other long-term analyses, its results may also benefit operations planning.

References

DWR (1986). New Flow Equations for the San Joaquin River at Stockton and for Old and Middle Rivers, Office Memorandum from Jim Snow to Richard Jones, April 17.

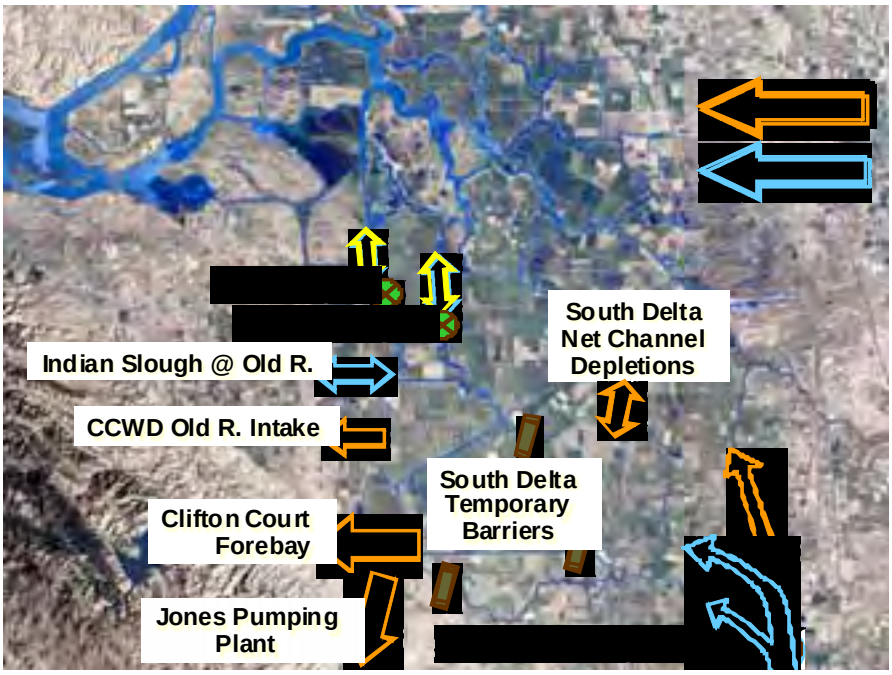
C.A. Ruhl, P.E. Smith, J.J. Simi, and J.R. Burau (2006). The Pelagic Organism Decline and Long-Term Trends in Sacramento-San Joaquin Delta Hydrodynamics, 4th Biennial CALFED Science Conference 2006, October 23-25, 2006, Sacramento Convention Center.

Table 2-1
Average South Delta Water Diversions
December-June 1998-2006

Month	San Joaquin River (cfs)[1]	South Delta Net Channel Depletions (cfs)[2]	SWP (cfs)	CVP (cfs)	CCWD (cfs)
December	2250	100	4400	3300	40
January	4030	-190	5100	3600	100
February	6310	-360	4600	3900	140
March	8290	-40	4300	3600	100
April	8680	160	2900	2200	140
May	8870	390	1100	1200	120
June	7500	720	2700	2900	190

[1] Measured at Vernalis
[2] Estimated. Agricultural return flows are often larger than agricultural diversions in high-precipitation months, resulting in negative net channel depletions.

Figure 2-1
Hydraulic Forces Contributing to OMR Flow



Several hydraulic forces determine the volume and direction of flows in Old and Middle Rivers. These forces may contribute to downstream (positive) flow or may contribute to upstream (reverse) flow.

Section 3
Performance and Limitations of Existing Models

As discussed in the previous sections, DWR and USGS have developed empirical models to predict daily OMR flow. The performance and limitations of these models, along with the performance of the physics-based DSM2 model in predicting OMR flow, are now discussed.

Data Used to Evaluate Performance of Existing Models

Observed OMR flow data for the period January 1, 1990 through September 30, 2006 were used to evaluate the performance of existing models. The following periods were excluded from the evaluation:

- Jan-Feb 1997. Vernalis flow data are suspect during this period due to flood conditions along the San Joaquin River. January 1997 data were also excluded from the USGS model development (Ruhl et.al. 2006).
- Jun-Dec 2004. Data collected during and after the Jones Tract levee breach were excluded due to the unique hydraulic conditions in the south Delta associated with island flooding and pump-off.

OMR flow data were obtained from the USGS National Water Information System (NWIS) website (USGS 2007). Pertinent data sites are the Old River @ Bacon Island (11313405) and the Middle River @ Bacon Island (11312676). Data provided on the web site are tidally filtered with a Godin filter and reported as daily values. The data record begins in January 1987 and continues up to the present. Raw 15-minute OMR flow data were also obtained directly from USGS staff (P. Smith 2007a). Calendar day average flows were computed from the raw data to estimate 7-day and 14-day average flows. As with most long-term data records, the OMR flow data record includes gaps. Correlations between observed Old River and Middle River flows were utilized to estimate OMR flow when one of the two flow records was available. Correlation statistics are provided in Table 3-1.

Data for daily averaged Jones Pumping Plant exports were obtained from DWR's DAYFLOW database (DWR 2007a). DWR's Operations Control Office provided data for daily averaged Clifton Court inflow (A. Sandhu 2007). Forebay stage measurements are used by DWR, along with Banks exports, to compute daily Clifton Court inflows.

South Delta temporary barrier operations data (installation and removal) were obtained from DWR Delta Simulation Model (DSM2) input files and summarized in Table 3-2. Details on historical installation and removal are available elsewhere (DWR 2007b).

Mathematical Form of Existing Models

Model forms assumed by the DWR and USGS OMR flow models, along with model constants, are provided in Table 3-3.

Evaluation of Existing Model Performance

DSM2. High frequency (15-minute) OMR flow data were extracted from a DSM2 simulation of historical hydrology and operations for the period January 1, 1990 through December 31, 2006. These data were tidally filtered with a Godin filter and averaged by calendar day. The resulting DSM2 data are compared with observed data in Figure 3-1. Differences with observed data are within ± 600 cfs over 70% of the time. Differences are greater than ± 1400 cfs less than 5% of the time. The DSM2 model shows a modest bias to under-predict OMR flow. The bias appears to be seasonal and is most pronounced during the months of June through November. A possible explanation for the observed bias is that south Delta net channel depletion estimates are higher than actual depletions.

Figure 3-2 shows that daily averaged DSM2 estimates of Clifton Court Forebay diversions can be considerably different from observed values. Differences between computed and observed values are considerably lower for longer averaging periods. Given the importance of Clifton Court Forebay diversions in determining OMR flow (and presumably other hydrodynamic characteristics in the central and south Delta), DSM2 input modifications appear to be warranted. One possible modification would be to more accurately specify forebay gate operations in DSM2 simulations. Another possible modification would be to specify Clifton Court Forebay diversions directly as a boundary condition.

DWR Empirical Model. OMR daily flows predicted by the DWR model are compared with tidally filtered observed data in Figures 3-3. Differences with observed data are within ±600 cfs about 40% of the time. Differences are greater than ±1400 cfs about 25% of the time. The DWR model shows a strong bias toward over-estimating OMR flow. This bias has the effect of under-estimating water supply impacts associated with potential OMR flow regulations. This bias is particularly pronounced in April and May. By not accounting for HORB installation, the model implicitly assumes that more San Joaquin River water will enter the south Delta and contribute to positive OMR flow than would actually occur. The bias is also pronounced during the late spring and summer months of June through September. By not accounting for in-Delta net channel depletions (highest during the irrigation season) and south Delta agricultural barrier installation, the model assumes that more San Joaquin River water will contribute to downstream OMR flow than would actually occur.

USGS Model. OMR daily flows predicted by the USGS model are compared with tidally filtered observed data in Figure 3-4. Similar to the DWR model, differences with observed data are within ±600 cfs about 45% of the time and are greater than ±1400 cfs

about 25% of the time. Unlike the DWR model, the USGS model does not show a general predictive bias. However, the model tends to under-predict in January through March and over-predict in June through August. The late spring and summer over-prediction bias is likely due to lack of accounting for in-Delta net channel depletions during the irrigation season.

Model Limitations

The DWR and USGS empirical models have several limitations when used to answer "what if" questions within a planning analysis framework. These limitations are discussed below:

- Modified Operational Regimes. A typical planning application will be to evaluate required export reductions to meet prescribed OMR flows. It is anticipated that several of these operational regimes will be at levels of OMR flow and Delta exports that have been rarely observed in the historical record. Therefore, the existing models may not be adequately calibrated in the regions of interest for planning applications. This limitation is common to models that are calibrated with historically observed data. This limitation can be addressed by calibrating a model with hydrodynamic data that covers a wider operational range than observed historically. A numerical model such as DSM2 can produce such data.
- Modified South Delta Barrier Operations. Another possible planning application would be to evaluate how changes in south Delta barrier operations impact OMR flow. Such an application is timely, as the recent court decision (NRDC vs. Kempthorne 2007) prohibits HORB installation during the spring. The DWR model does not account for barrier operation. The USGS model does not distinguish between HORB operation and agricultural barrier operation. Neither model account for the influence of Paradise Cut on OMR flow. These limitations can be addressed by including specific barrier operations as independent variables.
- Modified Net Channel Depletions. One possible planning application would be to evaluate how changes in Delta land use impacts OMR flow. Neither model accounts for seasonal variability associated with in-Delta net channel depletions. This limitation can be addressed by including net channel depletions as an independent variable.
- Modified Vernalis Flow. Another possible planning application would be to evaluate how different San Joaquin River water operations upstream of Vernalis (e.g. Friant settlement releases) effect OMR flow. Under low and moderate flow regimes, the USGS model is not a function of Vernalis flow. This limitation can be addressed by including San Joaquin River flow as an independent variable.
- Consistent Model Analysis. Given the recent court decision, it is anticipated that an OMR flow model will be implemented in CALSIM. Given that CALSIM hydrology and operations are often used as input to the DSM2 model, Delta-related components of the CALSIM model should be designed to be consistent with DSM2. For example, see a discussion on development of CALSIM's flow-salinity routine (Hutton and Seneviratne 2001). It is unlikely that the existing empirical OMR flow models will provide a consistent model analysis between CALSIM and DSM2.

References

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Hutton, P. and S. Seneviratne (2001). Chapter 8: An Assessment of Delta Carriage Water Requirements Using a New CALSIM Flow-Salinity Routine, *Methodology for flow and salinity estimates in the Sacramento-San Joaquin Delta and Suisun Marsh. 22nd Annual Progress Report to the State Water Resources Control Board.* DWR. August.

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Sandhu, A. (2007). Personal communication, August 28.

Smith, P. (2007a). Personal communication, October 10.

USGS (2007). National Water Information System (NWIS), http://waterdata.usgs.gov/ca/nwis/

Table 3-1
Correlations Used to Fill OMR Data Gaps
$Q_{Old\ River}$ (cfs) = A * $Q_{Middle\ River}$ (cfs) + B

Data Type	$Q_{Middle\ River}$	N	A	B	R2	SEE (cfs)
Tidally Filtered	< -4000 cfs	1682	0.578	-663	0.634	298
Tidally Filtered	≥ -4000 cfs	2881	0.836	367	0.977	388
Calendar Day Average	< -4000 cfs	1774	0.640	-345	0.643	383
Calendar Day Average	≥ -4000 cfs	3079	0.834	369	0.970	443

N= number of observations; R2=coefficient of determination; SEE=standard error of estimate

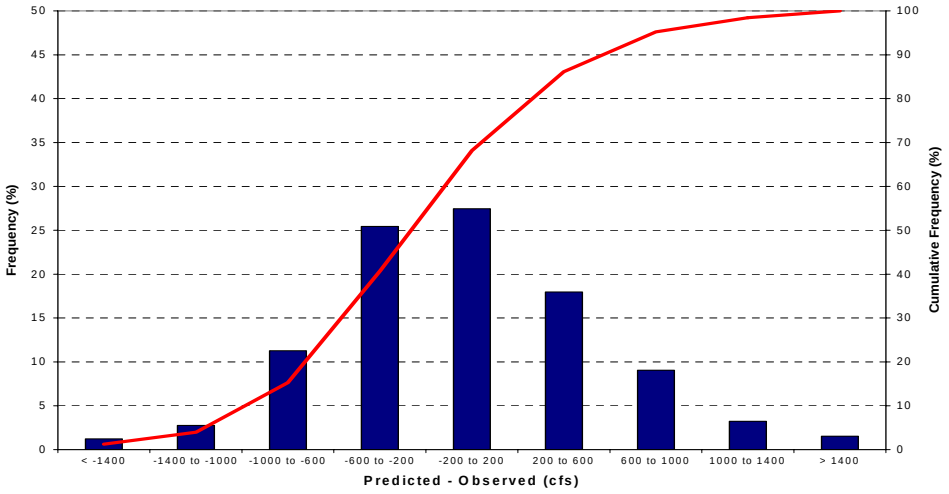
Table 3-2
South Delta Temporary Barrier Operations: 1990-2006

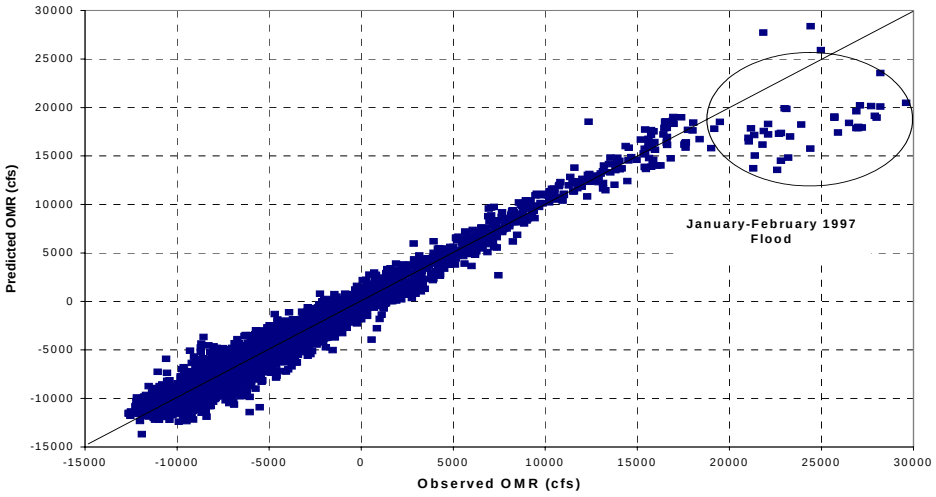
Year	HORB (Spring)		HORB (Fall)		Old River		Middle River		Grant Line Canal	
	In	Out	In	Out	In	Out	In	Out	In	Out
1990	---	---	Sep11	Nov27	---	---	Apr4	Sep29	---	---
1991	---	---	Sep13	Nov23	Aug26	Sep28	Apr4	Sep27	---	---
1992	Apr22	Jun5	Sep10	Dec3	Apr21	Oct1	Apr9	Sep29	---	---
1993	---	---	Nov10	Dec6	Jun2	Sep29	Jun17	Sep23	---	---
1994	Apr23	May18	Sep9	Nov29	Apr25	Oct4	Apr25	Sep30	---	---
1995	---	---	---	---	Aug8	Sep30	Aug10	Oct12	---	---
1996	May7	May17	Oct3	Nov20	---	---	May20	Sep29	Jul11	Oct3
1997	Apr10	May15	---	---	Apr17	Oct2	Apr5	Sep27	Jun5	Sep27
1998	---	---	---	---	---	---	---	---	---	---
1999	---	---	---	---	May25	Sep28	May19	Sep30	Jun4	Sep24
2000	Apr15	Jun1	Oct3	Dec8	Apr17	Sep30	Apr16	Sep30	Jun1	Sep29
2001	Apr25	May30	Oct7	Nov26	Apr27	Nov15	Apr21	Nov14	May4	Nov13
2002	Apr16	May24	Oct4	Nov21	Apr16	Nov19	Apr16	Nov21	Jun7	Nov18
2003	Apr16	May16	Sep22	Nov5	Apr15	Nov15	Apr15	Nov12	Apr16	Nov11
2004	Apr13	May21	Sep20	Nov2	Apr16	Nov13	Apr13	Nov11	Apr15	Nov12
2005	---	---	Sep29	Nov8	May31	Nov9	May12	Nov8	Jul13	Nov15
2006	---	---	---	---	Jul18	Nov17	Jul8	Nov18	Jul19	Nov21

Table 3-3
DWR and USGS OMR Flow Model Constants
Q_{OMR} (cfs) = A * $Q_{VERNALIS}$ (cfs) + B* $Q_{EXPORTS}$ (cfs) + C

OMR Equation	$Q_{VERNALIS}$	Barriers	A	B	C
DWR	All	All	0.58	-0.913	0
USGS	<10,000 cfs	In	0	-0.8129	-365
USGS	<10,000 cfs	Out	0	-0.8738	1137
USGS	≥10,000 cfs	All	0.7094	-0.7094	-4619

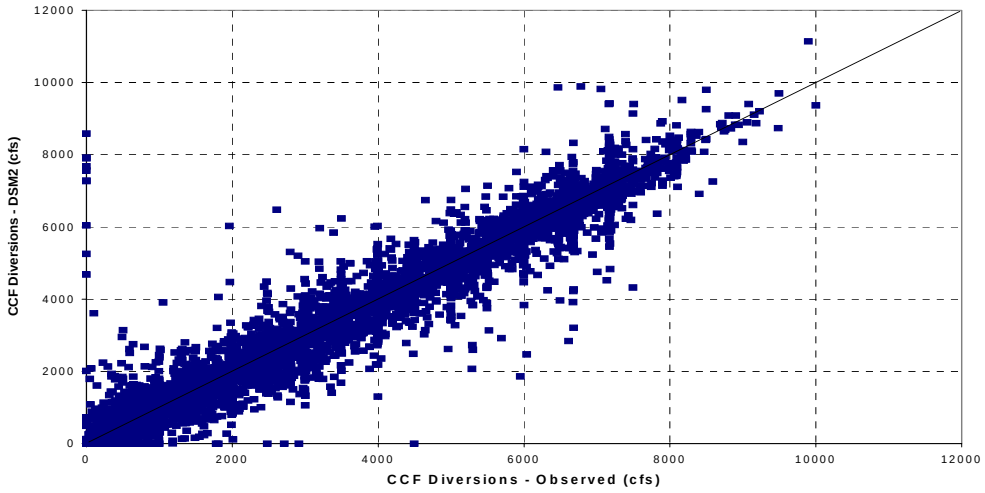
Figure 3-1
Comparison of Predicted & Observed OMR Flow: DSM2 Model
January 1, 1990 – September 30, 2006 (Tidally Filtered Daily Values)





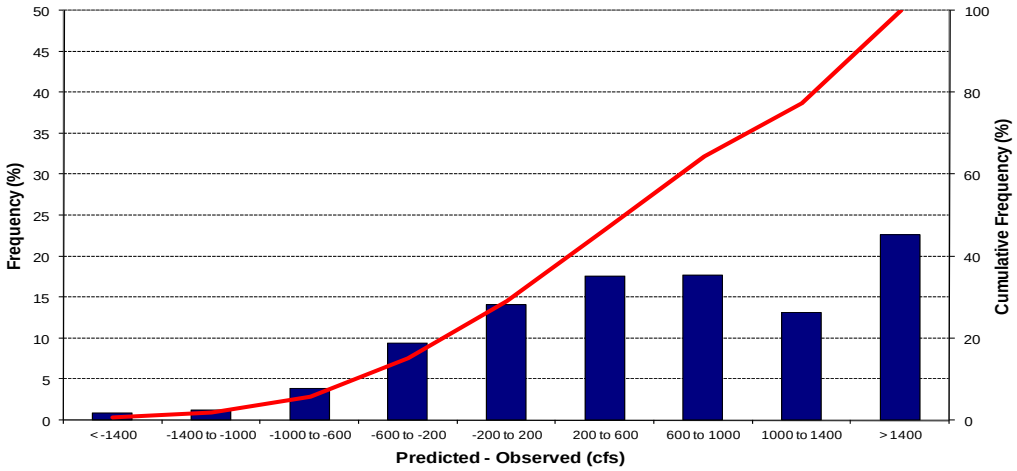
Differences with observed data are within ± 600 cfs over 70% of the time. Differences are greater than ± 1400 cfs less than 5% of the time. The DSM2 model shows a modest bias to under-predict OMR flow. Data corresponding to the 1997 flood (Jan-Feb 1997) were excluded from the evaluation. Vernalis flow data are suspect during early 1997 due to flood conditions along the San Joaquin River. In contrast to the DWR and USGS OMR model evaluations, data collected during and after the Jones Tract levee breach were included in the DSM2 evaluation because the unique hydraulic conditions in the south Delta associated with island flooding and pump-off were simulated by DSM2.

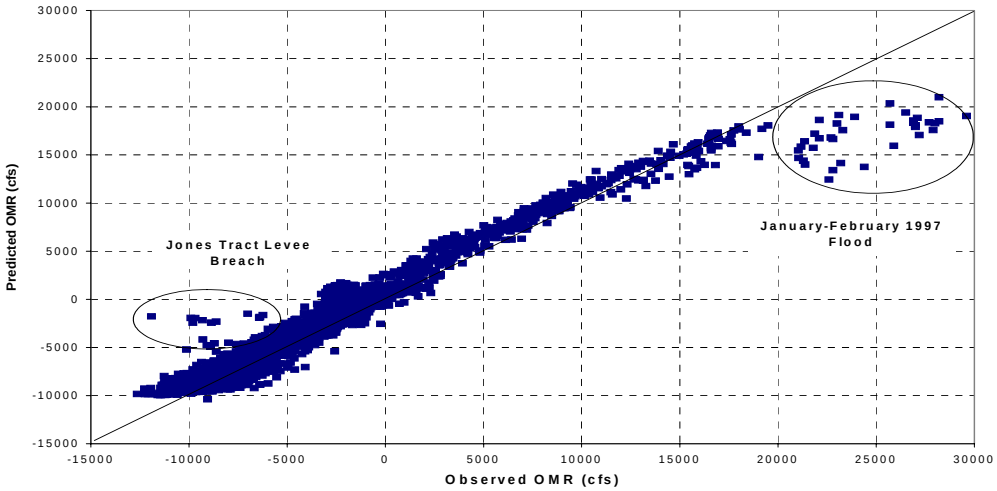
Figure 3-2
Difference Between Predicted & Observed Clifton Court Forebay Diversions
DSM2 Model January 1, 1990 – September 30, 2006 (24-hr Daily Values)



The above figure shows that DSM2 estimates for Clifton Court Forebay diversions can be considerably different from observed values. Given the importance of Clifton Court Forebay diversions in determining OMR flow, modifications to DSM2 appear to be warranted.

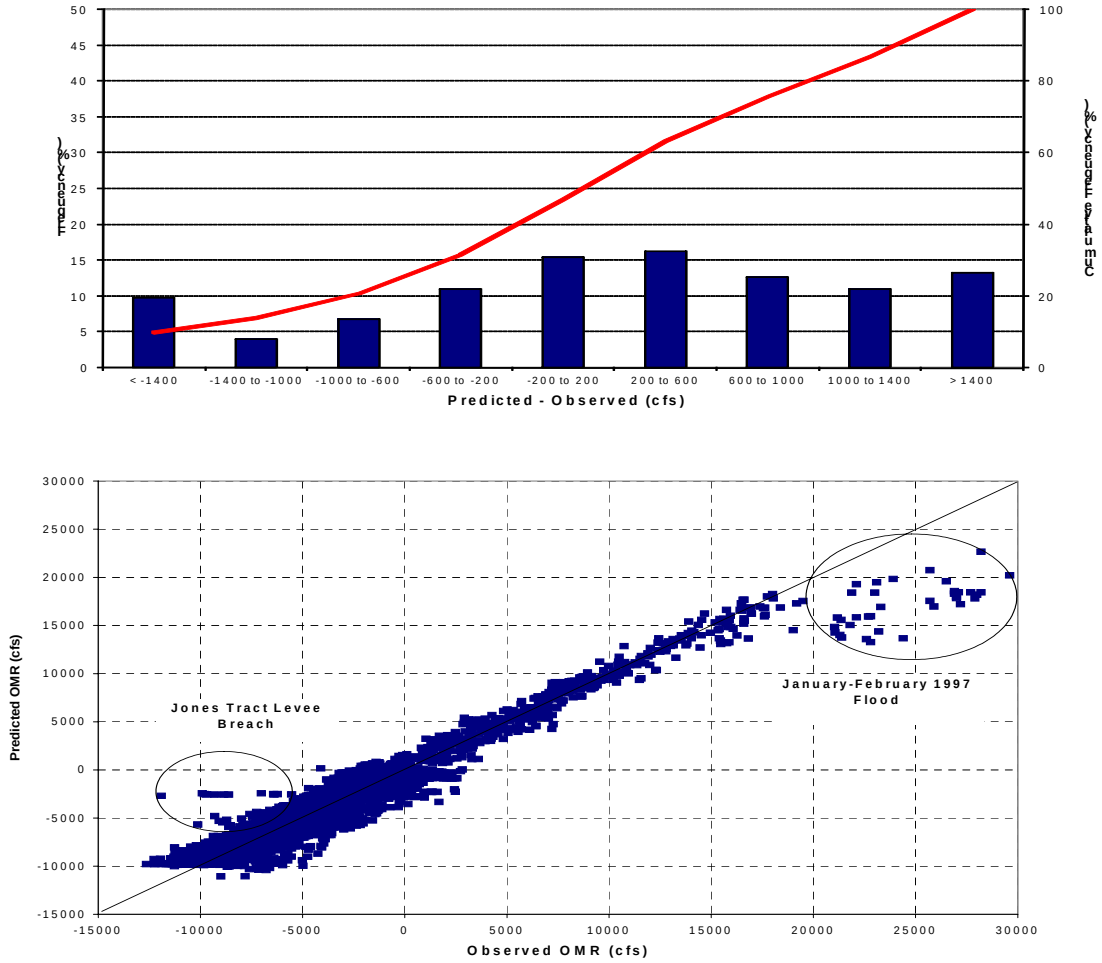
Figure 3-3
Comparison of Predicted & Observed OMR Flow: DWR Model
January 1, 1990 – September 30, 2006 (Tidally Filtered Daily Values)





Differences with observed data are within ±600 cfs about 40% of the time. Differences are greater than ±1400 cfs about 25% of the time. The DWR model shows a strong bias toward over-estimating OMR flow. This bias has the effect of under-estimating water supply impacts associated with potential OMR flow regulations. Data corresponding to the 1997 flood (Jan-Feb 1997) and the Jones Tract levee breach (Jun-Dec 2004) were excluded from the evaluation. Vernalis flow data are suspect during early 1997 due to flood conditions along the San Joaquin River. Data collected during and after the Jones Tract levee breach were excluded due to the unique hydraulic conditions in the south Delta associated with island flooding and pump-off.

Figure 3-4
Comparison of Predicted & Observed OMR Flow: USGS Model
January 1, 1990 – September 30, 2006 (Tidally Filtered Daily Values)



Similar to the DWR model, differences with observed data are within ±600 cfs about 45% of the time and are greater than ±1400 cfs about 25% of the time. Unlike the DWR model, the USGS model does not show a general predictive bias. Data corresponding to the 1997 flood (Jan-Feb 1997) and the Jones Tract levee breach (Jun-Dec 2004) were excluded from the evaluation. Vernalis flow data are suspect during early 1997 due to flood conditions along the San Joaquin River. Data collected during and after the Jones Tract levee breach were excluded due to the unique hydraulic conditions in the south Delta associated with island flooding and pump-off.

Section 4
Methods: Developing a South Delta Water Balance

The new OMR flow model presented in this report is founded on a simple control volume or water balance and calibrated with data generated by DSM2. Definition and development of the water balance is presented in this section. Many, but not all, of the water balance terms are routinely measured or are estimated though currently available methods. A statistical method to estimate these unknown water balance terms is presented in Section 5. Results from Section 5 are incorporated into the water balance and presented in Section 6 as the new OMR flow model.

Data Used to Calibrate OMR Flow Model

The new OMR flow model was originally calibrated with DSM2 data generated to simulate 1990-2006 historical conditions. Data from three additional DSM2 simulations were used to validate the initial model calibration:

- Validation Study 1: 1990-2006 historical conditions without Clifton Court and Jones Pumping Plant diversions
- Validation Study 2: 1990-2006 historical conditions without temporary barrier installation
- Validation Study 3: 1990-2006 historical conditions without (1) Clifton Court and Jones Pumping Plant diversions and (2) temporary barrier installation.

The initial model calibration provided excellent validation with data from Studies 2 and 3. RMS errors were similar to those calculated with the calibration data. The initial model calibration did not validate as well with data from Study 1. RMS errors were higher in the summer months of July, August and September. This result suggested that the Old River flow split in the initial model calibration was biased when south Delta diversions were high and temporary barriers were installed. As a remedy, the new OMR flow model was recalibrated with the original data set plus data from Validation Study 1.

Section 3 identified several limitations associated with the use of existing empirical OMR models for planning purposes. Some of these limitations are linked to the shortcomings of existing field data used to calibrate the models. The use of DSM2 data for model calibration addresses these limitations in the following ways:

- Modified Operational Regimes. A numerical model such as DSM2 can produce data that cover a wider operational range than observed historically. For example, see the above discussion on the use of Validation Study 1 data to calibrate the new OMR flow model. Therefore, a model calibrated with DSM2 data will not rely on extrapolation to evaluate new operational regimes.
- Modified Net Channel Depletions. The true relationship between net channel depletions and OMR flow is difficult to discover in the observed data, presumably because of the limited accuracy of current depletion estimates. However, the

relationship between net channel depletions and DSM2-simulated OMR flow is mathematically defined and is therefore more distinct.

- Consistent Model Analysis. An OMR flow model calibrated with DSM2 data, if implemented in CALSIM, will allow for consistent analysis between CALSIM and DSM2.

DSM2 South Delta Water Balance

Section 2 described several hydraulic forces that determine the volume and direction of flows in Old and Middle Rivers. If the influence of tides is ignored, the following south Delta water balance can be defined to describe OMR flow in term of other riverine flows and diversions:

OMR flow = San Joaquin River flow @ Vernalis
+ Indian Slough flow @ Old River
– San Joaquin River flow downstream of HOR
– Clifton Court Forebay diversions
– Jones Pumping Plant diversions
– CCWD Old River Intake diversions
– South Delta net channel depletion

Indian Slough flow is defined in the above water balance to be positive when flowing upstream (east) into Old River. The assumed sign convention is opposite that used in the DSM2 model. Indian Slough is tidally influenced, so net flows may be positive or negative. Net channel depletion is defined to be positive when depletions exceed accretions. Net channel depletions may be negative in the winter when local precipitation and drainage returns are greater than channel diversions.

The flow in Tom Paine Slough is regulated such that ebbs are not allowed to return to the south Delta. An exact water balance would treat flow into Tom Paine Slough as a diversion from the south Delta, and net channel depletions along the slough would not be explicitly accounted for. This refinement was investigated and, although it improved the water balance marginally, it was not adopted for the sake of simplicity.

The above water balance provides a foundation for the proposed OMR flow model, herein referred to as the MWD model. Data used to compute the south Delta water balance and to calibrate the MWD model are listed in Table 4-1. DSM2 boundary conditions are used in the water balance for San Joaquin River flows at Vernalis and for diversions at Jones Pumping Plant and CCWD Old River intake. Computed data from DWR's Delta Island Consumptive Use (DICU) model (DWR 1995) are used in the water balance for south Delta net channel depletions. DSM2 computed data are used in the water balance for flows at Indian Slough at Old River and San Joaquin River downstream of HOR and for diversions at Clifton Court Forebay. The resulting south Delta water balance was averaged by month for eight years (1998-2006) and is summarized in Table 4-2. CCWD's Old River diversion became operational in late 1997; therefore, data prior to 1998 were excluded from the table.

If the south Delta water balance accounted for all mechanisms, it should exactly equal the DSM2-computed OMR flow. However, given that tidal influences are ignored, some differences are expected. Figures 4-1 and 4-2 compare 14-day averaged OMR flow from DSM2 with the south Delta water balance. The water balance closely approximates the OMR flow on a 14-day average basis. As shown in Figure 4-2, the south Delta water balance is within ± 150 cfs of the DSM2 estimate about 85% of the time and within ± 350 cfs 97% of the time.

Figure 4-3 illustrates the periodic behavior of the differences between DSM2-computed OMR flow and the south Delta water balance. The residuals exhibit periodic behavior when computed from 7-day averaged data. As shown in the figure, the phasing is not well predicted from the Martinez tidal range. Tidal range is defined as the difference between daily maximum and daily minimum water levels.

References

DWR (1995). *Estimation of Delta Island Diversions and Return Flows*. Division of Planning, February.

Table 4-1
DSM2 Data Used in South Delta Water Balance and MWD OMR Model Calibration

Data Type	Data Location	DSM2 Channel or Node	Observed or Computed Data
River Flow	Old River @ Bacon Island	Channel 106	Computed
River Flow	Middle River @ Bacon Island	Channels 144 and 145	Computed
River Flow	San Joaquin River @ Vernalis	Node 1	Observed
River Flow	Indian Slough @ Old River	Channel 236	Computed
River Flow	San Joaquin River d/s HOR	Channel 8	Computed
Diversion	Clifton Court Forebay	Node 72	Computed
Diversion	Jones Pumping Plant	Node 181	Observed
Diversion	CCWD Intake @ Old River	Diversion from Channel 90	Observed
Diversion	South Delta Net Channel Depletions	Diversions/returns from several nodes	Computed [1]
Temporary Barrier Operation	Head of Old River Fish Barrier	Channel 54	Observed
Temporary Barrier Operation	Grant Line Canal Agricultural Barrier	Channel 206	Observed
Temporary Barrier Operation	Old River Agricultural Barrier	Channel 79	Observed
Temporary Barrier Operation	Middle River Agricultural Barrier	Channel 134	Observed

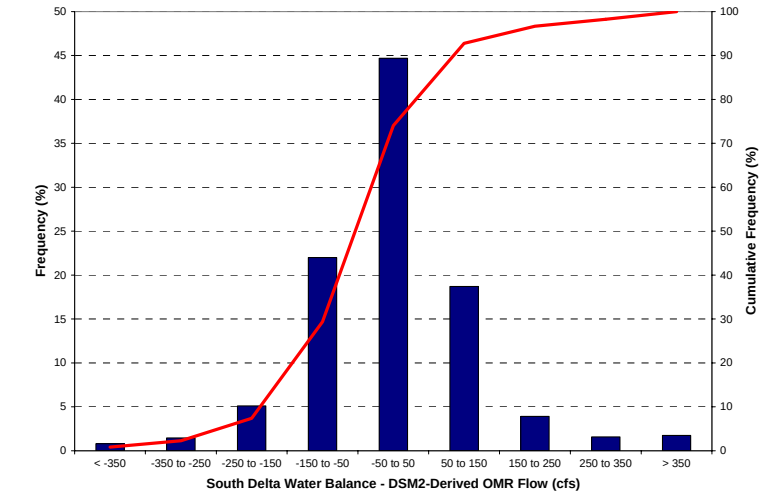
[1] From DICU model (DWR 1995)

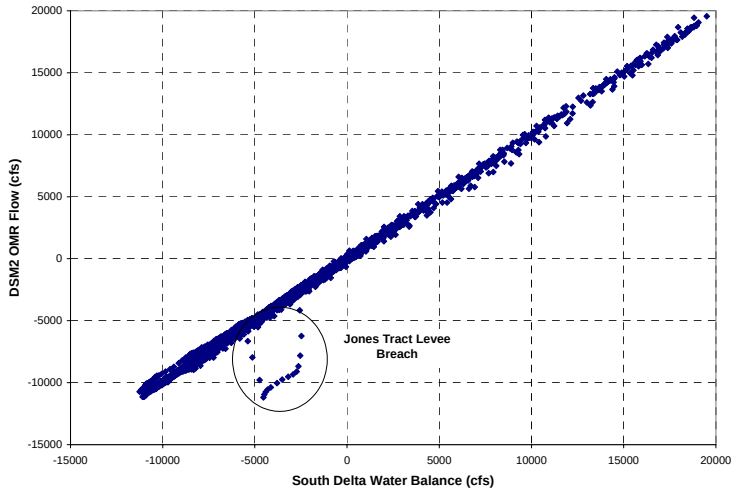
Table 4-2
Monthly Average South Delta Water Balance (cfs): 1998-2006

Month	Old & Middle Rivers	San Joaquin River @ Vernalis	Indian Slough @ Old River	South Delta Net Channel Depletions	San Joaquin River d/s HOR	Clifton Court Forebay Diversions	Jones Pumping Plant Diversions	CCWD Diversions @ Old River	Water Balance [1]	Difference (9) – (1)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Jan	-5850	4034	377	185	-1554	-5125	-3642	-98	-5824	26
Feb	-4275	6307	268	356	-2520	-4560	-3895	-139	-4183	92
Mar	-3043	8288	181	41	-3589	-4311	-3598	-99	-3085	-43
Apr	-718	8681	-14	-163	-3856	-2932	-2238	-144	-665	53
May	1271	8873	-193	-392	-4574	-1116	-1205	-116	1276	5
Jun	-2361	7503	6	-719	-3396	-2700	-2894	-191	-2392	-31
Jul	-7496	4785	294	-926	-2120	-5209	-4209	-154	-7539	-43
Aug	-9298	2621	440	-671	-1168	-6082	-4326	-135	-9320	-23
Sep	-8962	2368	476	-383	-1105	-5918	-4291	-118	-8971	-10
Oct	-7403	2633	414	-252	-1434	-4455	-4220	-94	-7407	-4
Nov	-6639	2490	388	-184	-1284	-4099	-3912	-74	-6675	-36
Dec	-5927	2246	359	-103	-741	-4378	-3266	-35	-5917	10

[1] Sum of Columns (2) thru (8)

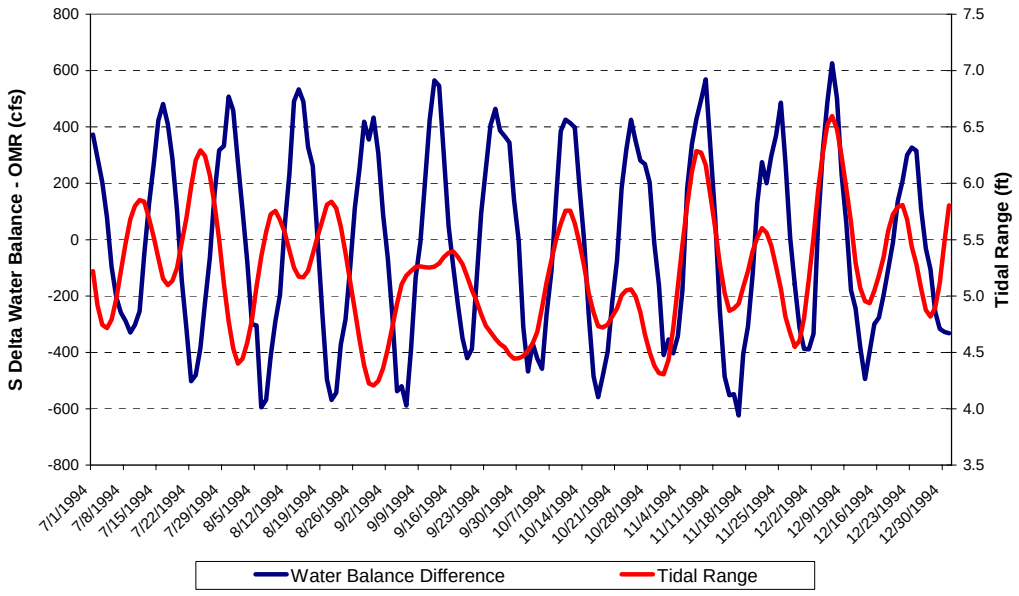
Figure 4-1
Comparison of OMR Flow and South Delta Water Balance
14-day Averaged DSM2 Data: 1990-2006





The south Delta water balance closely approximates DSM2-simulated OMR flow on a 14-day average basis. The south Delta water balance is within ± 150 cfs of the DSM2 estimate about 85% of the time and within ± 350 cfs 97% of the time. The water balance does not account for unique hydraulic conditions in the south Delta associated with Jones Tract island flooding and pump-off during and after the levee failure.

Figure 4-2
Comparison of Water Balance Residual and Martinez Tidal Range
7-day DSM2 Averages: Jul 1994 - Dec 1994



The residuals between DSM2-computed OMR flow and the south Delta water balance exhibit periodic behavior when computed from 7-day averaged data. As shown in the figure, the phasing is not well predicted from the Martinez tidal range. Tidal range is defined as the difference between daily maximum and daily minimum water levels.

Section 5
Methods: Developing Statistical Relationships for Unknown Water Balance Terms

As discussed in the previous section, a south Delta water balance developed with DSM2 data provides a foundation for the MWD OMR flow model. Since most of the water balance terms are measured in the field or estimated through currently available methods, these terms are defined as independent variables in the MWD model. Two key water balance terms, Indian Slough flow at Old River and San Joaquin River flow downstream of HOR, are not measured in the field or estimated through currently available methods. Therefore, regression equations were developed with DSM2 data to predict these terms.

Indian Slough Flow @ Old River

Figure 5-1 shows a linear relationship between 14-day averaged Indian Slough flow and 14-day OMR flow, as provided by DSM2, where positive flow is defined as flowing upstream (east) into Old River. Regression statistics are provided in Table 5-1. All data points generated in the DSM2 simulation of historical conditions were used to develop the relationship. This relationship suggests that, as OMR downstream flow increases, Indian Slough flow decreases (or moves downstream in a westerly direction away from Old River). A practical implication of this relationship is that, under low flow conditions, south Delta water diversions have less than a 1-to-1 effect on gauged Old and Middle River reverse flows. If this bypass did not exist, a 1-to-1 effect would exist (ignoring the influence of south Delta water diversions on the HOR flow split), i.e. an additional 100 cfs south Delta diversion would result in 100 cfs of additional reverse flow measured in Old and Middle Rivers.

A similar regression analysis was performed with daily averaged flows. The resulting relationship was nearly identical to the relationship developed with 14-day averaged flows; however, the data scatter was greater.

An attempt was made to refine the above relationship by removing data corresponding to periods when the south Delta water balance does not compare favorably with DSM2 generated OMR flows. Removing data from two specific periods (January-February 1997 flood and June-December 2004 Jones Tract levee breach) did not result in a more refined relationship, however.

A residuals analysis revealed a strong seasonal trend that was correlated with net channel depletions in Indian Slough and Rock Slough. For the same OMR flow, Indian Slough flows into Old River are higher when local net channel depletions are lower. The 14-day averaged Indian Slough flow relationship was improved by adding an additional term for local depletions (see Table 5-1). Curiously, CCWD diversions from Rock Slough did not appear to be a statistically significant factor in estimating Indian Slough flow.

Although the refined Indian Slough relationship provided better correspondence with DSM2 data, it was not incorporated into the final model discussed in Section 6. The better fit with DSM2 data did not translate into a better fit with observed data, probably

due to difficulties in estimating net channel depletions in Indian Slough and Rock Slough. Therefore, it was determined that the additional model complexity was not warranted.

San Joaquin River Flow Downstream of HOR

Figure 5-2 shows a linear relationship between daily averaged San Joaquin River flow downstream of HOR and daily averaged San Joaquin River flow at Vernalis as provided by DSM2. As shown in the figure, the relationship is strongly influenced by operation of the HORB. When the HORB is not installed, San Joaquin River flows downstream of HOR increase as Vernalis flows increase. When the HORB is installed in the fall (partial) and spring (full), less water is diverted into Old River and San Joaquin River flows downstream of HOR increase at a faster rate as Vernalis flows increase. The actual flow split is dictated by culvert and weir operation and installed barrier height; these factors vary between fall and spring and also vary from year to year.

Focusing on lower-flow periods when the HORB is not installed, Figure 5-3 shows that installation of the Grant Line Canal barrier influences the flow split at HOR. Installation of the Grant Line Canal barrier results in a larger fraction of Vernalis flow remaining in the San Joaquin River downstream of the HOR by increasing water levels in the south Delta. Limited data suggests that the influence on HOR flow split is due solely to Grant Line Canal barrier installation rather than concurrent installation of all agricultural barriers. This conclusion is based on 95 data points simulated during the following periods: Jul 11-Oct 2, 1996, Nov 8-14, 2005, and Nov 17-20, 2006. During these periods, the Grant Line Canal barrier is installed alone or with one additional agricultural barrier. The flow split during these periods is consistent with periods when all agricultural barriers are installed.

The HOR flow split is also influenced by south Delta diversions when the HORB and Grant Line Canal barriers are not installed. South Delta diversions result in a smaller fraction of Vernalis flow remaining in the San Joaquin River downstream of the HOR by decreasing water levels in the south Delta. Figure 5-4 compares the flow split at low and high south Delta diversions. The figure shows that, as Vernalis flows increase, the influence of south Delta diversions on the HOR flow split diminishes.

An overflow weir is installed on Paradise Cut at the junction with the San Joaquin River. When Vernalis flows exceed 16,000 cfs, some flow is diverted into the south Delta at Paradise Cut before reaching the HOR (Hildebrand, A. 2007). The relationship between daily averaged Paradise Cut flow and daily averaged Vernalis flow, as provided by DSM2, is shown in Figure 5-5. Therefore, at higher Vernalis flows, a smaller fraction of Vernalis flow moves downstream of the HOR. The figure shows a change in slope when Vernalis and Paradise Cut flows exceed 28,000 cfs and 7,000 cfs, respectively.

The relationship between daily averaged San Joaquin River flow downstream of HOR and daily averaged San Joaquin River flow at Vernalis shows more data scatter at low Vernalis flows. Incorporating San Joaquin River net channel depletions between Vernalis and HOR did not reduce the observed scatter. By using daily averaged data, the

proposed relationships assume tidal influence is negligible. As Vernalis flows decrease, this assumption becomes less valid. Under these conditions, downstream flows sometimes reverse and are dominated by tidal conditions. Regression analysis results are summarized in Table 5-2. Residuals analysis confirms that the flow split is influenced by tidal conditions when Vernalis flows are low to modest.

The regression analysis implies that the HOR flow split, defined as the ratio of Old River flow to Vernalis flow, decreases as Vernalis flows increase and approaches 0.5 at high Vernalis flows. The implied ratio is approximately 0.6-0.8 at moderate flow levels, depending on south Delta diversions. And as discussed above, under low flow conditions, tidal conditions can cause San Joaquin River flows downstream of HOR to reverse and result in all flow moving through Old River.

DWR has recently collected flow data on the San Joaquin River downstream of HOR at Lathrop (Mayr, S. 2007). Figure 5-6 compares these 24-hour daily averaged flow measurements for the period October 19, 2005 through September 30, 2006 with (1) estimates produced by the statistical relationship and (2) USGS flow measurements at Stockton (Smith, P. 2007b). All three data sets are generally consistent with two notable exceptions:

- The statistical relationship underestimates the peak flow of 14,000 to 15,000 cfs observed at Lathrop and Stockton in mid-April 2006.
- The observed data at Lathrop deviates from statistical estimates and Stockton measurements in late April and May 2006.

References

Hildebrand, A. (2007). Personal communication, September 18.

Mayr, S. (2007). Personal communication, October 15.

Smith, P. (2007b). Personal communication, November 9.

Table 5-1
Regression Analysis Results:
Statistical Models of Indian Slough Flow at Old River
$Q_{Indian\ Slough}$ (cfs) = A * Q_{OMR} (cfs) + B * $Q_{Local\ Diversions}$ (cfs) + C

Model	N	A	B	C	R2	SEE (cfs)
Preferred	6194	-0.0638	0	-72	0.952	71
Alternate	6193	-0.0669	-0.679	-36	0.990	33

N= number of observations; R2=coefficient of determination; SEE=standard error of estimate

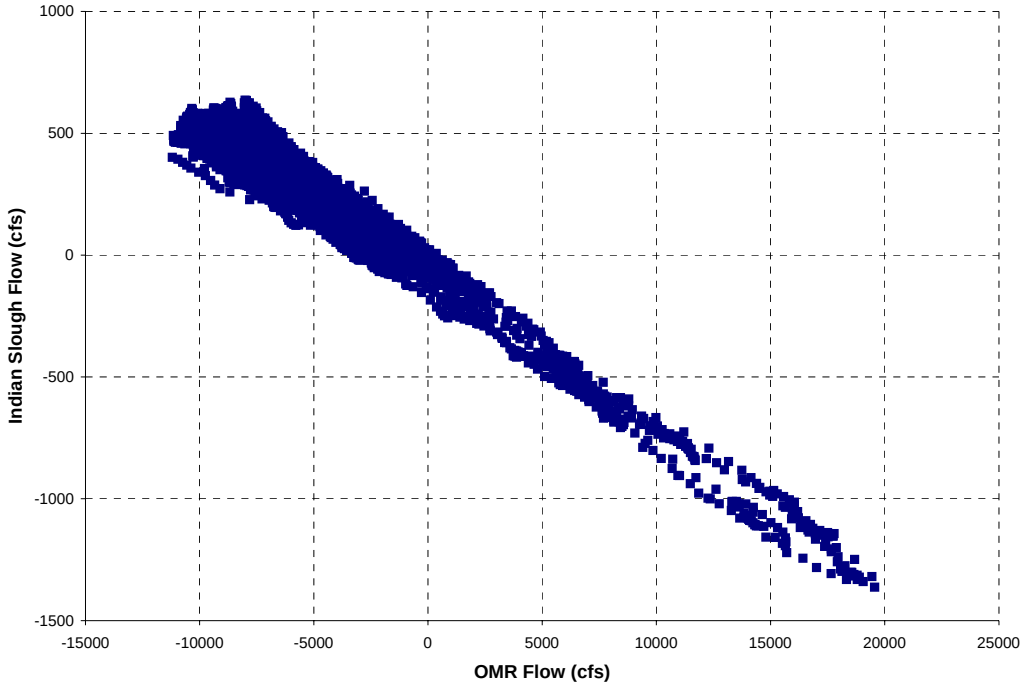
Table 5-2
Regression Analysis Results:
Statistical Model of San Joaquin River Flow Downstream of Head of Old River

$Q_{SJR\ d/s\ HOR}$ (cfs) = A * $Q_{Vernalis}$ (cfs) + B * $Q_{South\ Delta\ Diversions}$ (cfs) + C

HORB	GLC Barrier	Vernalis (cfs)	N	A	B	C	R2	SEE (cfs)	Comments
Out	Out	< 16,000	7167	0.499	-0.0312	-161	0.996	112	
Out	Out	16000-28000	622	0.276	0	3128	0.991	84	Weir allows flow in Paradise Cut
Out	Out	> 28000	214	0.327	0	1677	0.983	180	Weir allows flow in Paradise Cut, but at a lower rate
Out	In	All	2055	0.554	-0.0168	-45	0.918	127	
In (Spring)	Out/In	All	586	0.916	0	-146	0.978	219	
In (Fall)	Out/In	All	1251	0.747	-0.0109	-24	0.961	109	

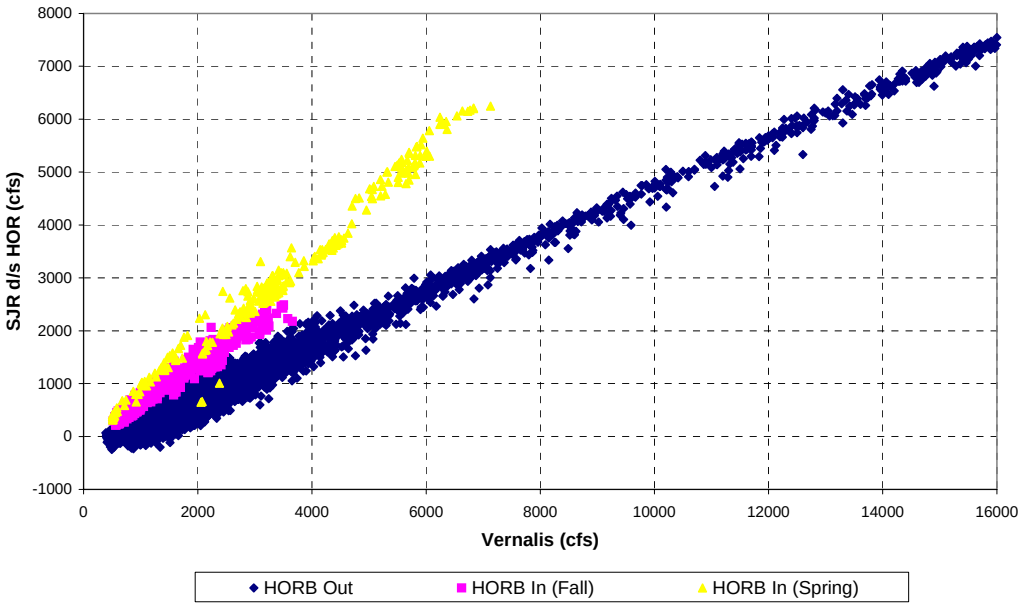
N= number of observations; R2=coefficient of determination; SEE=standard error of estimate

Figure 5-1
Flow Relationship Between Indian Slough @ Old River and OMR
14-Day Averaged DSM2 Data 1990-2006



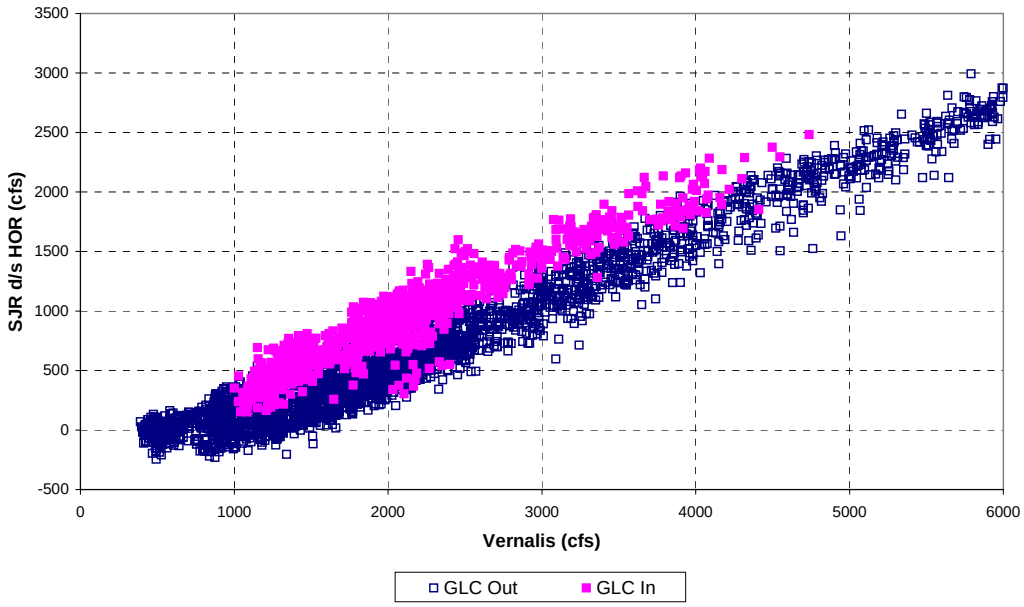
The above figure shows an inverse linear relationship between 14-day averaged Indian Slough flow and 14-day averaged OMR flow, where positive flow is defined as flowing upstream (east) into Old River. Thus, as OMR flows increase, Indian Slough flows decrease (or move downstream in a westerly direction away from Old River). A practical implication of this relationship is that, under low flow conditions, south Delta water diversions have less than a 1-to-1 effect on Old and Middle River reverse flows.

Figure 5-2
Flow Relationship Between San Joaquin River d/s HOR & Vernalis
Influence of HORB
Daily Average DSM2 Data 1990-2006



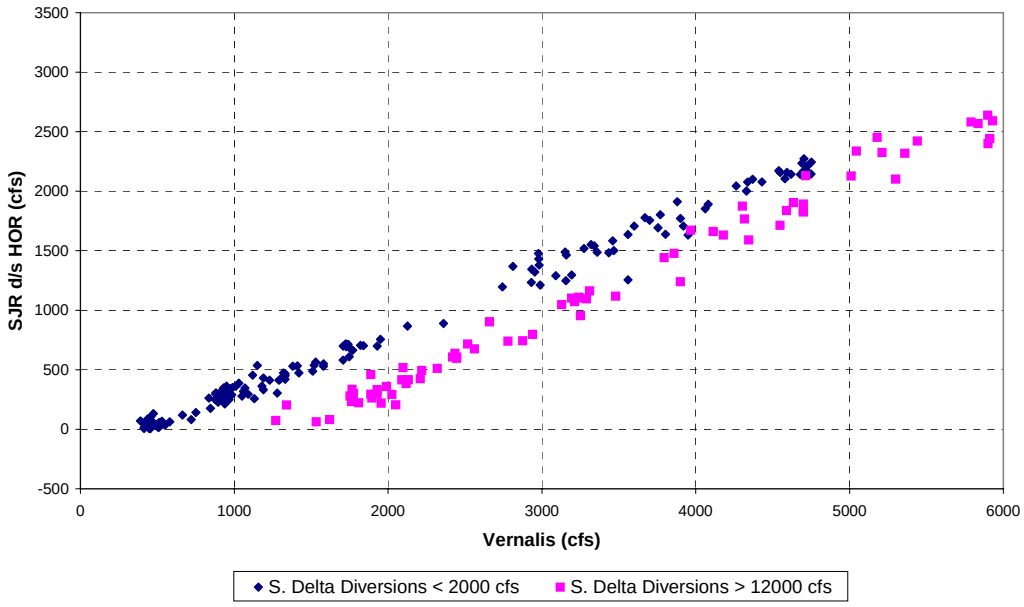
The above figure shows a linear relationship between daily averaged San Joaquin River flow downstream of HOR and daily averaged San Joaquin River flow at Vernalis. The relationship is strongly influenced by operation of the HORB. When the HORB is installed in the fall (partial) and spring (full), less water is diverted into Old River and San Joaquin River flows downstream of HOR increase at a faster rate as Vernalis flows increase.

Figure 5-3
Flow Relationship Between San Joaquin River d/s HOR & Vernalis
Influence of Grant Line Canal Barrier
Daily Average DSM2 Data 1990-2006 (HORB Out)



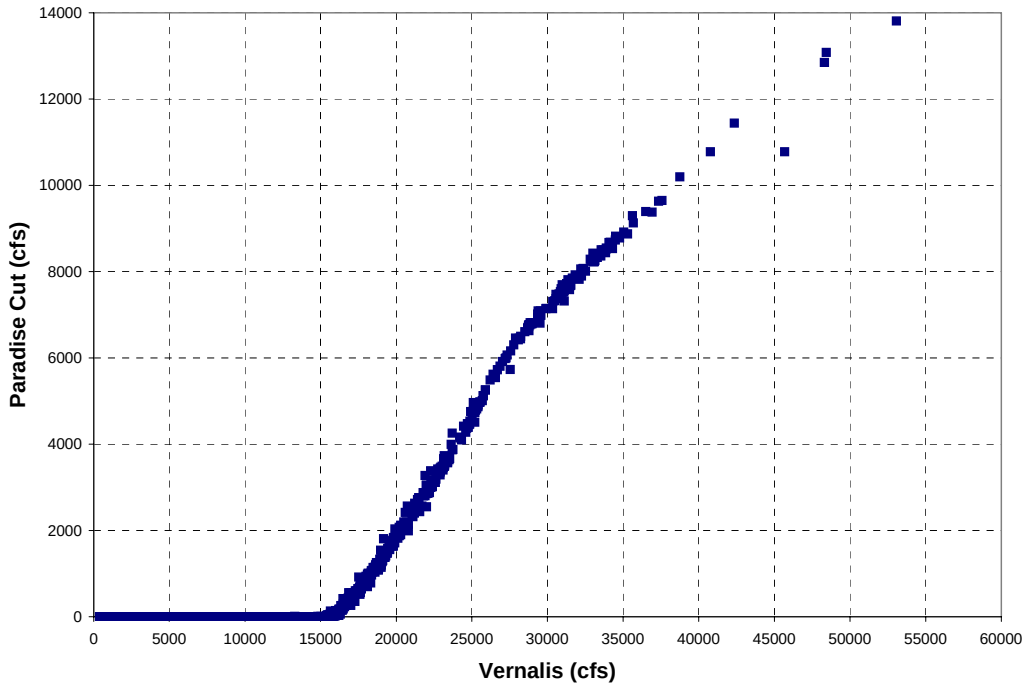
Installation of the Grant Line Canal barrier results in a larger fraction of Vernalis flow moving in the San Joaquin River downstream of the HOR by increasing water levels in the south Delta.

Figure 5-4
Flow Relationship Between San Joaquin River d/s HOR & Vernalis
Influence of South Delta Diversions
Daily Average DSM2 Data 1990-2006 (HORB & GLC Barriers Out)



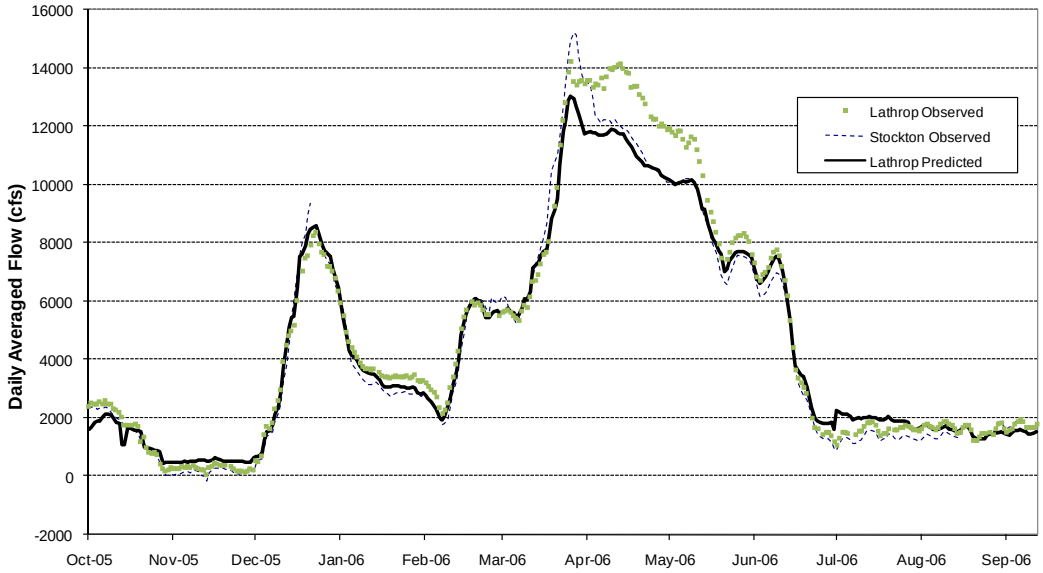
The HOR flow split is influenced by south Delta diversions when the HORB and Grant Line Canal barriers are not installed. South Delta diversions result in a smaller fraction of Vernalis flow remaining in the San Joaquin River downstream of the HOR by decreasing water levels in the south Delta. The figure shows that, as Vernalis flows increase, the influence of south Delta diversions on the HOR flow split diminishes.

Figure 5-5
Flow Relationship Between San Joaquin River at Paradise Cut & Vernalis
Daily Average DSM2 Data 1990-2006



An overflow weir is installed on Paradise Cut at the junction with the San Joaquin River. When Vernalis flows exceed 16,000 cfs, some flow is diverted into the south Delta at Paradise Cut before reaching the HOR. Thus, at higher Vernalis flows, a smaller fraction of Vernalis flow moves downstream of the HOR. The figure shows a change in slope when Vernalis and Paradise Cut flows exceed 28,000 cfs and 7,000 cfs, respectively.

Figure 5-6
Comparison of Predicted & Observed San Joaquin River Flow Downstream of HOR
October 19, 2005 – September 30, 2006



DWR has recently collected flow data on the San Joaquin River downstream of HOR at Lathrop (Mayr, S. 2007). These flow data are generally consistent with predictions from the statistical relationship and are generally consistent with USGS measurements at Stockton (Smith, P. 2007b). However, the observed data at Lathrop deviates from predicted values and Stockton measurements in late April and May 2006.

Section 6
Results

Predictive equations for OMR flow were developed by incorporating the statistical relationships for Indian Slough at Old River and San Joaquin River downstream of HOR (developed in Section 5) into the south Delta water balance presented in Section 4. The resulting MWD model is a function of Vernalis flow, south Delta diversions, and south Delta barrier operations. South Delta diversions are the sum of Clifton Court Forebay diversions, Jones Pumping Plant diversions, CCWD diversions at Old River, and south Delta net channel depletions. Model constants are provided in Table 6-1.

Comparison with DSM2 Data

Figure 6-1 compares 14-day averaged OMR flows as generated by DSM2 and the MWD model for the 1990-2006 period. The MWD model estimates are within ± 150 cfs of the DSM2 OMR estimates more than 75% of the time and are within ± 350 cfs 98% of the time.

Comparison with Observed Data

Daily averaged OMR flows predicted by the MWD model are compared with daily averaged observed data in Figure 6-2. Differences with observed data are within ± 600 cfs about 60% of the time. Differences are greater than ± 1400 cfs about 5% of the time. Similar to the DSM2 model, the MWD model shows a modest bias to underestimate OMR flow. Time series comparisons of predicted and observed 14-day averaged OMR flow are shown in Appendix 6A.

Model Uncertainty

Model uncertainty was evaluated by computing safety factors or "buffers" needed to avoid exceeding an OMR flow objective with 95% confidence. A buffer of 300 cfs indicates that, for a flow objective of -5000 cfs, operations decisions would be based on meeting a more stringent flow of -4700 cfs. Larger buffers result in higher water costs. The following forecast applications were evaluated:

- 3-day forecast of 14-day averaged OMR flows
- 5-day forecast of 14-day averaged OMR flows
- 3-day forecast of 7-day averaged OMR flows
- 5-day forecast of 7-day averaged OMR flows

Buffers required for the months of December through June are summarized in Table 6-2. Probability exceedence curves associated with 14-day and 7-day averages are presented in Appendix 6B. The exceedence curves may be used to select buffers with confidence levels other than 95%.

A 3-day forecast of 14-day averaged OMR flows takes advantage of 11 observed values; a 5-day forecast of 14-day averaged OMR flows takes advantage of only 6 observed values. Similarly, a 3-day forecast of 7-day averaged OMR flows takes advantage of 4 observed values; a 5-day forecast of 7-day averaged OMR flows takes advantage of 7 observed values. The buffer values and exceedence curves associated with the "MWD Equation" assume no knowledge of antecedent conditions.

The table and exceedence curves show that longer flow averaging periods can be forecasted with greater certainty, and therefore can rely on smaller buffers (and lower water costs) to meet OMR flow objectives. Buffers required to meet 7-day averaged flow objectives are approximately twice as large as buffers required to meet 14-day averaged flow objectives.

The table and exceedence curves also show that 3-day forecasts can be estimated with greater certainty than 5-day forecasts, and therefore can rely on smaller buffers. Buffers required for a 5-day forecast are approximately 50% greater than those required for a 3-day forecast. When no knowledge of antecedent conditions are available for a forecast (e.g. a 7-day averaged OMR flow forecasted beyond 7 days), required buffers are approximately twice as large as those required for a 3-day forecast.

Buffer size does not vary greatly between months, although April and May tend to be somewhat higher. Because the buffers were developed from measured data, the April and May buffers represent data that measures the influence of HORB operations. It is anticipated that the MWD model will provide more accurate OMR flow estimates for conditions when the HORB is not installed; therefore, buffer requirements for April and May could be more consistent with other months.

Tables 6-3 and 6-4 compare planning-level estimates of water costs associated with 300 cfs and 600 cfs operations buffers. These estimates are useful for comparison only, as the assumed OMR objectives only roughly approximate the recent court ruling. The 300 cfs buffer is representative of a 3-day forecast of 14-day averaged OMR flows; the 600 cfs buffer is representative of a 3-day forecast of 7-day averaged OMR flows.

The annual costs of a 300 cfs buffer range from 90-150 TAF for a -750 cfs OMR objective and from 20-70 TAF for a -5000 cfs OMR objective, depending on water year type. The annual costs of a 600 cfs buffer range from 190-230 TAF for a -750 cfs OMR objective and from 50-140 TAF for a -5000 cfs OMR objective.

Table 6-1
MWD OMR Flow Model Coefficients

$$Q_{OMR}\ (cfs) = A * Q_{Vernalis} + B * Q_{South\ Delta\ Diversions} + C$$

Where: $Q_{South\ Delta\ Diversions} = Q_{CCF} + Q_{Jones} + Q_{CCWD} + Q_{South\ Delta\ NCD}$

HORB	GLC Barrier	Vernalis (cfs)	A	B	C
Out	Out	< 16,000	0.471	-0.911	83
Out	Out	16,000-28,000	0.681	-0.940	-3008
Out	Out	> 28,000	0.633	-0.940	-1644
Out	In	All	0.419	-0.924	-26
In (Spring)	Out/In	All	0.079	-0.940	69
In (Fall)	Out/In	All	0.238	-0.930	-51

Table 6-2
OMR Flow Buffers with 95% Confidence (cfs)

Month	14-Day Averaged OMR Flow			7-Day Averaged OMR Flow		
	3-Day Forecast	5-Day Forecast	MWD Equation	3-Day Forecast	5-Day Forecast	MWD Equation
Dec	300	450	700	600	850	1000
Jan	250	350	450	500	700	800
Feb	250	350	500	500	700	850
Mar	200	300	300	350	550	600
Apr	300	450	700	600	900	1050
May	300	450	850	600	950	1200
Jun	250	350	700	450	650	850
12 Months	300	400	750	550	850	1000

Notes on USGS Observed Data Used to Develop Buffers:
1) 24-hour averages were computed from raw 15-minute data
2) 24-hour data were filled based on correlations between Old and Middle Rivers
3) The period Jan 1, 1990 thru Sep 30, 2006 was used to develop buffers except as noted below
    3a) Events when OMR flow was > 0 cfs were excluded from buffer calculations
    3b) The period Jun 1, 2004 thru Dec 31, 2004 was excluded from buffer calculations (Jones Tract levee failure)

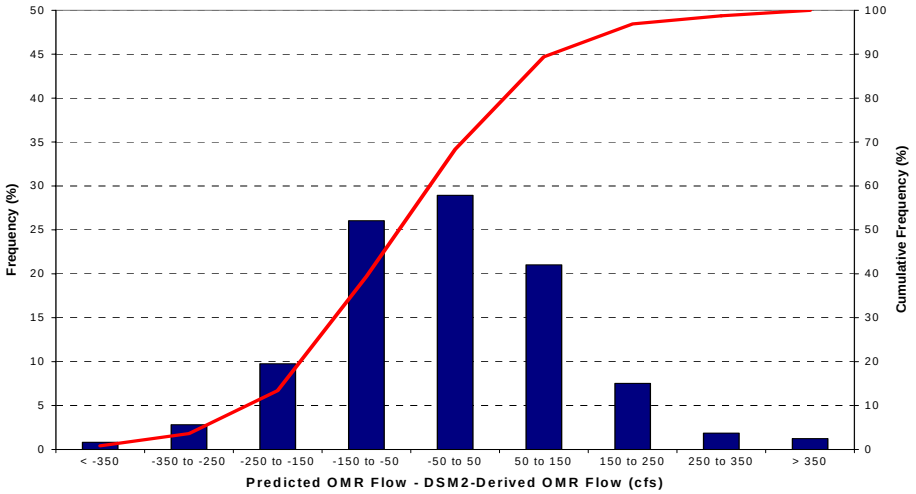
Table 6-3
Export Reductions Required to Meet a 300 cfs OMR Buffer
January-June with No South Delta Barrier Operations
(TAF per year)

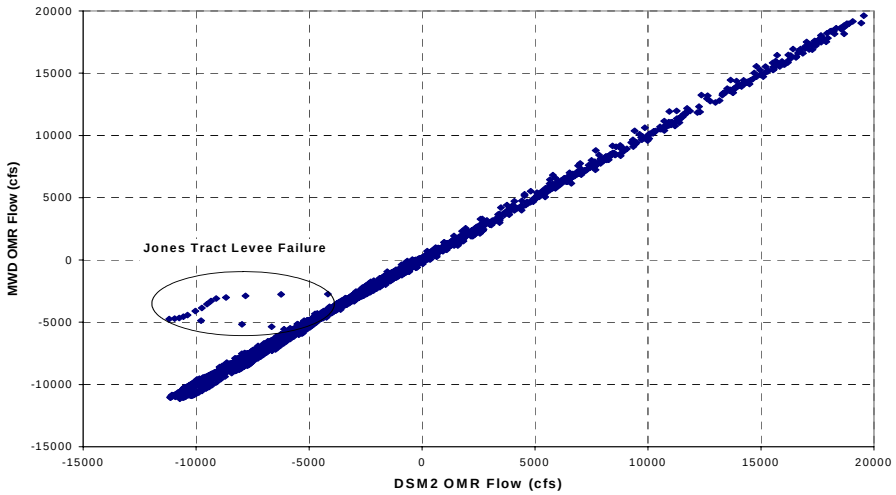
Water Year Type	OMR > -750 cfs			OMR > -5000 cfs		
	Without Buffer	With Buffer	Water Cost	Without Buffer	With Buffer	Water Cost
73-Year Average	1540	1650	110	380	430	50
Wet	1390	1480	90	310	350	40
Above Normal	1800	1920	120	480	540	60
Below Normal	1840	1960	150	480	550	70
Dry	1710	1830	120	450	510	60
Critical	890	990	100	190	210	20

Table 6-4
Export Reductions Required to Meet a 600 cfs OMR Buffer
January-June with No South Delta Barrier Operations
(TAF per year)

Water Year Type	OMR > -750 cfs			OMR > -5000 cfs		
	Without Buffer	With Buffer	Water Cost	Without Buffer	With Buffer	Water Cost
73-Year Average	1540	1760	220	380	490	110
Wet	1390	1580	190	310	400	90
Above Normal	1800	2030	230	480	610	130
Below Normal	1840	2070	230	480	620	140
Dry	1710	1940	230	450	580	130
Critical	890	1090	200	190	240	50

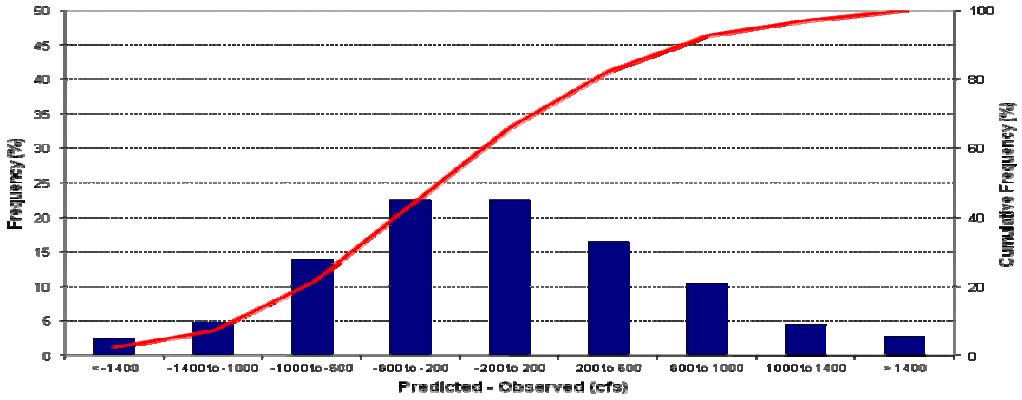
Figure 6-1
Comparison of DSM2 and MWD Model OMR Flow Predictions
14-Day Averaged Flows 1990-2006

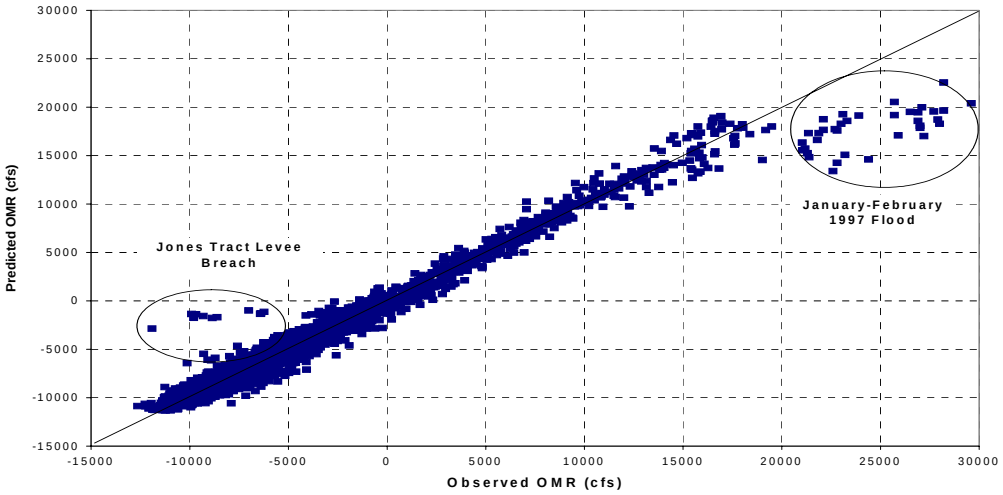




The MWD model closely approximates DSM2-simulated OMR flow on a 14-day average basis. The MWD model estimates are within ± 150 cfs of the DSM2 OMR estimates more than 75% of the time and are within ± 350 cfs 98% of the time. The MWD model does not account for unique hydraulic conditions in the south Delta associated with Jones Tract island flooding and pump-off during and after the levee failure.

Figure 6-2
Comparison of Predicted & Observed OMR Flow: MWD Model
January 1, 1990 – September 30, 2006





Differences with observed data are within ± 600 cfs over 60% of the time. Differences are greater than ± 1400 cfs about 5% of the time. As with the DSM2 model, the MWD model shows a modest bias to underestimate OMR flow. Data corresponding to the 1997 flood (Jan-Feb 1997) and the Jones Tract levee breach (Jun-Dec 2004) were excluded from the evaluation. Vernalis flow data are suspect during early 1997due to flood conditions along the San Joaquin River. Data collected during and after the Jones Tract levee breach were excluded due to the unique hydraulic conditions in the south Delta associated with island flooding and pump-off.

Appendix 6A
MWD Model Time Series Graphs

Figures

6A-1. Observed &Predicted 14-Day OMR Flow: 1990-91
6A-2. Observed &Predicted 14-Day OMR Flow: 1992-93
6A-3. Observed &Predicted 14-Day OMR Flow: 1994-95
6A-4. Observed &Predicted 14-Day OMR Flow: 1996-97
6A-5. Observed &Predicted 14-Day OMR Flow: 1998-99
6A-6. Observed &Predicted 14-Day OMR Flow: 2000-01
6A-7. Observed &Predicted 14-Day OMR Flow: 2002-03
6A-8. Observed &Predicted 14-Day OMR Flow: 2004-05

Figure 6A-1
Observed & Predicted 14-Day OMR Flow
1990-91

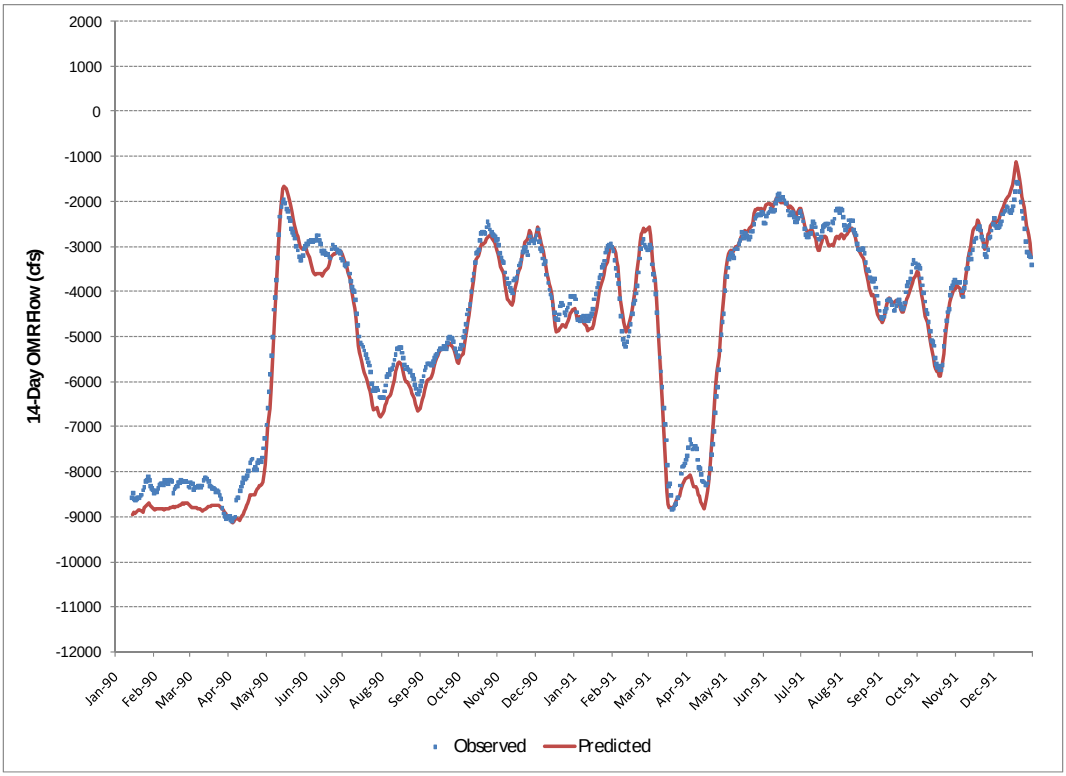


Figure 6A-2
Observed & Predicted 14-Day OMR Flow
1992-93

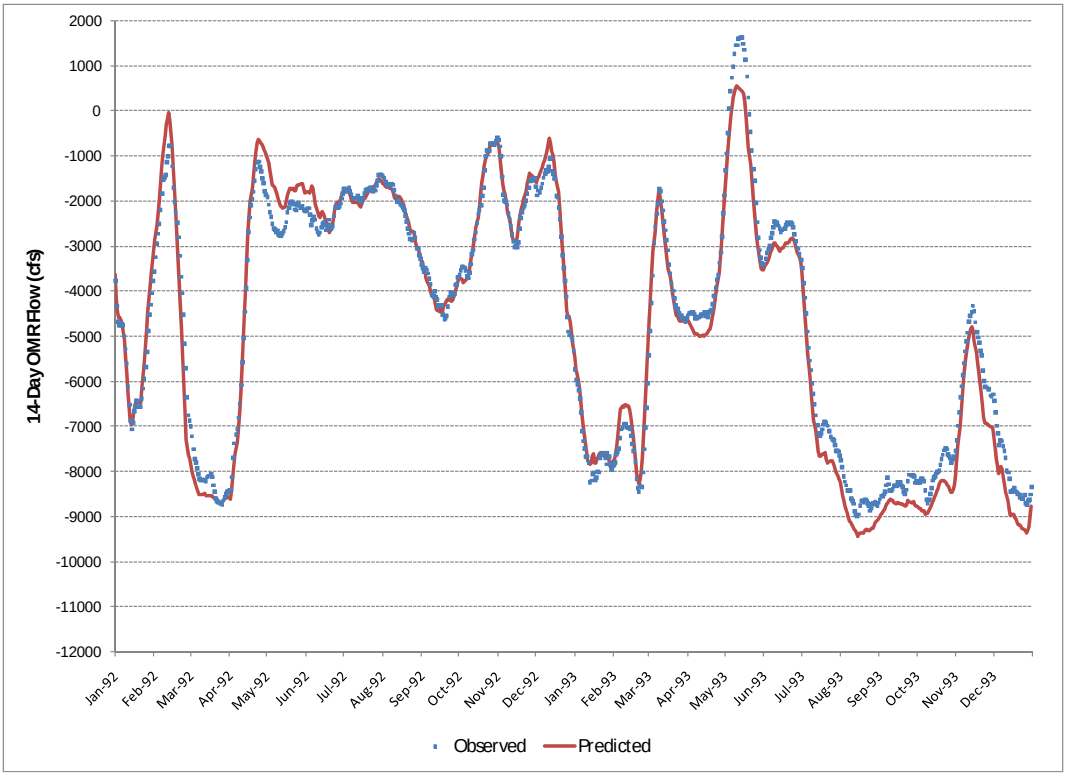


Figure 6A-3
Observed & Predicted 14-Day OMR Flow
1994-95

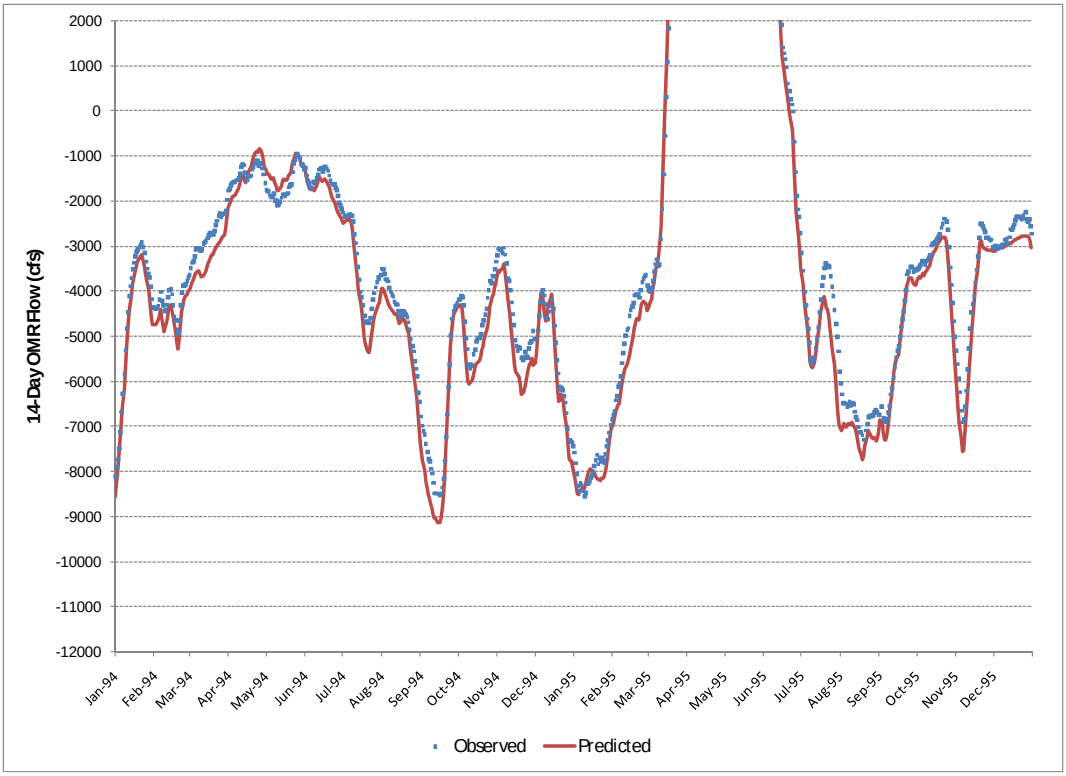


Figure 6A-4
Observed & Predicted 14-Day OMR Flow
1996-97

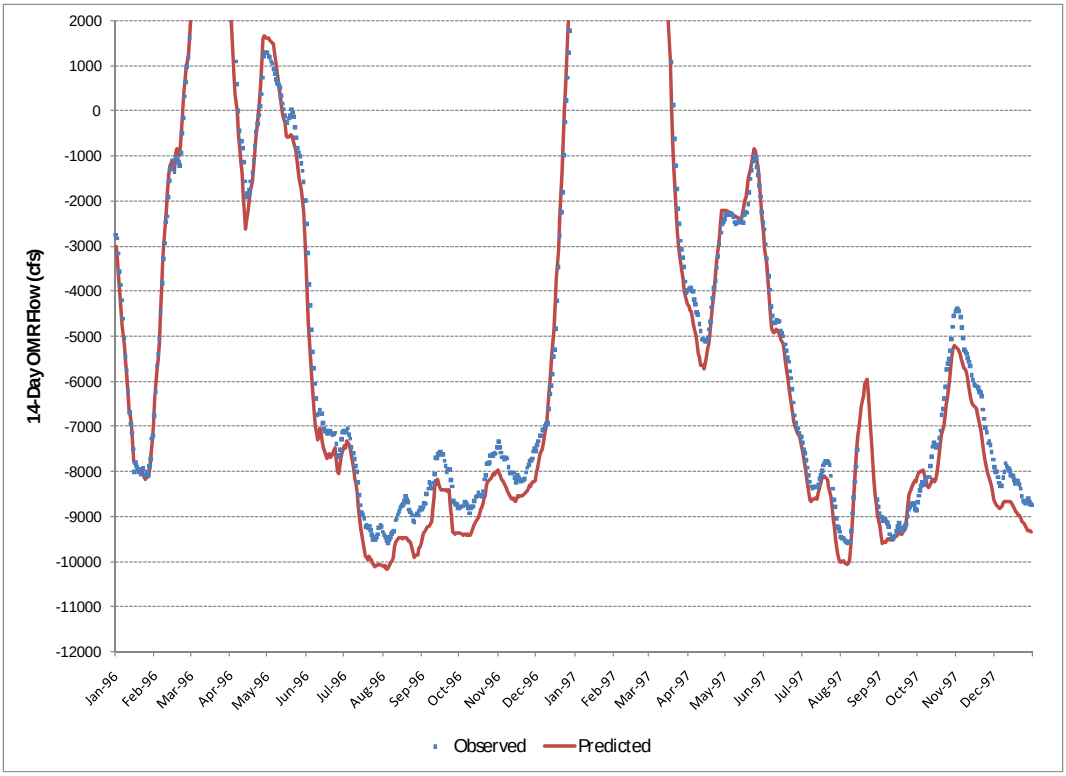


Figure 6A-5
Observed & Predicted 14-Day OMR Flow
1998-99

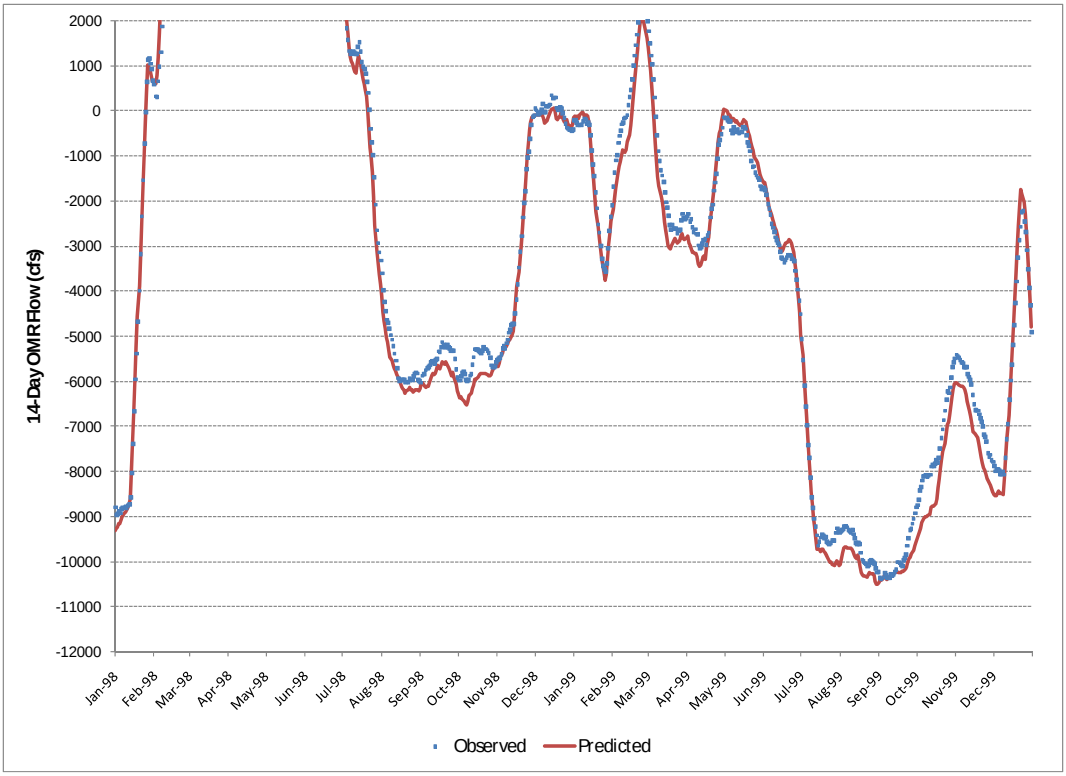


Figure 6A-6
Observed & Predicted 14-Day OMR Flow
2000-01

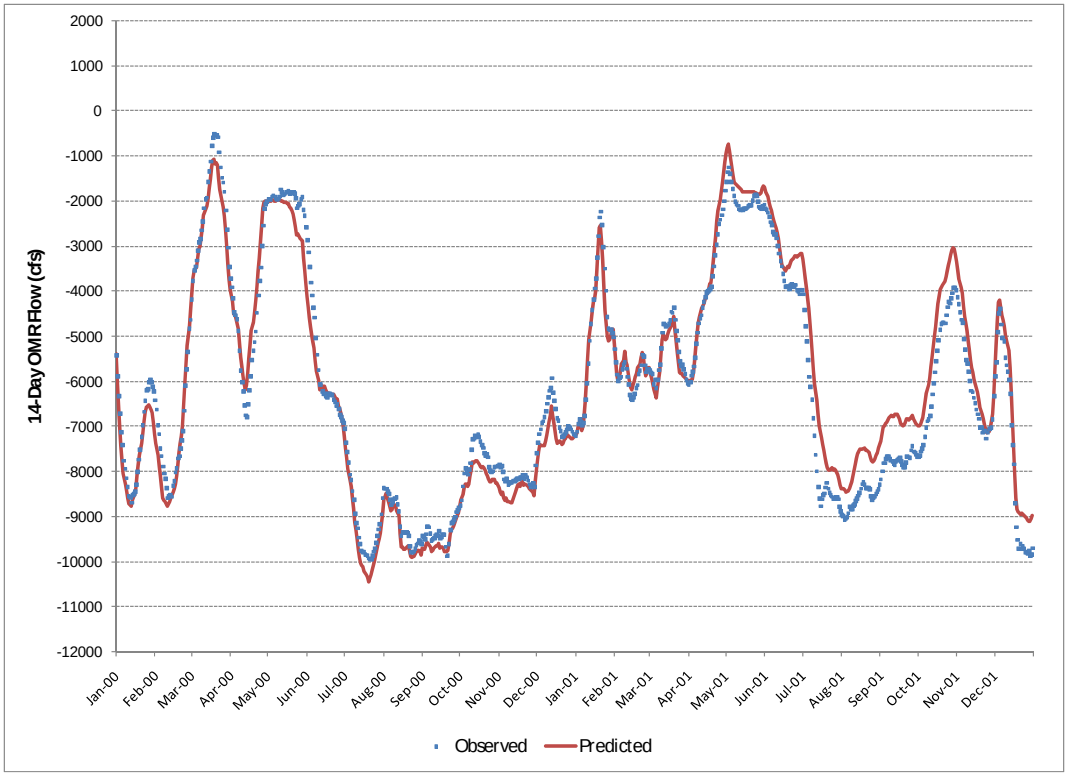


Figure 6A-7
Observed & Predicted 14-Day OMR Flow
2002-03

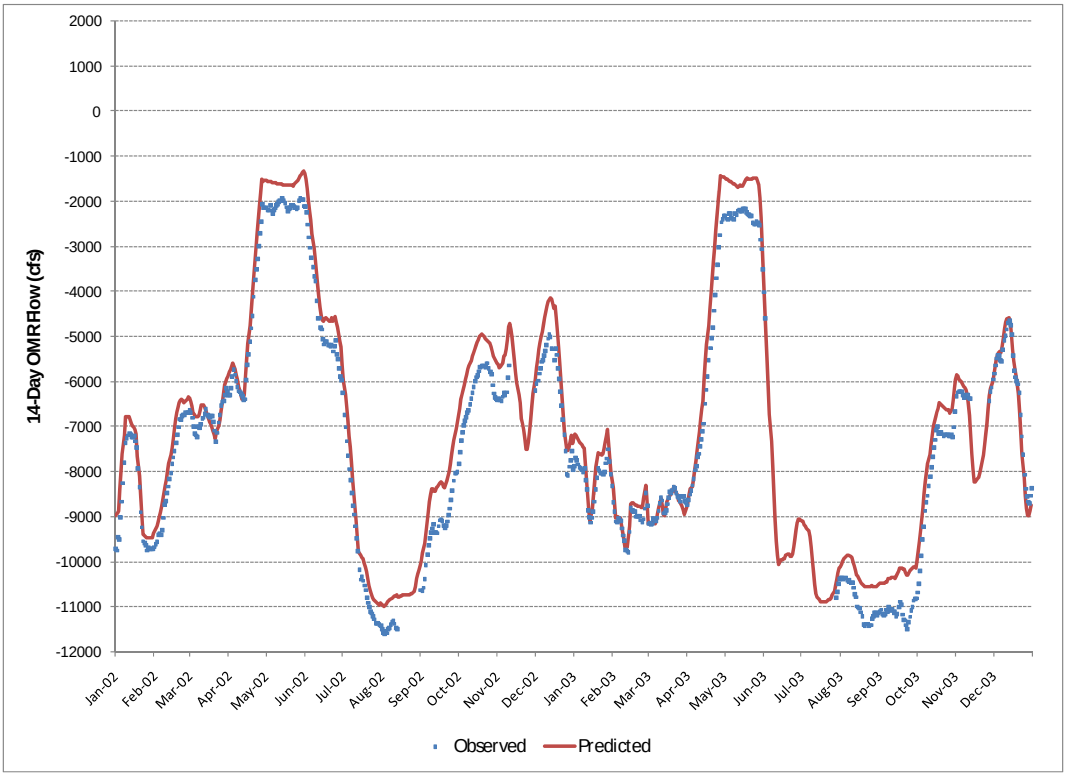
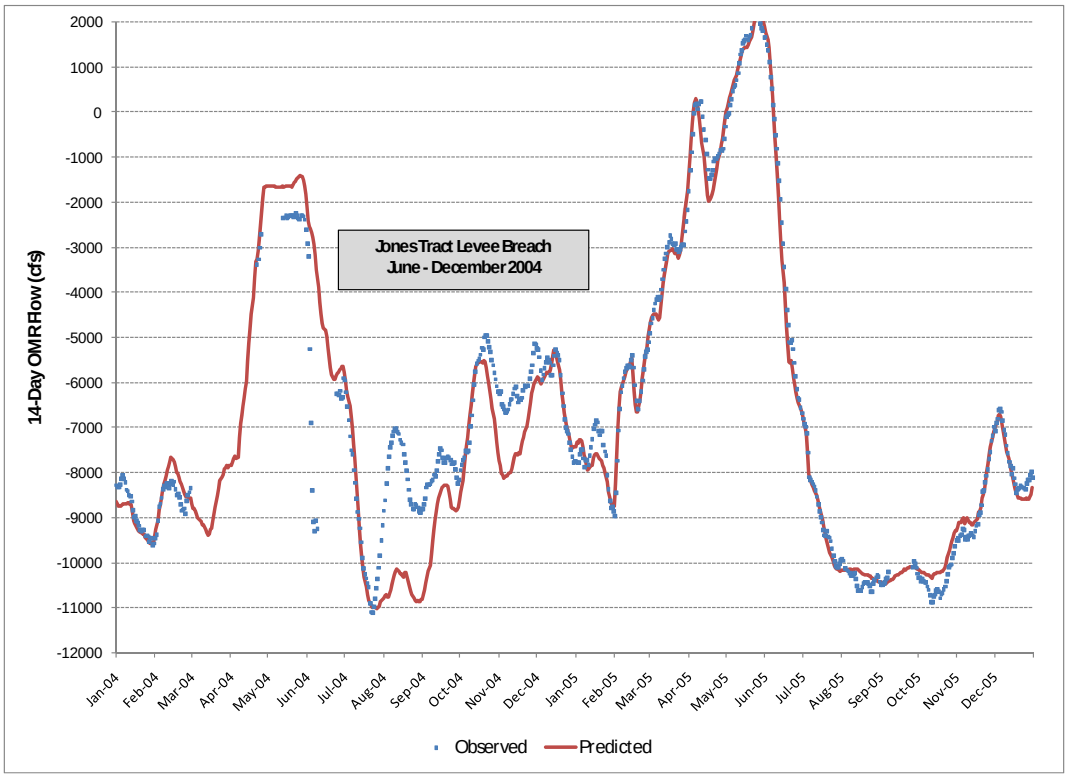


Figure 6A-8
Observed & Predicted 14-Day OMR Flow
2004-05



Appendix 6B
MWD Model Probability Exceedence Graphs

Figures

6B-1. 14-Day OMR Flow: Forecast Model Performance - December
6B-2. 14-Day OMR Flow: Forecast Model Performance - January
6B-3. 14-Day OMR Flow: Forecast Model Performance - February
6B-4. 14-Day OMR Flow: Forecast Model Performance - March
6B-5. 14-Day OMR Flow: Forecast Model Performance - April
6B-6. 14-Day OMR Flow: Forecast Model Performance - May
6B-7. 14-Day OMR Flow: Forecast Model Performance - June
6B-8. 7-Day OMR Flow: Forecast Model Performance - December
6B-9. 7-Day OMR Flow: Forecast Model Performance - January
6B-10. 7-Day OMR Flow: Forecast Model Performance - February
6B-11. 7-Day OMR Flow: Forecast Model Performance - March
6B-12. 7-Day OMR Flow: Forecast Model Performance - April
6B-13. 7-Day OMR Flow: Forecast Model Performance - May
6B-14. 7-Day OMR Flow: Forecast Model Performance - June

Figure 6B-1
14-Day OMR Flow
Forecast Model Performance
December

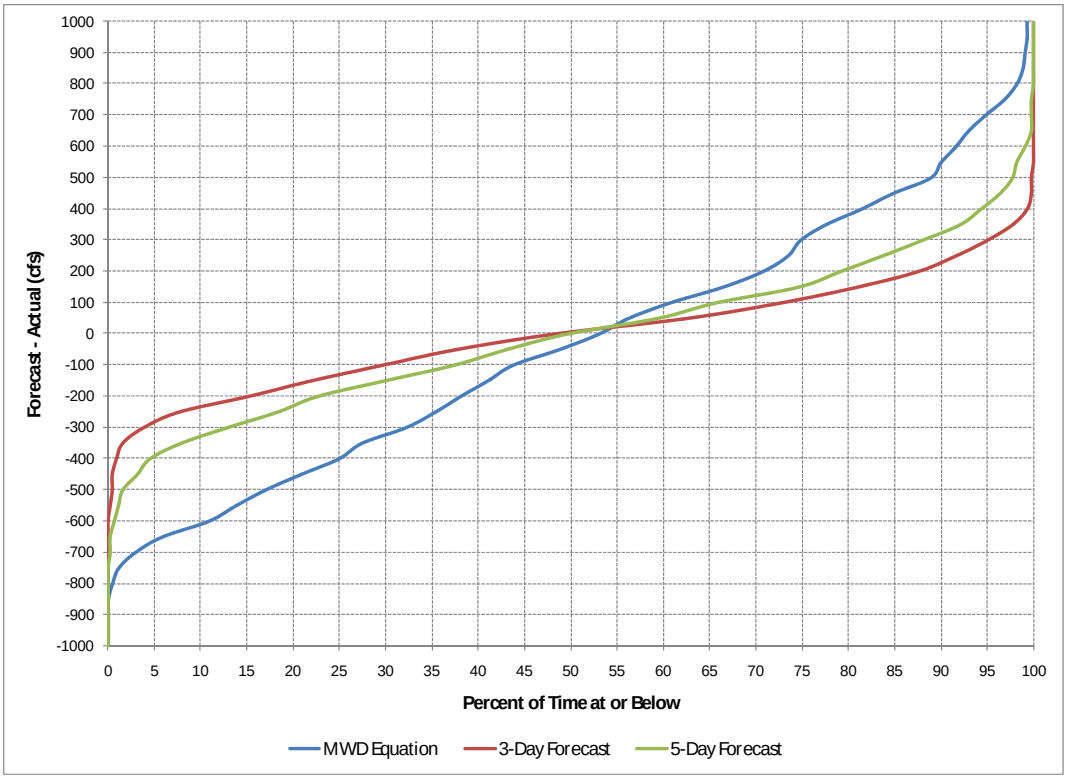


Figure 6B-2
14-Day OMR Flow
Forecast Model Performance
January

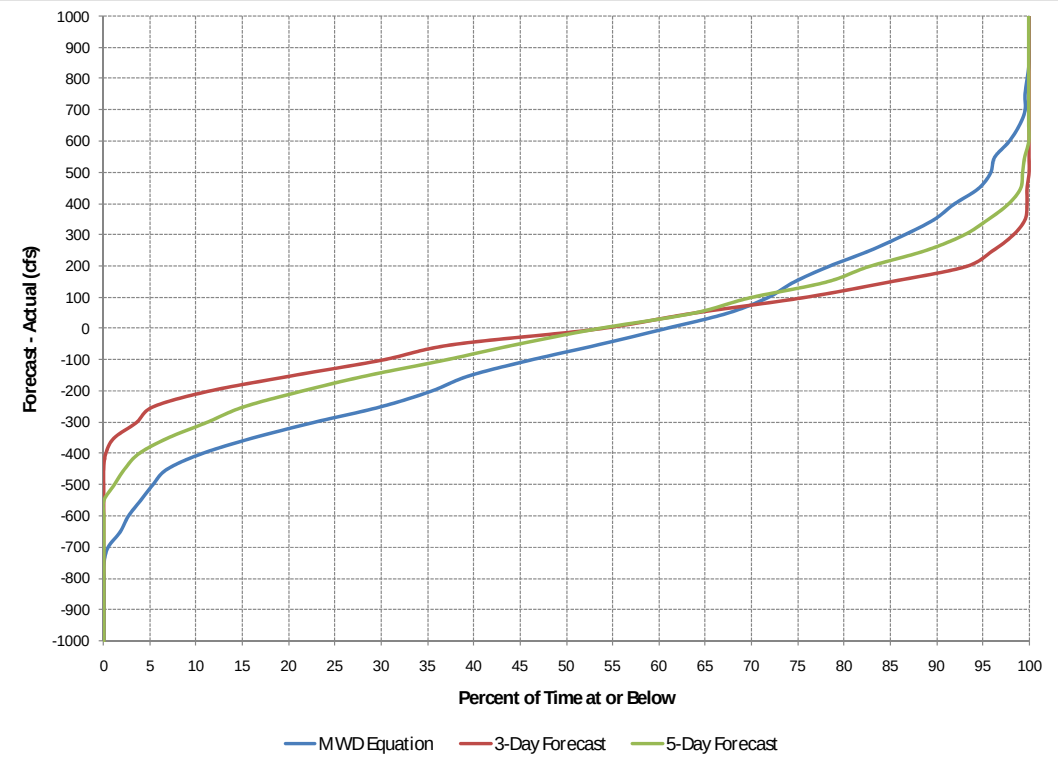


Figure 6B-3
14-Day OMR Flow
Forecast Model Performance
February

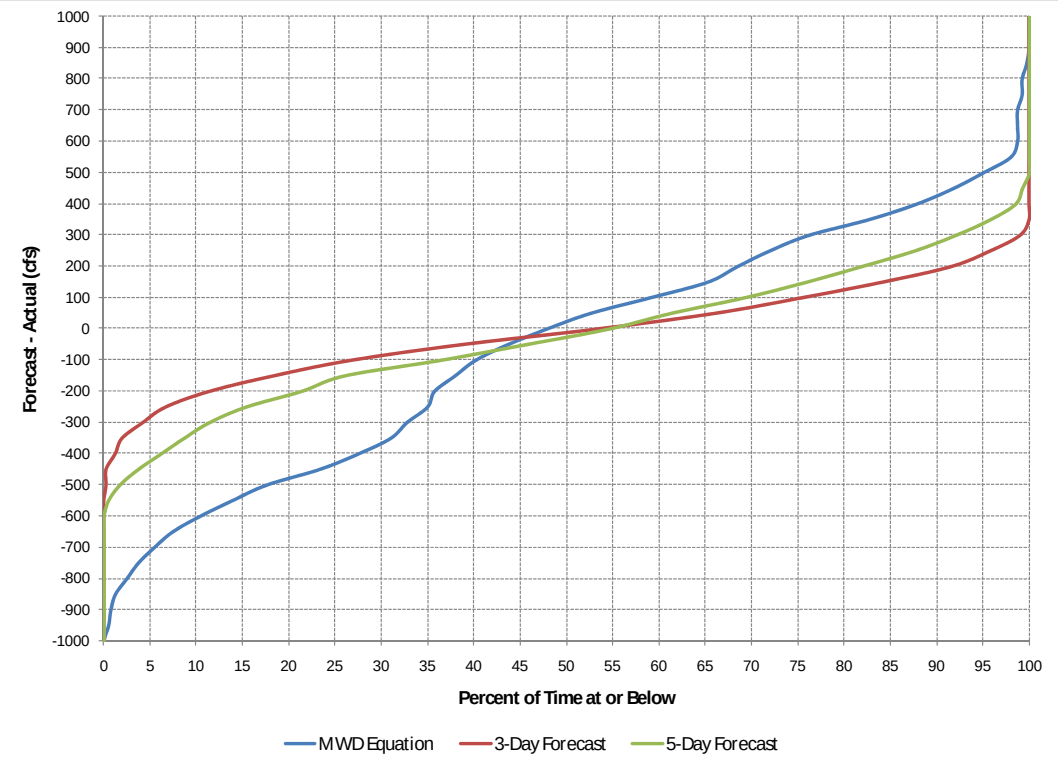


Figure 6B-4
14-Day OMR Flow
Forecast Model Performance
March

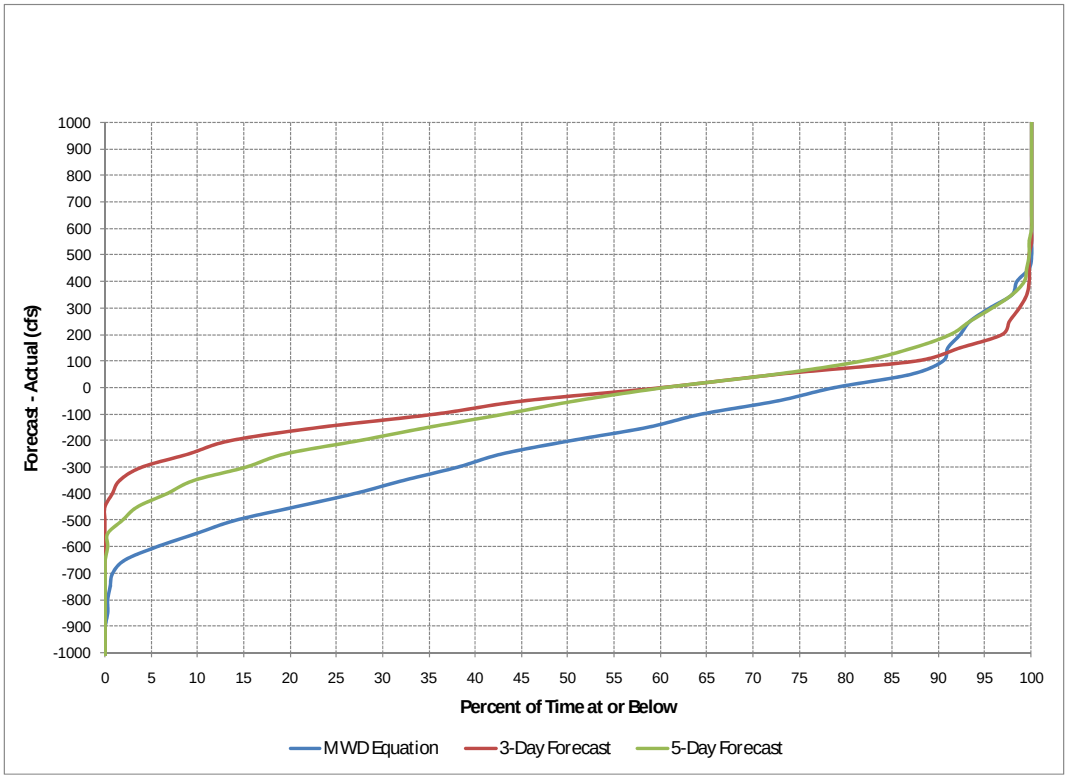


Figure 6B-5
14-Day OMR Flow
Forecast Model Performance
April

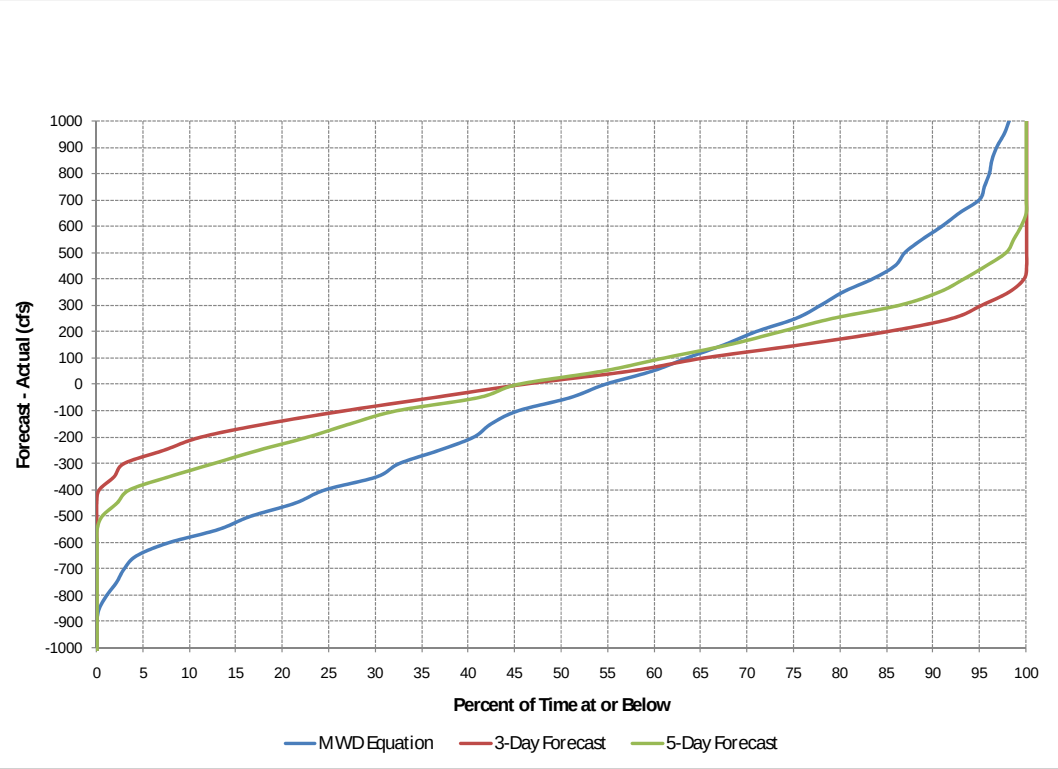


Figure 6B-6
14-Day OMR Flow
Forecast Model Performance
May

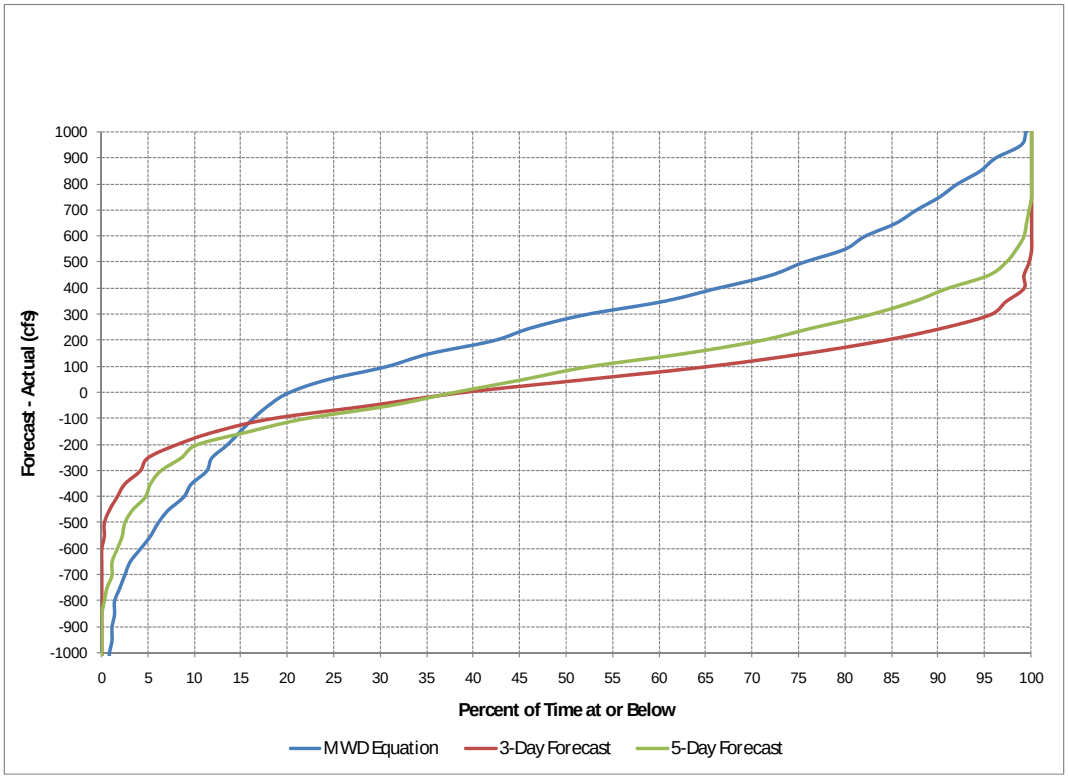


Figure 6B-7
14-Day OMR Flow
Forecast Model Performance
June

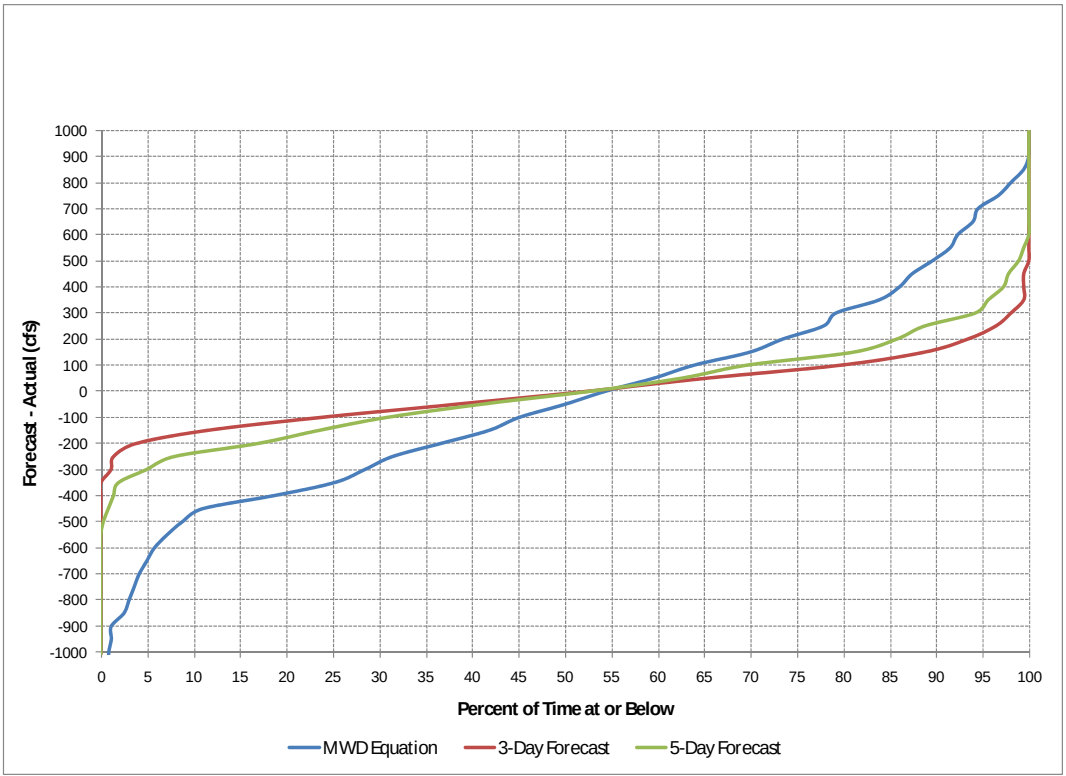


Figure 6B-8
7-Day OMR Flow
Forecast Model Performance
December

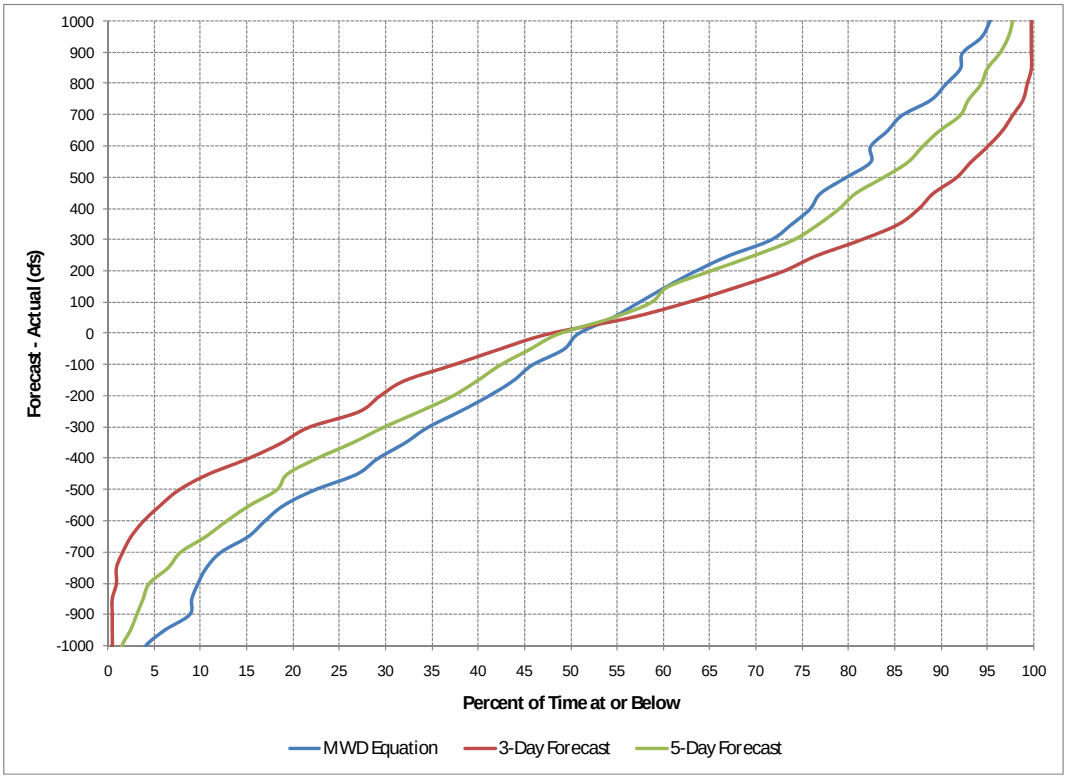


Figure 6B-9
7-Day OMR Flow
Forecast Model Performance
January

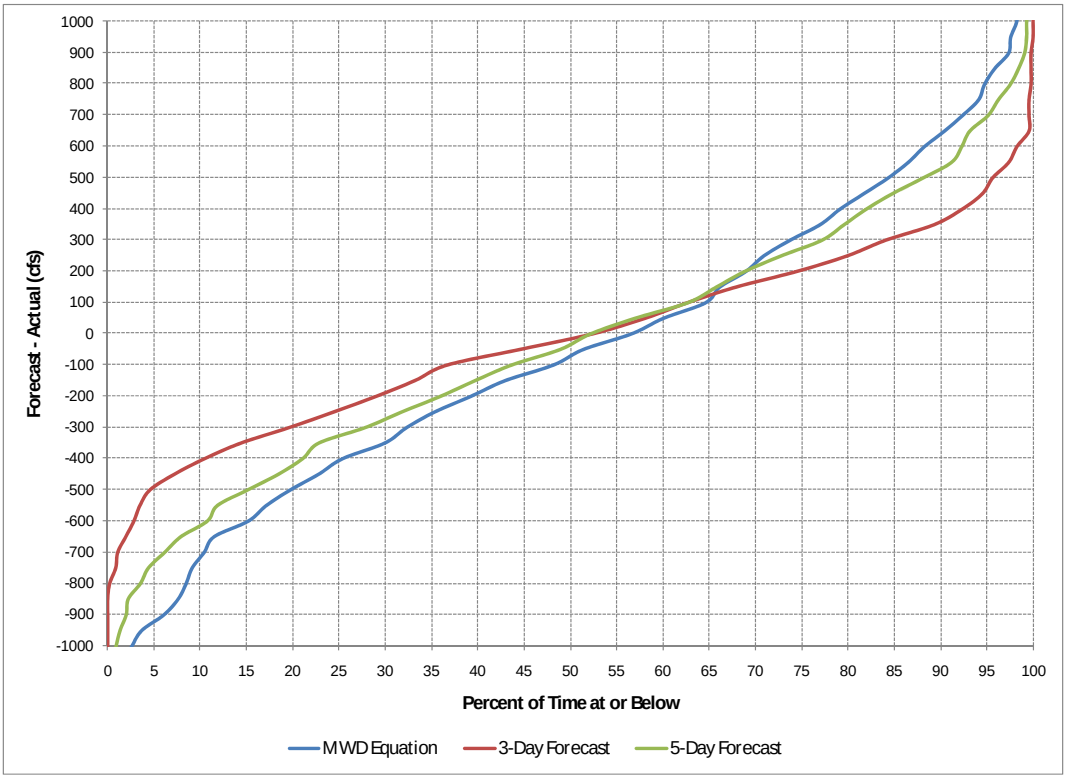


Figure 6B-10
7-Day OMR Flow
Forecast Model Performance
February

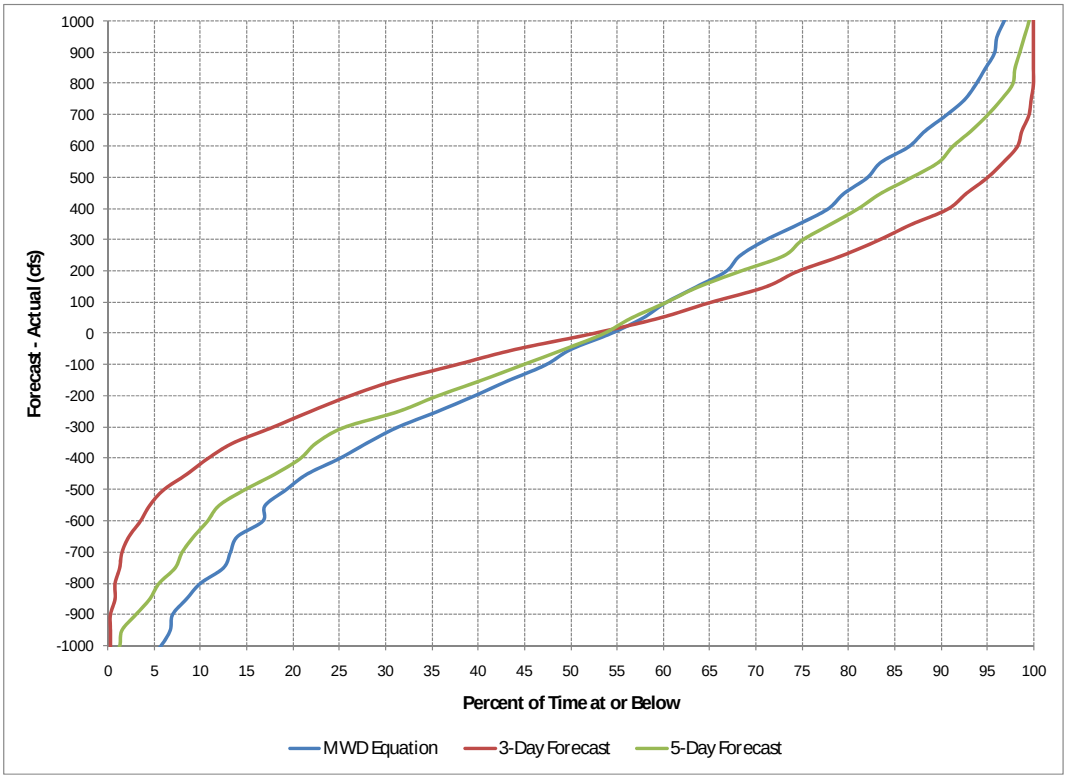


Figure 6B-11
7-Day OMR Flow
Forecast Model Performance
March

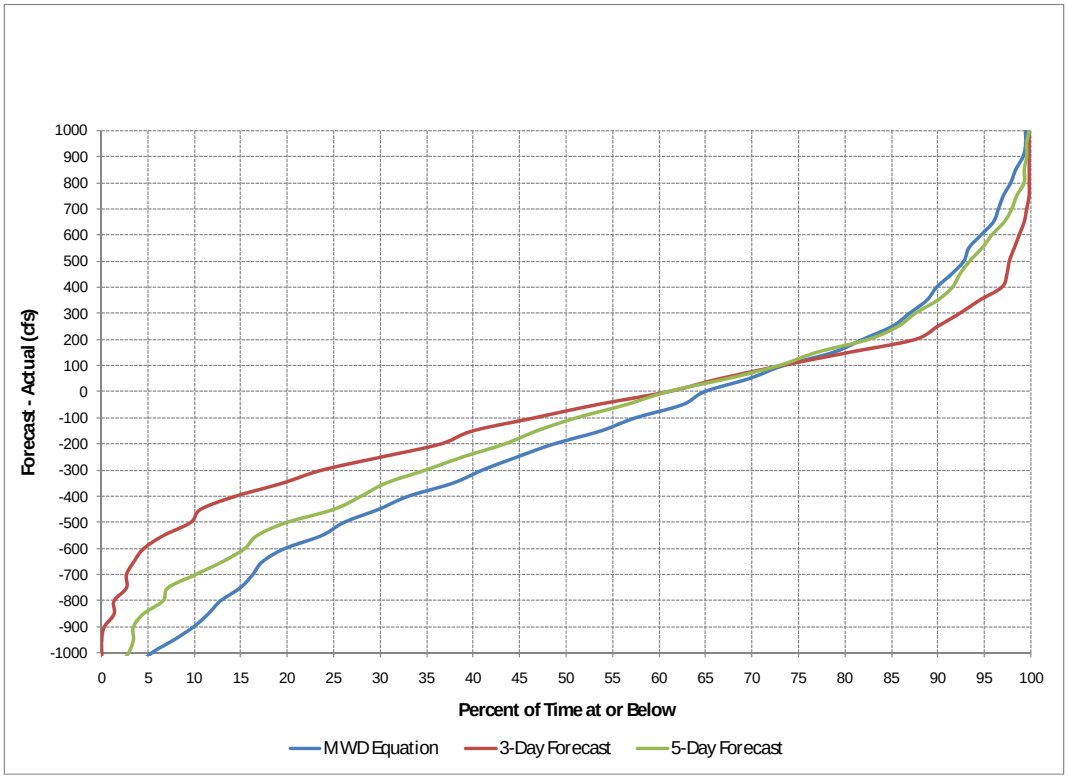


Figure 6B-12
7-Day OMR Flow
Forecast Model Performance
April

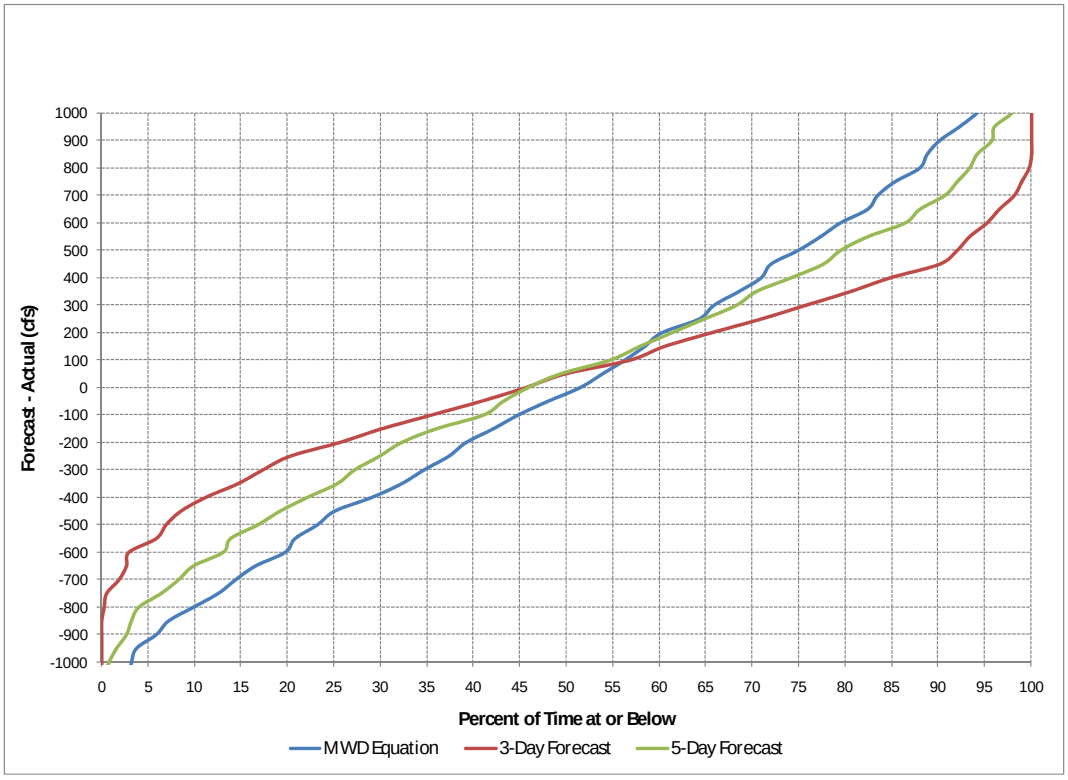


Figure 6B-13
7-Day OMR Flow
Forecast Model Performance
May

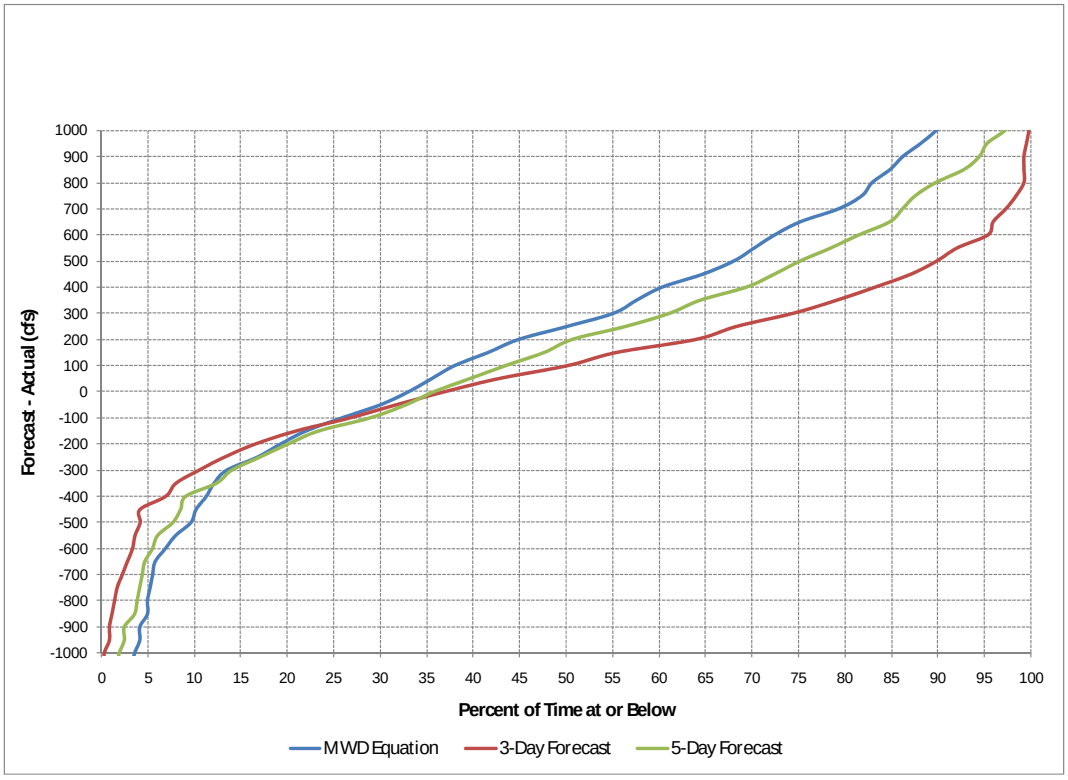
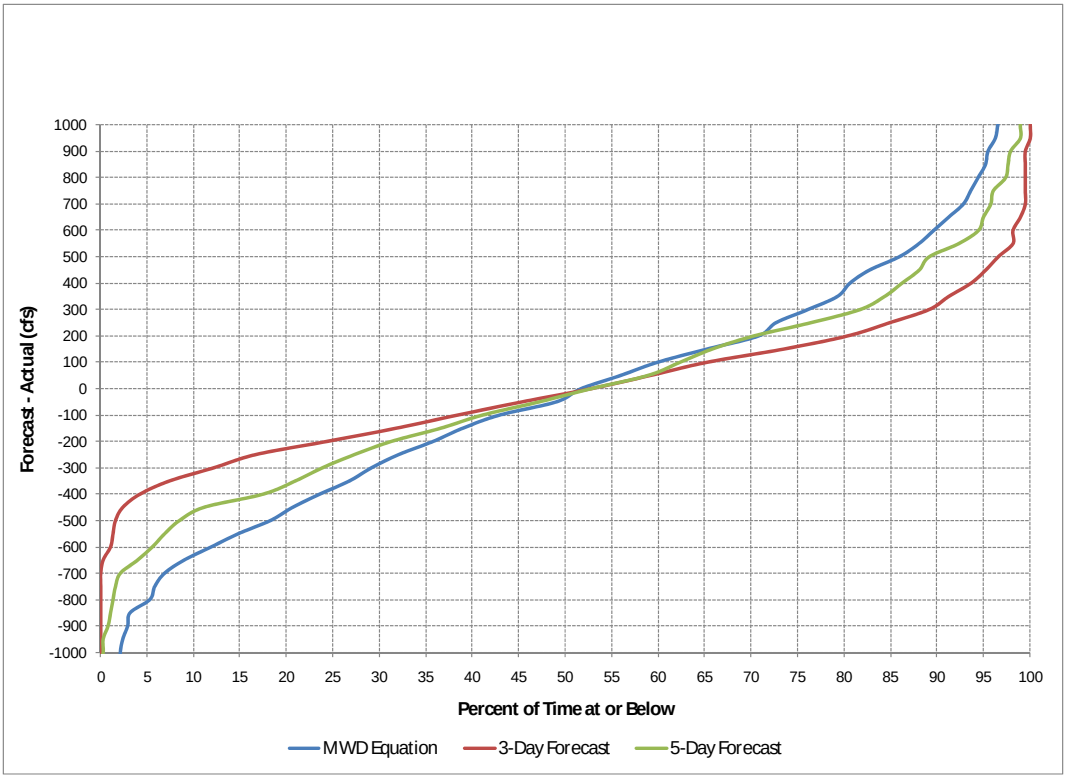


Figure 6B-14
7-Day OMR Flow
Forecast Model Performance
June



Section 7
Discussion

Comparison with Other Models

Validation With Observed Data. The MWD model provides significantly better estimates of daily averaged observed OMR flow compared with existing statistically-based models. The MWD model performance is similar to that of DSM2 on a daily averaged basis. Compare Figure 6-2 with Figures 3-3 and 3-4.

Tables 7-1 through 7-3 summarize, by month, absolute differences or residuals between model predictions and measured OMR flows. Table 7-1 summarizes residuals for daily (tidally filtered) averaged estimates. Tables 7-2 and 7-3 summarize residuals for 7-day and 14-day averaged estimates, respectively. Some observations are outlined below.

- The MWD model, with few exceptions, provides the lowest residuals for each month.
- The DWR model provides the lowest residuals in February and the USGS model provides the lowest residuals in November for the 7-day and 14-day averaged estimates.
- All models show a general decrease in residuals as the averaging period increases. The decrease is most pronounced with the MWD model.
- The USGS model gives the highest residuals during the winter months (December-March).
- The DWR model generally gives the highest residuals in the remaining months.

Baseline Estimates. Appendix 7A compares average OMR flow estimates by month for a 73-year average and by 40-30-30 water year type. Baseline estimates assume Delta hydrology and operations as represented in CALSIM (CALSIM 2007); baseline estimates also assume south Delta temporary barrier installations are triggered by San Joaquin River flows (DWR 2003). The following discussion is limited to the months of January through June, as these are the months when OMR flow restrictions are imposed by the recent court decision (recognizing that restrictions may sometimes occur in late December).

The DWR model consistently provides the highest OMR flow estimate over the 73-year average. This observation is consistent with the finding that the DWR model shows a strong bias toward over-estimating OMR flow (see Section 3). The DWR estimates are particularly high relative to the other models in April, May and June under all water year types. The high April-May estimates result because the DWR model does not account for HORB installation.

The USGS model estimates tend to deviate from the other model estimates in February and March. The USGS model gives lower OMR estimates during wetter water years and gives higher OMR estimates during dryer water years. The former observation is consistent with the finding that the USGS model tends to under-predict OMR flow in

January through March (see Section 3). This deviation probably occurs because the USGS model does not consider the relationship between Vernalis flow and OMR flow under most hydrologic conditions.

The MWD model consistently provides the lowest OMR flow estimates in June. This deviation probably results because the MWD model considers the relationship between south Delta net channel depletions and OMR flow (net channel depletions are typically high in June).

Export Reductions Necessary to Meet OMR Flow Restrictions. Table 7-4 compares estimated export reductions necessary to meet January through June OMR flows greater than –750 cfs and –5000 cfs. These flow restrictions are generally representative of those imposed by the recent court decision. In wet, above and below normal years, the MWD model consistently gives estimates that fall between the DWR model estimates (low) and USGS model estimates (high). The MWD model consistently gives the highest estimate for export reductions in dry and critical years.

Sensitivity Analysis. The MWD model was compared with the other OMR flow models through sensitivity analysis.

Figure 7-1 compares predicted relationships between combined CVP-SWP exports and OMR flow for three typical hydrologic conditions: January, April-May and June. Some observations are outlined below.

- The MWD and DWR models show similar sensitivity under a typical January condition. The USGS model suggests lower exports are required to maintain OMR flows. As discussed above, the USGS model validates relative poorly to observed data in winter months, tending to under-predict OMR flows. This deviation probably occurs because the USGS model does not consider the relationship between Vernalis flow and OMR flow under most hydrologic conditions.

- The MWD and USGS models show similar sensitivity under a typical spring condition when the HORB is installed. The DWR model suggests higher exports are permitted to maintain OMR flows. As discussed above, the DWR model validates relatively poorly to observed data in April-May and has a strong bias to over-predict OMR flows. The high April-May estimates result because the DWR model does not account for HORB installation. MWD model estimates fall between the USGS and DWR model estimates when the HORB is not installed.

- The MWD model suggests lower exports are required to maintain OMR flows in June. This finding is consistent with the above discussion on baseline estimates. This deviation from the other models probably results because the MWD model considers the relationship between south Delta net channel depletions and OMR flow (net channel depletions are typically high in June).

Table 7-5 provides another model sensitivity analysis, summarizing marginal water costs and savings associated with applying various Delta actions during January thru June when OMR flow restrictions are in place. Some observations are outlined below.

- The DWR model is, by definition, insensitive to changes in barrier operations. The USGS model is more sensitive than the MWD model to changes in GLC barrier operations and less sensitive to changes in HORB operations. Both models show barrier installation is more costly when OMR flow requirements are more stringent.
- The DWR and USGS models are, by definition, insensitive to changes in south Delta net channel depletions. The MWD model shows a small water savings associated with a 50% reduction in south Delta net channel depletions.
- While all models show savings associated with a 20% increase in Vernalis flows, the USGS model is less sensitive than the MWD and DWR models. The USGS model sensitivity is limited to high flow periods when Vernalis flows exceed 10,000 cfs.

Discussion on Model Input

South Delta Net Channel Depletions. The MWD model requires estimates of south Delta net channel depletions to predict OMR flow. While Delta-wide estimates of net channel depletions are available, estimates for south Delta net channel depletions are generally not available. The ratio of Delta-wide net channel depletions that represents south Delta net channel depletions was computed each month for the 1990-2006 period to arrive at an average ratio. These ratios are summarized in Table 7-6. Based on this analysis, it is recommended that a ratio of 0.25 be used to estimate south Delta net channel depletions from Delta-wide net channel depletions. This ratio is consistent with a ratio of 0.2889 proposed by DWR (DWR 1986).

Clifton Court Forebay Diversions. The MWD model, as well as the DWR and USGS models, requires estimates of Clifton Court Forebay diversions to predict OMR flow. For many planning applications, estimates of forebay diversions may not be available. Under such conditions, estimates of Banks Pumping Plant diversions would be the best available data for model input. As shown in Figure 7-2, differences between forebay diversions and Banks pumping can be significant at a daily time scale. These differences collapse, however, as data is averaged over longer time scales such as a 14-day average. Clifton Court Forebay diversions are related to Banks Pumping Plant diversions through the following water balance:

Clifton Court Forebay diversions = Banks Pumping Plant diversions + Byron-Bethany Irrigation District net diversions ± Change in Forebay storage

Findings and Conclusions

Model Development & Application. The following findings and conclusions relate to MWD model development and application:

- The model, which was formulated as a water balance and calibrated with DSM2 data, provides (1) superior validation to observed data and (2) more robust sensitivity to key hydrologic variables. The model should be adopted as a planning tool for predicting OMR flow. Including a tidal influence term could enhance model performance.
- Clifton Court Forebay diversion is a better measure than Banks Pumping in predicting OMR flow. This consideration is important for short-term forecasting. For long term planning, the distinction is less important.

Potential Control Measures. The following findings and conclusions relate to potential measures to control OMR flow:

- Comparison of model estimates with observed OMR flows was used to develop planning "buffers" to account for estimate uncertainty.
    - Longer flow averaging periods can be forecasted with greater certainty, and therefore can rely on smaller buffers to meet OMR flow objectives. Buffers required to meet 7-day averaged flow objectives are approximately twice as large as buffers required to meet 14-day averaged flow objectives.
    - 3-day forecasts can be estimated with greater certainty than 5-day forecasts, and therefore can rely on smaller buffers. Buffers required for a 5-day forecast are approximately 50% greater than those required for a 3-day forecast.
- The only south Delta agricultural barrier that has a significant impact on OMR flow is the Grant Line Canal. This finding seems reasonable given that the Grant Line Canal barrier provides the greatest flow restriction. Therefore, any future Delta smelt protections should focus on operation of this barrier.
- Water savings will result from delaying or prohibiting installation of HORB and Grant Line Canal barriers. But will delayed installation require export curtailments to meet south Delta water levels?
- Measures that increase San Joaquin River flows at Vernalis would be effective in controlling OMR flow. Such measures would be even more effective if the Paradise Cut weir operation was modified to allow more San Joaquin River water into the south Delta.

References

CALSIM (2007). Study OCAP_2001D10A_TODAY_B2

DWR (2003). Proposed Temporary Barrier Operations for 2001 and 2020 Base Case SDIP 16-Year DSM2 Simulations, Office Memorandum from Jamie Anderson to Parviz Nader-Tehrani, January 23.

Table 7-1
Comparison of OMR Flow Model Residuals by Month
Daily (Tidal) Averaged Estimates

Month	N	Absolute Difference (cfs)		
		DWR Model	USGS Model	MWD Model
Jan	496	585	1026	560
Feb	452	636	1126	688
Mar	503	676	1025	608
Apr	501	1204	884	547
May	527	1588	845	578
Jun	452	1277	945	503
Jul	478	1179	1145	555
Aug	489	973	947	525
Sep	475	854	766	551
Oct	465	875	684	554
Nov	442	701	528	526
Dec	465	699	848	656
All	5745	944	900	571

Table 7-2
Comparison of OMR Flow Model Residuals by Month
7-Day Averaged Estimates

Month	N	Absolute Difference (cfs)		
		DWR Model	USGS Model	MWD Model
Jan	483	467	877	420
Feb	452	487	1035	522
Mar	491	619	965	493
Apr	494	1099	847	506
May	522	1654	841	523
Jun	452	1269	886	416
Jul	466	1216	1124	487
Aug	477	980	972	534
Sep	469	884	813	615
Oct	465	911	774	625
Nov	430	690	512	546
Dec	465	540	712	501
All	5666	909	866	515

Table 7-3
Comparison of OMR Flow Model Residuals by Month
14-Day Averaged Estimates

Month	N	Absolute Difference (cfs)		
		DWR Model	USGS Model	MWD Model
Jan	469	312	709	251
Feb	452	373	1013	407
Mar	485	517	882	358
Apr	479	913	778	346
May	515	1663	761	383
Jun	452	1236	764	338
Jul	458	1236	1065	386
Aug	457	949	921	385
Sep	462	776	684	389
Oct	465	783	609	453
Nov	416	633	310	375
Dec	465	411	604	357
All	5575	824	761	369

Table 7-4
Comparison of Export Reductions Required to Meet OMR Restrictions
January-June with No South Delta Barrier Operations
(TAF per year)

Water Year Type	OMR > -750 cfs			OMR > -5000 cfs		
	DWR Model	USGS Model	MWD Model	DWR Model	USGS Model	MWD Model
73-Year Average	1300	1640	1540	320	440	380
Wet	1110	1680	1390	250	460	310
Above Normal	1520	2130	1800	420	640	480
Below Normal	1570	2000	1840	380	530	480
Dry	1510	1570	1710	410	390	450
Critical	760	690	890	180	150	190

Table 7-5
January-June Marginal Water Costs & Savings of Various Delta Actions[1]
(TAF per year)

Action	OMR > -750 cfs			OMR > -5000 cfs		
	DWR Model	USGS Model	MWD Model	DWR Model	USGS Model	MWD Model
GLC Installation	0	-170	-30	0	-50	-10
GLC and HORB Installation	0	-210	-120	0	-50	-40
50% Reduction of Net Channel Depletions	0	0	30	0	0	<10
20% Increase in Vernalis Flow	150	90	140	50	30	50

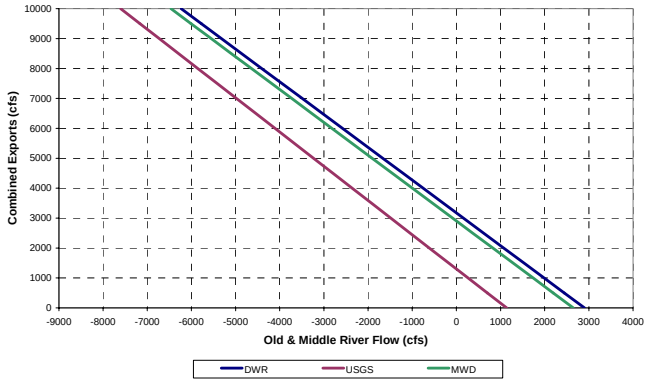
[1] Marginal costs and savings measured against 73-year average export reductions presented in Table 7-3. Savings are denoted by a positive value; costs are denoted by a negative value.

Table 7-6
Fraction of Delta-Wide Net Channel Depletions
Contributing to South Delta Net Channel Depletions: 1990-2006

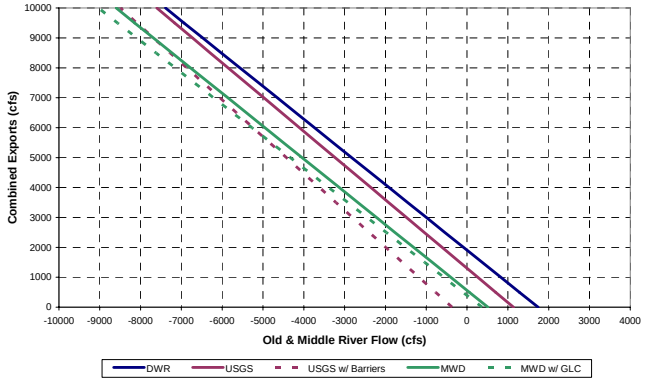
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1990	0.01	(1)	0.36	0.27	0.20	0.27	0.25	0.25	0.24	0.24	0.23	0.23
1991	0.36	0.26	(1)	0.28	0.28	0.31	0.25	0.26	0.25	0.22	0.22	0.22
1992	(1)	0.13	0.09	0.26	0.27	0.27	0.25	0.25	0.24	0.24	0.21	(1)
1993	0.12	0.20	0.32	0.23	0.22	0.30	0.25	0.25	0.24	0.21	0.24	0.24
1994	0.04	0.08	0.28	0.25	0.20	0.27	0.25	0.25	0.24	0.22	0.28	0.36
1995	0.12	0.32	0.14	0.23	0.29	0.30	0.25	0.25	0.24	0.22	0.22	(2)
1996	0.21	0.23	0.35	0.22	0.28	0.29	0.25	0.25	0.24	0.22	0.24	0.11
1997	0.18	0.23	0.25	0.26	0.26	0.26	0.25	0.25	0.24	0.23	0.29	0.34
1998	0.18	0.21	0.05	0.23	0.10	0.28	0.25	0.25	0.24	0.21	0.25	0.21
1999	0.18	0.10	(2)	0.23	0.25	0.27	0.25	0.25	0.23	0.22	0.23	0.22
2000	0.13	0.20	0.25	0.26	0.28	0.28	0.25	0.25	0.23	0.22	0.21	0.21
2001	0.19	0.07	0.35	0.27	0.28	0.27	0.25	0.25	0.24	0.23	0.24	0.15
2002	0.17	0.47	0.27	0.25	0.28	0.28	0.25	0.25	0.24	0.22	0.24	0.09
2003	0.12	0.05	0.49	0.62	0.29	0.29	0.25	0.26	0.24	0.22	0.23	0.74
2004	0.15	0.14	0.25	0.25	0.26	0.27	0.24	0.25	0.23	0.23	0.23	0.09
2005	0.18	0.21	0.01	0.20	0.26	0.29	0.25	0.25	0.24	0.22	0.22	(1)
2006	0.16	(1)	0.12	0.13	0.25	0.28	0.25	0.25	0.24	0.22	0.23	0.23
avg	0.16	0.19	0.24	0.26	0.25	0.28	0.25	0.25	0.24	0.22	0.24	0.24

(1) Negative ratios removed from calculation of averages
(2) Extreme outliers removed from calculation of averages

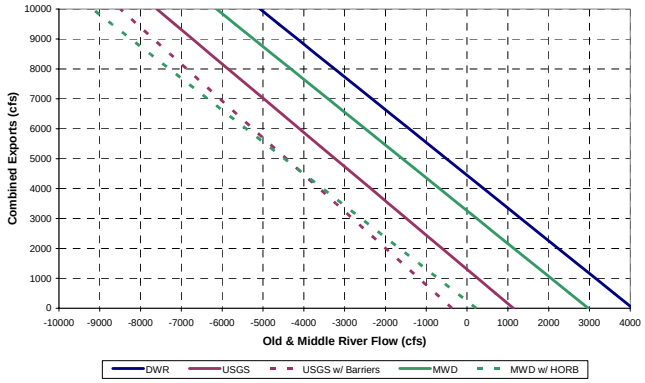
Figure 7-1
Predicted Relationships Between OMR Flow and Exports



Typical January
Vernalis = 5000 cfs
South Delta NCD = -300 cfs



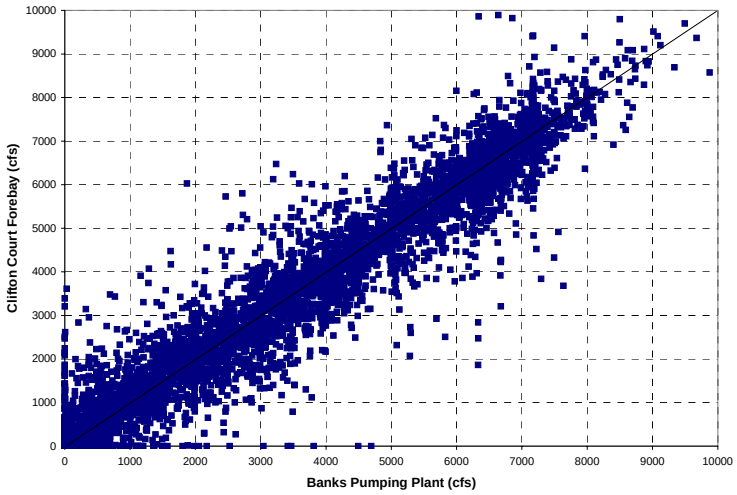
Typical April-May
Vernalis = 7000 cfs
South Delta NCD = 350 cfs

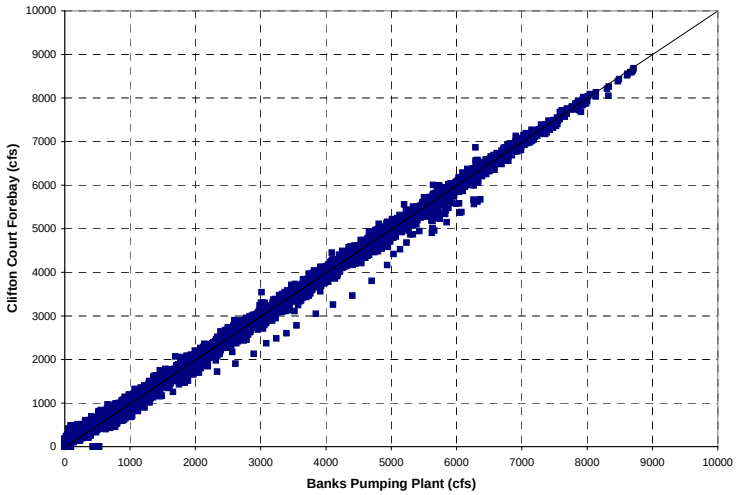


Typical June
Vernalis = 3000 cfs
South Delta NCD = 1000 cfs

A Model to Estimate Combined OMR Flows
April 2008
Hutton

Figure 7-2
Comparison of Clifton Court Forebay & Banks Pumping Plant Diversions
Daily Averaged Observed Data January 1, 1990 – September 30, 2006





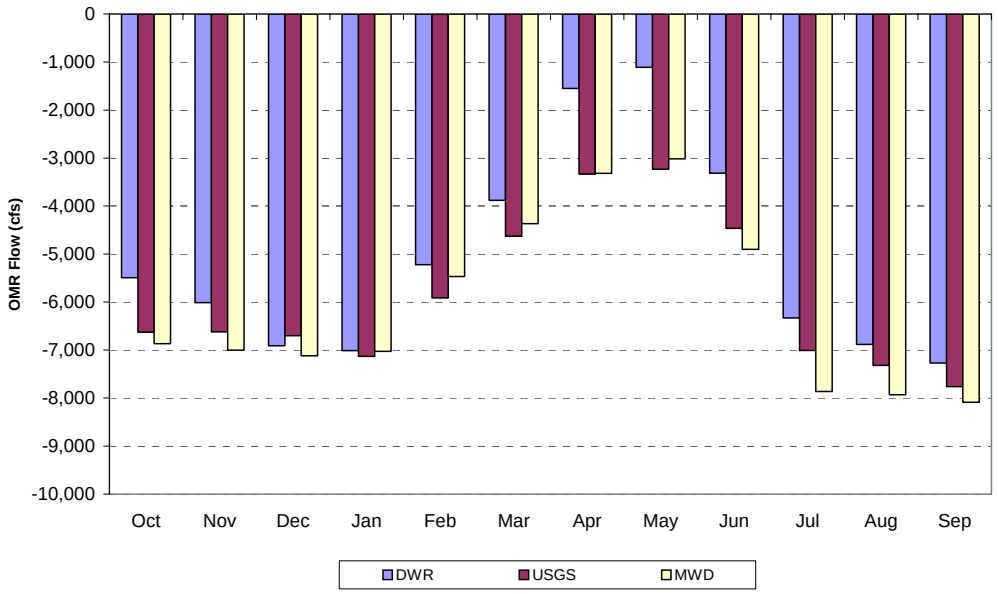
Differences between forebay diversions and Banks pumping can be significant at a daily time scale (see top graph). These differences collapse as data is averaged over a 14-day average (see bottom graph).

Appendix 7A
Comparison of CALSIM Baseline OMR Flow Estimates

Figures

Figure 7A-1. Comparison of CALSIM Baseline OMR Flow Estimates: 73-Year Averages
Figure 7A-2. Comparison of CALSIM Baseline OMR Flow Estimates: Wet Yrs
Figure 7A-3. Comparison of CALSIM Baseline OMR Flow Estimates: Above Normal Yrs
Figure 7A-4. Comparison of CALSIM Baseline OMR Flow Estimates: Below Normal Yrs
Figure 7A-5. Comparison of CALSIM Baseline OMR Flow Estimates: Dry Yrs
Figure 7A-6. Comparison of CALSIM Baseline OMR Flow Estimates: Critical Yrs

Figure 7A-1
Comparison of CALSIM Baseline OMR Flow Estimates
73-Year Averages



The DWR model consistently provides the highest OMR flow estimate over the 73-year average. This observation is consistent with the finding that the DWR model shows a strong bias toward over-estimating OMR flow (see Section 3). The DWR estimates are particularly high relative to the other models in April, May and June under all water year types. The high April-May estimates result because the DWR model does not account for HORB installation.

The MWD model consistently provides the lowest OMR flow estimates in June. This deviation probably results because the MWD model considers the relationship between south Delta net channel depletions and OMR flow (net channel depletions are typically high in June).

Figure 7A-2
Comparison of CALSIM Baseline OMR Flow Estimates
Wet Years

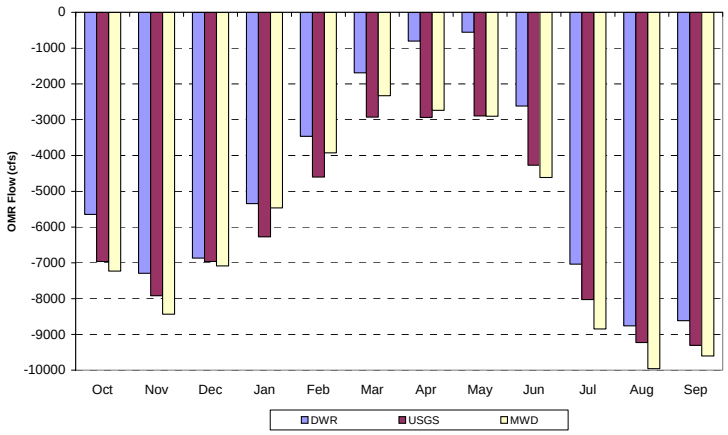


Figure 7A-3
Comparison of CALSIM Baseline OMR Flow Estimates
Above Normal Years

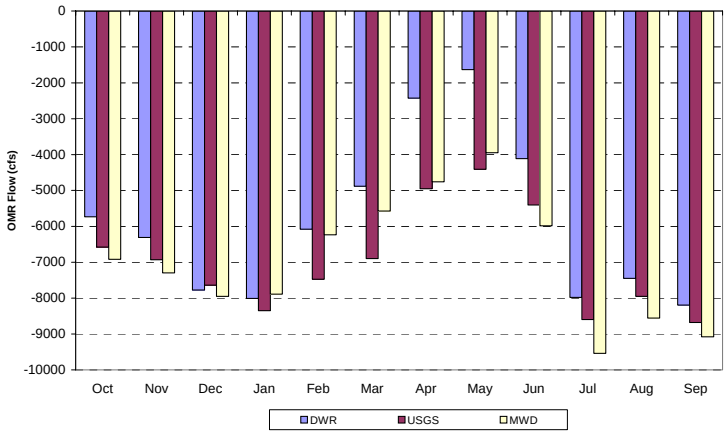


Figure 7A-4
Comparison of CALSIM Baseline OMR Flow Estimates
Below Normal Years

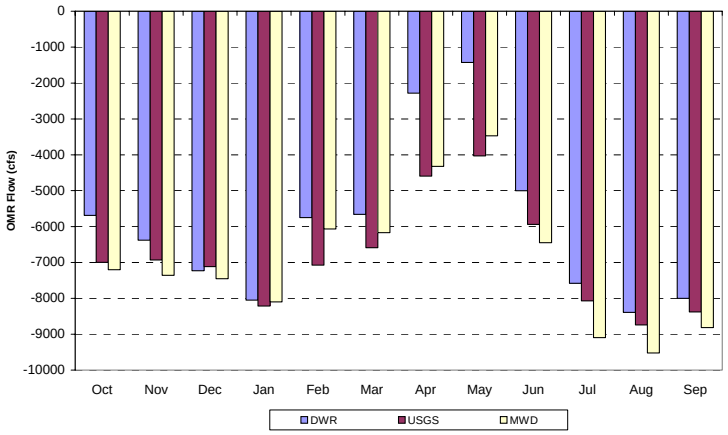


Figure 7A-5
Comparison of CALSIM Baseline OMR Flow Estimates
Dry Years

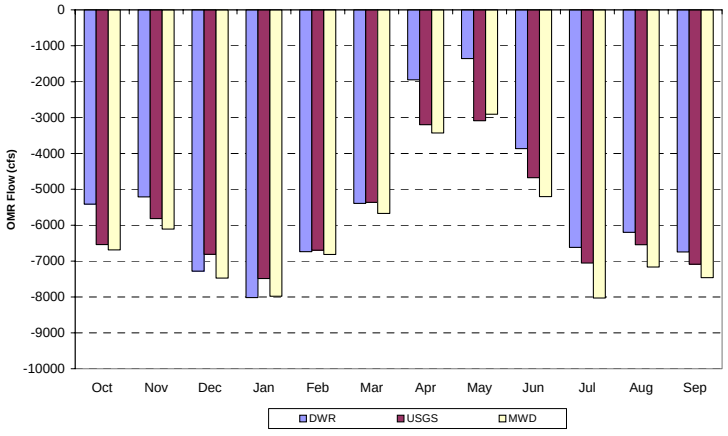
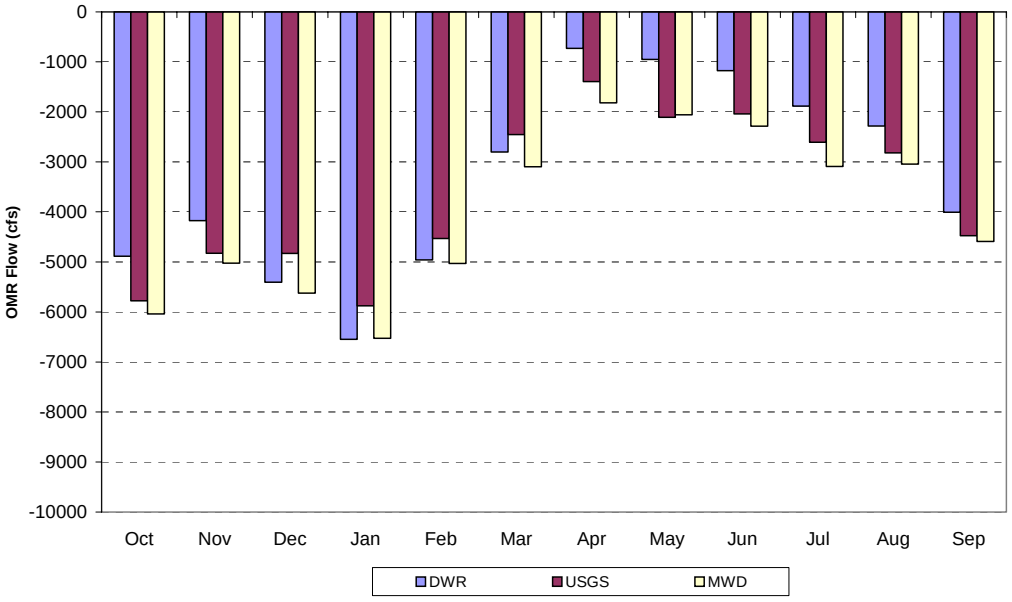


Figure 7A-6
Comparison of CALSIM Baseline OMR Flow Estimates
Critical Years



-----Original Message-----
From: Los Vaqueros [mailto:lvstudies@hotmail.com]
Sent: Tue 4/21/2009 4:24 PM
To: Andrea Nocito
Subject: FW: LVE EIS/EIR - Zone 7 Comment Letter



From: bledesma@zone7water.com
To: lvstudies@hotmail.com; mnaillon@ccwater.com
CC: wmoore@mp.usbr.gov; Eric.Cartwright@acwd.com; KKennedy@valleywater.org; karends@zone7water.com; mlim@zone7water.com
Date: Tue, 21 Apr 2009 16:22:14 -0700
Subject: LVE EIS/EIR - Zone 7 Comment Letter

Dear Ms. Naillon,

Please find attached a letter outlining our comments on the Los Vaqueros Expansion Project EIS/EIR; a hardcopy will follow in the mail.

Sincerely,

Brad Ledesma

Zone 7 Water Agency

(925) 454-5038

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100 NORTH CANYONS PARKWAY LIVERMORE, CA 94551 PHONE (925) 454-5000 FAX (925) 454-5723

April 21, 2009

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Marguerite Naillon, Special Projects Manager
Contra Costa Water District
Attn: Los Vaqueros Reservoir Expansion Project DEIR/EIS
P.O. Box H2O
Concord, CA 94524

Subject: **Los Vaqueros Reservoir Expansion Project (LVE Project)**
Draft Environmental Impact Report/Statement (Draft EIR/EIS)
SCH #2006012037

Dear Ms. Naillon:

Zone 7 Water Agency (Zone 7) appreciates Contra Costa Water District (CCWD) providing us with the opportunity to review and comment on the referenced California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) document. Zone 7 has reviewed the CEQA/NEPA document in the context of Zone 7's mission to provide a reliable supply of high quality water to the Livermore-Amador Valley. Based on our review, we offer the following two general comments for your consideration:

1. More Coordination with Other Related Planning Processes

   The Draft EIR/EIS indicates that the LVE Project is independent of the Delta Vision and Strategic Plan, is not tied to completion or implementation of the Bay Delta Conservation Plan, and is subject to its own biological opinion; it appears that the Delta Habitat Conservation and Conveyance Plan is not mentioned. These other planning processes will provide the framework to accomplish the long-term goals necessary for protecting and enhancing the Delta as a valuable environmental and water supply resource.

   Consequently, it is unclear whether the LVE Project will accomplish the long-term benefits described in the Draft EIR/EIS for the LVE Project, including protection of key Delta species and enhanced water supply reliability and water quality, without fully incorporating these other related planning processes. We understand that CCWD is on the BDCP Steering Committee so this comment is only by way of clarification.

   Based on several meetings with CCWD in the past, Zone 7 understands the constraints governing the current Draft EIR/EIS and therefore, would like to continue to work with CCWD staff to improve our understanding of the relationship between the LVE Project goals and these other planning processes, and how these goals can be accomplished compatibly.

1

2. Better Define and Clarify Water Supply Reliability Benefit

The Draft EIR/EIS clearly states that the LVE Project derives its water supply reliability benefit by changing the timing and location of diversions from the Delta. The SBA contractors, however, completed a recent analysis that indicates CCWD did not consider the potential benefits of an alternative conveyance facility and how this facility may or may not influence the supply reliability benefits provided by the LVE Project; moreover, this analysis also indicates that discrepancies exist between modeling completed by CCWD and the Department of Water Resources (DWR). 2

As a SWP Contractor and a potential partner in the LVE Project, Zone 7 urges CCWD to work with DWR and the Bureau of Reclamation to coordinate the LVE Project with any proposed alternative conveyance facility, and reconcile any potential discrepancies between the models completed for the LVE Project and the SWP. 3

Zone 7 is committed to providing a reliable supply of high quality water to the Livermore-Amador Valley, and is developing a long-term water supply plan to address the uncertain future presented by potential impacts of climate change and the most recent regulatory constraints imposed in the Delta.

We look forward to continuing to work with CCWD staff to help address these concerns as the LVE Project is one potential water supply option that Zone 7 would like to continue to evaluate. If you have any questions or comments, please feel free to contact Brad Ledesma or Mary Lim at 925-454-5000.

Sincerely,

G.F. Duerig
General Manager

cc: Louis Moore, U.S. Bureau of Reclamation
Eric Cartwright, Alameda County Water District
Kellye Kennedy, Santa Clara Valley Water Agency
Kurt Arends, Brad Ledesma, Mary Lim

6.4 Organizations

6.4 Organizations

TABLE 6.4-1
ORGANIZATIONS THAT SUBMITTED COMMENTS ON THE DRAFT EIS/EIR

Comment Format	Comment ID	Name of Commenter	Title	Organization/ Affiliation
Public Hearing	O_CCCFB	John Veitch		Contra Costa County Farm Bureau
Email	O_CEMC	M. Scott Mansholt	Senior Environmental Project Management Specialist	Chevron Environmental Management
Email	O_CFBF	Christian C. Scheuring	Managing Counsel	California Farm Bureau Federation
Mail	O_DPBC1	Richard M. Anderson		Delta Pedalers Bicycle Club
Mail	O_DPBC2	John Diaz Coker		Delta Pedalers Bicycle Club
Mail	O_DPBC3	Connie Davis		Delta Pedalers Bicycle Club
Mail	O_DPBC4	Steve Diputado		Delta Pedalers Bicycle Club
Mail	O_DPBC5	Phil Paulson		Delta Pedalers Bicycle Club
Mail	O_DPBC6	Dave Stoeffler		Delta Pedalers Bicycle Club
Mail	O_DPBC7	Kathryn Thomas		Delta Pedalers Bicycle Club
Email	O_DWP	Anson B. Moran	General Manager	Delta Wetlands Project
Public Hearing	O_EBATC1	Steven Eng		East Bay Area Trails Council
Email	O_EBATC2	Morris Older		East Bay Area Trails Council
Public Hearing	O_EBBC	Bruce D. Ohlson		East Bay Bicycle Coalition
Email	O_EBCNPS	Lech Naumovich	East Bay Conservation Analyst	East Bay California Native Plant Society
Email	O_NASNF	John Eustacio Negrete	Treasurer	Native Alliance of the Sierra Nevada Foothills
Email	O_PCL	Evon Parvaneh Chambers	Water Policy Assistant	Planning and Conservation League
Email	O_SMD	Troy Bristol	Land Conservation Associate	Save Mount Diablo

LOS VAQUEROS RESERVOIR EXPANSION PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT/
ENVIRONMENTAL IMPACT REPORT (DRAFT EIS/EIR)
PUBLIC HEARINGS

CONTRA COSTA WATER DISTRICT

SPEAKER CARD

OAKLEY – APRIL 2, 2009

Name: John VEITCH

Affiliation: C.C.C.F.B

Address: 629 CASHEL CT., BRENTWOOD

Phone: 9'240 9879

E-mail: JSVEITCH@Yahoo.Com

Please submit your speaker card to the registration desk or meeting facilitator. The hearing officer will use the cards to invite participants to provide verbal comments during the public hearing.

LOS VAQUEROS RESERVOIR EXPANSION

PUBLIC HEARING ON DRAFT EIS/EIR

Iron House Elementary School

5180 Frank Hagley Drive, Multi-Purpose Room

Oakley, California

Thursday, April 2, 2009

REPORTED BY: DEBORAH A. FUQUA, CSR #12948

A P P E A R A N C E S

Pete Lucero - Public Affairs Officer
Bureau of Reclamation Mid-Pacific Region

Sharon McHale - Project Manager
Bureau of Reclamation

Marguerite Naillon - Project Manager
Contra Costa Water District

PUBLIC OUTREACH:

Charles Gardiner - Project Manager, CirclePoint

I N D E X

SPEAKER PAGE NO.

Bill Veitch..... 6

ALSO PRESENT: Terri Gillen, Representing Congresswoman

if you please state your name, your affiliation, spell your name and -- your first and your last names. And please remember this is a formal hearing and a court reporter is recording your comments.

Please speak clearly so your comments can be captured accurately. And I'll be the time keeper, giving you your full hour if you need it, sir.

We do have with us today Mr. Paul Adler, who is representing the Contra Costa County Supervisor Federal Glover.

Welcome. Thank you very much for coming.

And with that, Mr. Veitch, please come up and make your comments.

BILL VEITCH: Bill Veitch, V-E-I-T-C-H, Contra Costa Farm Bureau. My question was, what effect will the peripheral canal have on water quantity and quality for the reservoir?

PETE LUCERO: Mr. Veitch, thank you very much for your question. It has been written into the record, and we will consider -- you will see an answer to that question in response to the comments in the final document.

6

1

From: Green, Karla L. [mailto:KARLA.L.GREEN@saic.com]
Sent: Wednesday, April 22, 2009 10:55 AM
To: Matt Moses
Cc: Burns, Thomas A.; Anzelon, Daniel B.; Ibrahim, Mohamed N.
Subject: Comments for the Los Vaqueros Reservoir Expansion Project EIR

Good Morning Mr. Moses:

Attached please find the subject letter that Danny Anzelon spoke with you about. If you have any questions or comments, please contact Tom Burns at 916-979-3748 or Mohamed Ibrahim at 916-979-3828.

Regards,



Karla L. Green | SAIC

Technical Editor/Document Manager

Division 6102|E2I BU

phone: 916.979.3707|fax 916.979.3735

email: greenkarl@saic.com <mailto:greenkarl@saic.com>

Please consider the environment before printing this email.

M. Scott Mansholt
Sr. Environmental Project Management Specialist

Chevron Environmental Management Company
6111 Bollinger Canyon Rd.
San Ramon, CA 94583-2324
Tel (925) 543-2353
Fax (925) 543-2323
scott.mansholt@chevron.com

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April 21, 2009

Stakeholder Correspondence–Contra Costa County Water District
Los Vaqueros Reservoir Expansion Project

Matt Moses, P.E.
Senior Water Resources Specialist
Contra Costa County Water District
1331 Concord Ave
PO Box H20
Concord, CA 94524-2099

Subject: **Comments for the Los Vaqueros Reservoir Expansion Project Environmental Impact Report**
Chevron Environmental Management Company
Historic Pipeline Alignment–Bakersfield to Richmond

Dear Mr. Moses:

Chevron Environmental Management Company (CEMC) recently became aware of the proposed Los Vaqueros Reservoir Expansion Project including construction of the Delta-Transfer Pipeline in eastern Contra Costa County, California, and the associated Draft Environmental Impact Report (EIR) prepared in support of this project. The purpose of this letter is to notify project stakeholders as to the location of former crude-oil transportation pipelines that were operated by Chevron's predecessors. Portions of the proposed Delta-Transfer Pipeline will intersect both historic and active pipelines owned by Chevron. CEMC requests that this information be incorporated into the comments section of the Draft EIR.

In the early 1900s, Chevron's predecessors built the Tidewater Associated Oil Company (TAOC) dual-pipeline system and the Old Valley Pipeline (OVP) system to transport heavy crude oil and Bunker C fuel oils from oilfields in Kern County to the Richmond Refinery. The pipelines were operated until the early 1970s when they were emptied, cleaned, and decommissioned. The pipelines are no longer active, and the bulk of the pipe has been removed. The locations of the former OVP and TAOC pipelines in eastern Contra Costa County are illustrated on Figure 1.

Evidence of historic releases associated with the former OVP and TAOC pipelines are sometimes identified during the course of underground utility work and other subsurface construction activities near the pipeline ROWs. Generally, residual weathered crude oil associated with Chevron's historical pipeline operations can be observed visually; however, analytical testing is necessary to confirm if the source of the affected material is associated with the former OVP or TAOC pipelines. Government agencies agreed with the testing and analytical results from human health risk assessments performed at several known historical pipeline release sites, which confirm that soil affected by the historic

1

release of product from the pipelines is non-hazardous, and does not pose significant health risks. It has also been established that residual subsurface oil in the soil is relatively immobile due to its heavy and weathered nature.

CEMC is not aware of any historic petroleum-hydrocarbon releases in the vicinity of the proposed Delta-Transfer Pipeline alignment. CEMC's experience along various portions of the former OVP and TAOC alignments indicates that the potential exists for subsurface soil along and near the historical ROWs to be affected by undocumented residual weathered crude oil. For this reason, CEMC requests that the Contra Costa County Water District provide any future updates and ongoing developments regarding this project.

1 Cont.

Note that Chevron Pipeline Company (CPL) may provide separate correspondence regarding activities associated with the active Bay Area Products Line (BAPL), which is coincident with the former OVP and TAOC alignments. CPL also manages the Kettleman-Los Medanos (KLM) alignment located approximately 2 miles east of the aforementioned ROWs, which is also intersected by the proposed project pipelines (see Figure 2).

2

For more information regarding the Historical Pipeline Portfolio–Bakersfield to Richmond alignment, please visit http://www.hppinfo.com/. If you have any questions or require additional information, please call SAIC consultants Tom Burns at (916) 979-3748 or Mohamed Ibrahim at (916) 979-3828.

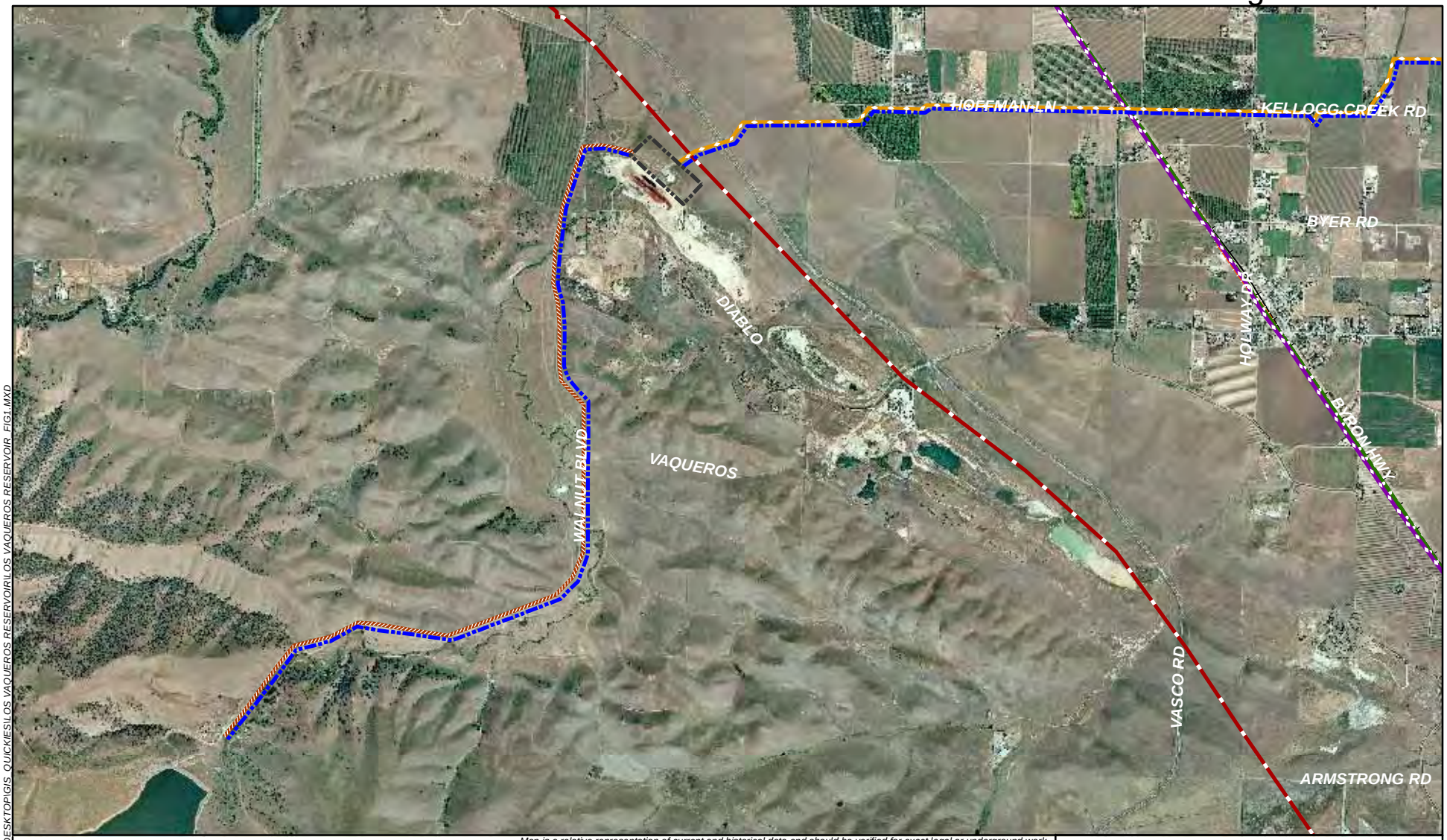
Sincerely,

M. Scott Mansholt

MSM/klg

Enclosures:
Figure 1. Los Vaqueros Expansion Project – Overview Map
Figure 2. Los Vaqueros Expansion Project – Chevron Pipeline Alignments

cc: Mr. Tom Burns – SAIC
3800 Watt Avenue, Suite 210, Sacramento, California 95821
Mr. Mike Jenkins – SAIC (letter only)
3800 Watt Avenue, Suite 210, Sacramento, California 95821
Mr. Jeremy Gross – Chevron Pipeline Company
2360 Buchanan Road, Pittsburg, CA 94565



Map is a relative representation of current and historical data and should be verified for exact legal or underground work.

0 1,000 2,000
Feet

CALIFORNIA LOCATION MAP

- Expanded Transfer Facility
- Potential Future Pipeline
- Delta-Transfer Pipeline
- Transfer-LV Pipeline
- Union Pacific Railroad
- Historical Old Valley Pipeline (OVP)
- Historical Tidewater Associated Oil Company (TAOC) Pipeline
- Active Bay Area Products Line (BAPL)
- Active Kettleman - Los Medanos (KLM) Pipeline

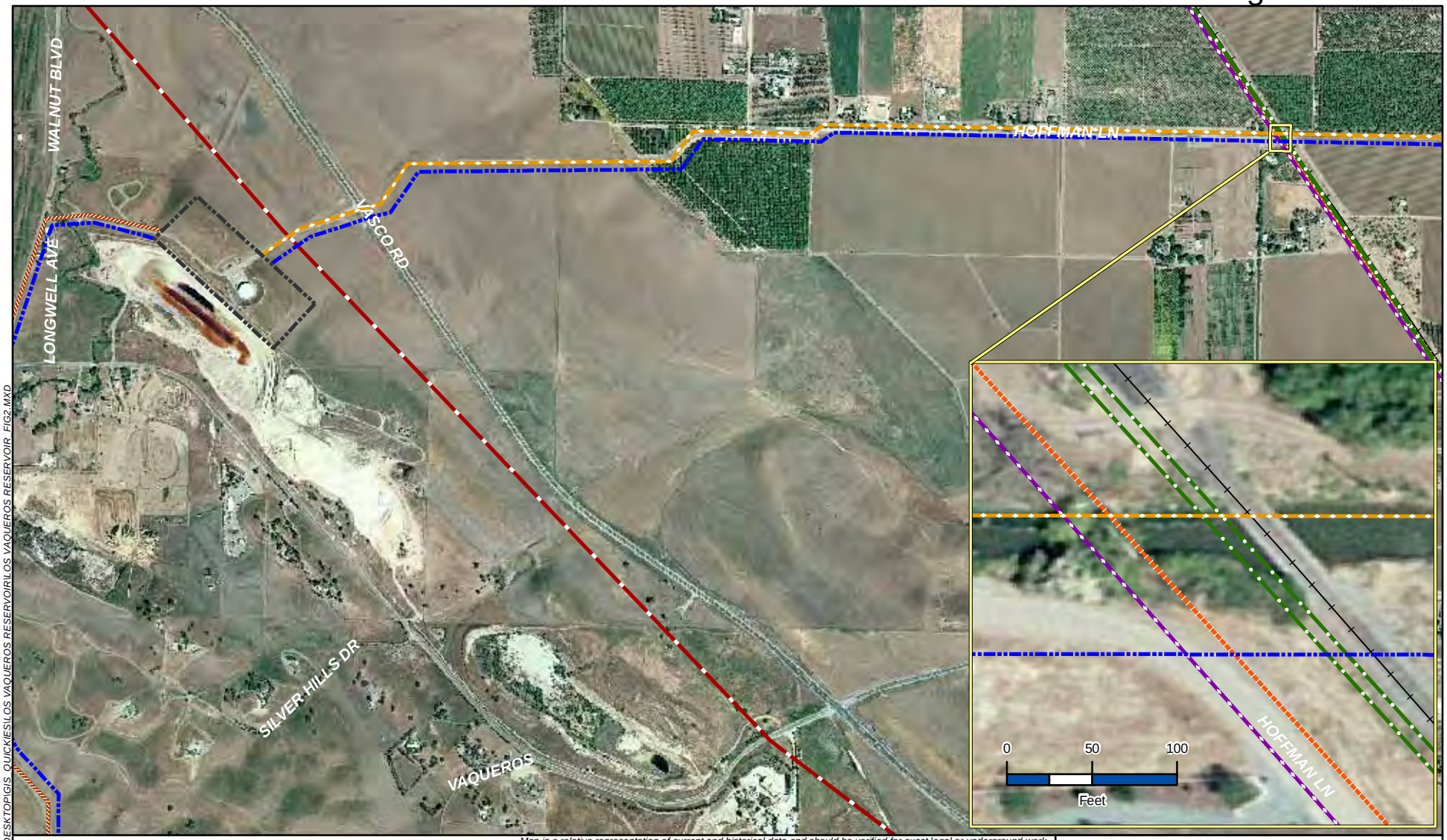
PROJECT OVERVIEW

LOS VAQUEROS EXPANSION PROJECT
Contra Costa County, California

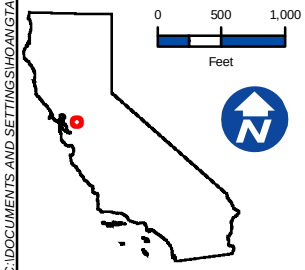
DATE: 4/21/2009 | ANALYST: HOANGTA | FIGURE: 1

SAIC From Science to Solutions

FILE: C:\DOCUMENTS AND SETTINGS\HOANGTA\DESKTOP\GIS QUICKIES\LOS VAQUEROS RESERVOIR\LOS VAQUEROS RESERVOIR FIG1.MXD



Map is a relative representation of current and historical data and should be verified for exact legal or underground work.



- Expanded Transfer Facility
- Potential Future Pipeline
- Delta-Transfer Pipeline
- Transfer-LV Pipeline
- Union Pacific Railroad
- Historical Old Valley Pipeline (OVP)
- Historical Tidewater Associated Oil Company (TAOC) Pipeline
- Active Bay Area Products Line (BAPL)
- Active Kettleman - Los Medanos (KLM) Pipeline

CHEVRON PIPELINE ALIGNMENTS

LOS VAQUEROS EXPANSION PROJECT
Contra Costa County, California

DATE: 4/21/2009	ANALYST: HOANGTA	FIGURE:
		2

SAIC
From Science to Solutions

FILE: C:\DOCUMENTS AND SETTINGS\HOANGTA\DESKTOP\GIS_QUICKIES\LOS VAQUEROS RESERVOIR\LOS VAQUEROS RESERVOIR_FIG2.MXD

-----Original Message-----
From: Wilbert Moore [mailto:wmoore@mp.usbr.gov]
Sent: Tuesday, April 21, 2009 12:40 PM
To: Marguerite Naillon; Andrea Nocito; Charles Gardiner; Sharon McHale
Subject: Fwd: Los Vaqueros Reservoir Expansion

Hello,

Another comment.

Thank you,

Wilbert "Louis" Moore
Project Coordination Specialist
Mid-Pacific Region
916-978-5189 Desk
916-335-9755 Cell
916-978-5094 Fax
wmoore@mp.usbr.gov



>>> "Maggard Michelle" <MMaggard@CFBF.com> 4/21/2009 11:57 AM >>>
Attached (in .pdf format) please find California Farm Bureau Federation's comments on the Draft EIS/EIR for the Los Vaqueros expansion project; the original of which went out today (to your attention) via First-Class mail.

Thank you for your consideration.

Regards,

Michelle Maggard
Assistant to Mr. Scheuring
(916) 561-5653

<<ole0>>

<<Comment Letter -Los Vaqueros.pdf>>

CALIFORNIA FARM BUREAU FEDERATION
NATURAL RESOURCES AND ENVIRONMENTAL DIVISION
2300 RIVER PLAZA DRIVE, SACRAMENTO, CA 95833-3293 · PHONE (916) 561-5655 · FAX (916) 561-5691



April 21, 2009

Via First-Class Mail & Email
wmoore@mp.usbr.gov

Mr. Louis Moore
Bureau of Reclamation
2800 Cottage Way
Sacramento, CA 95825

Re: Comment Letter –Los Vaqueros Reservoir Expansion Project Draft EIS/EIR

Dear Mr. Moore:

The California Farm Bureau Federation ("Farm Bureau") is a non-governmental, non-profit, voluntary membership California corporation whose purpose is to protect and promote agricultural interests throughout the state of California and to find solutions to the problems of the farm, the farm home and the rural community. Farm Bureau is California's largest farm organization, comprised of 53 county Farm Bureaus currently representing approximately 85,000 members in 56 counties. Farm Bureau strives to protect and improve the ability of farmers and ranchers engaged in production agriculture to provide a reliable supply of food and fiber through responsible stewardship of California's resources.

Farm Bureau appreciates the opportunity to submit comments on the Bureau of Reclamation's Draft EIS/EIR for the Los Vaqueros Reservoir Expansion Project.

General Comments:

The Farm Bureau has long publicly advocated in favor of a significant expansion of capacity over and above the state's existing water storage infrastructure. Competition for limited supplies in California is intense and likely to intensify still further in the years and decades ahead. Environmental water needs in particular have grown exponentially over the last few decades, even as the state's population has roughly doubled—yet the state's major water infrastructure has remained largely static over the last several decades.

Surface water storage has distinct advantages that water efficiency, groundwater storage, and other sources of water supply can certainly complement and enhance, but *not* replace. Meanwhile, long-term sustainability issues, along with reduced snowpack, intensifying drought and flood cycles, changing seasonal runoff patterns, increasing ambient and water temperatures, and rising sea levels associated with climate change, highlight the urgent need for new surface water storage facilities and improved regional and interregional conveyance.

Additional storage, both upstream and south of the delta, in combination with possible new delta conveyance facilities could greatly enhance system capacity to meet co-equal water supply and ecosystem goals. In particular, an enhanced ability to move water at opportune times (i.e., in wetter years and at less biological sensitive times of the year) and in more environmentally friendly ways (through improved operations and screened diversions designed and located to avoid conflict with fish and ecosystem management goals) has great potential to improve system flexibility and sustainability statewide.

While Farm Bureau remains a strong supporter of new surface water storage, however, the Los Vaqueros Expansion ("LVE") project, as currently proposed, appears to fall short of its true potential in several respects.

To be clear, it does appear that the project, as described in the EIR/EIS, could have some local and regional benefits in addition to some apparent marginal improvements in terms of indirect benefits and overall system flexibility.

Unfortunately, as currently proposed, the project appears to have limited *statewide* benefits, whereas the greatest and most urgent water supply challenges currently faced in the state of California are *statewide* and even national in reach and scope.

This problem appears to stem, first and foremost, from the limitations imposed in CCWD's "Principles for Expansion" and by the local 2004 advisory vote specifically limiting water supply benefits to the Bay Area and specifically excluding other water users from project benefits. Unfortunately, from our perspective, these same limitations represent a tremendous foregone opportunity. 1

As currently proposed, the overall statewide utility and appeal of the Los Vaqueros Expansion is limited. A more ambitious and less constrained LVE calculated to achieve a broader range of *statewide*, as well as local and regional benefits in the Bay Area, could provide multiple benefits currently excluded from the project description.

In particular, a larger LVE, combined with improved Delta conveyance and utilized for water supply, water quality, and environmental benefits not only for the Bay Area, but also for CVP and SWP contractors elsewhere in the state, could greatly enhance the flexibility, reliability, and capacity of California's statewide water distribution system to meet competing ecosystem and water supply goals.

To improve the project's overall usefulness, CCWD and USBR should consider a follow-on supplemental EIR/EIS to examine additional project alternatives to include operational integration and broader statewide benefits in connection with possible, future improvements to Delta conveyance. 1 Cont.

Refuge Water and Environmental Water Account:

Farm Bureau has concerns with the proposed use of environmental water supply from a Los Vaqueros Expansion to ensure delivery of CVPIA base and supplemental refuge water supplies, but which deliberately excludes any potential concurrent benefits to CVP and SWP contractors outside of the Bay Area.

If the LVE project would provide enhanced capacity to move, store, and deliver base CVP supplies to south-of-Delta refuges—or to conserve coldwater resources in upstream reservoirs by deferring or shifting deliveries to CCWD—this should logically translate into an improved ability on the part of Reclamation to more consistently and reliability meet its obligations to CVP contractors elsewhere in the state and also to better deal with tightening regulatory restrictions on operations of the existing CVP facilities. As analyzed in the EIR/EIS, however, while each of the alternatives seeks to improve reliability to Bay Area users and for environmental purposes including improved deliveries of base and supplemental supplies to South-of-Delta refuges, *none* of the alternatives looks at the potential for increased reliability of deliveries from the existing SWP and CVP diversions, where a portion of deliveries occurring currently at those facilities would now instead be shifted to new points of diversion in connection with a proposed LVE. The net effect of each of the proposed project alternatives, therefore, in terms benefits to "other water users" outside of the Bay Area and for the wildlife refuges areas south of the Delta, is essentially zero.[1] 2

This artificial constraint on the full range of potential project benefits associated with an optimized LVE project appears, again, to be a by-product of the CCWD "Principles for Expansion" and of the local 2004 advisory vote restricting benefits to Bay Area users and the environment. This, of course, is the prerogative of CCWD's board and of its ratepayers at a local and regional level; from a statewide perspective, however, it once again creates an unfortunate barrier and limitation on the full potential and range of broader benefits a LVE without such restrictions might otherwise have.

Also of some concern to Farm Bureau from a statewide agricultural standpoint, the EIR/EIS's review of the potential environmental effects on agricultural resources (section 4.8) looks only at direct impacts from inundation and construction to local farmland in the vicinity of the project. Thus, it does *not* consider the potential for additional adverse impacts to agricultural resources

[1] See Tables 4.2-9, 4.2-10, 4.2-11, 4.2-12, 4.2-13, 4.2-14 (LVE EIR/EIS at pp. 4.2-45 through 4.2-50).

resulting from water acquisition by the Bureau of Reclamation to supply up to 150,000 acre-feet a year in supplemental supplies to refuges, or the potential cumulative loss of agricultural land throughout the state as part of the no project alternative should the LVE project proceed with a possible preclusive effect on other statewide projects, including possible future delta conveyance improvements and other CALFED storage projects. Nor does the EIR/EIS consider the potential for possible, adverse drainage impacts associated with increased loading of salts, selenium, boron, and the like as result of increased deliveries to south-of-Delta refuges or of regulatory compliance issues this may create for valley agriculture.

Another shortcoming, in our view, relates to the LVE project's purported benefits as a functional equivalent or complement to the existing Environmental Water Account or some similar program in the future. Unfortunately, applied to the Bay Area only and to the CVP refuges south of the Delta and upstream coldwater compliance *in isolation* from water supply and water use needs elsewhere in the state, the project is, here as elsewhere, far less compelling than it could potentially be.

2 Cont.

A larger LVE project (at least 500 taf), that served as a functional equivalent of the environmental water account to provide *statewide* benefits (especially in combination with a possible new delta conveyance) could function as a tremendous asset to state and federal water and ecosystem managers in terms of increased flexibility and reliability. In contrast, a smaller (160-240 taf) expansion with few *statewide* benefits beyond the Bay Area and the federal refuges, appears to fall short of the true potential of an large, multipurpose surface water reservoir south of the Delta, in close proximity to the existing state and federal export facilities of the CVP and SWP.

Potential Benefits of an LVE Expansion Despite Limited Scope and Number of Eligible Beneficiaries:

One significant, potential statewide benefit of a Los Vaqueros Expansion, separate from the scoping issues we have identified, is the buffer it could provide against a sudden interruption in supply, even if only to the Bay Area. Such a supply could enable the state as a whole to regain its footing in the event of a temporary or extended interruption in Delta supplies.

Another benefit that is potentially compatible with any long-term outcome in the Delta relates to the environmental benefits associated with the timing shift in diversions (the proposed "no diversion" period), proposed coldwater conservation benefits, and the shifting of a portion of existing SWP and CVP exports (for CCWD, Zone 7, SCVWD, etc.) from the existing CVP and SWP facilities to the fully screened, more environmentally friendly set of intakes proposed as part of the LVE. The problem, however or, rather, a major limitation on these purported benefits, is again that these benefits, in themselves, can do little to improve the water supply and ecosystem outlook for the state a as whole, if they are arbitrarily locked away from any possible benefit to the larger universe of CVP and SWP users in the state—or, worse still, if the LVE

3

project proceeds to the detriment of other proposed storage and conveyance projects with broader, intended *statewide* benefits. Again, the answer lies in expansion of benefits and integration with other important statewide initiatives.

3 Cont.

The Proposed LVE Project in the Context of All Other Proposed Surface Storage Projects:

From a policy standpoint at least, an important factor *not* considered in the EIR/EIS is the 'opportunity cost' of pursuing one of the LVE alternatives with federal and/or state participation, in terms of other projects a large public expenditure for this purpose might potentially preclude. If the South Bay water agencies, for example, decide to partner with CCWD on an LVE project at the local and regional level, this could improve their own 'regional self-sufficiency' somewhat, but might also preclude participation in other more comprehensive initiatives. Similarly, a large expenditure of state or federal funds on a LVE project alternative with limited statewide benefits could preclude subsequent investment in other surface storage projects with broader, potential statewide benefits. However, as we have suggested herein thorough, a more comprehensive statewide solution is what is most urgently needed at this time.

4

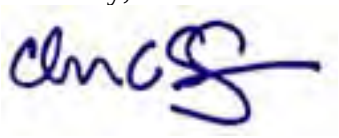
Future Direction on the Proposed LVE Project:

With an urgency accentuated by the difficult and uncertain times faced by the state as whole, please know that Farm Bureau and agricultural interests throughout the state anxiously await completion of the CALFED surface storage. In general, the proposed CALFED storage investigations should be rapidly brought to a conclusion and then evaluated comparatively in the larger context of *all* proposed infrastructure improvements, as well as the state's current objectives to achieve greater statewide ecosystem health, water supply reliability, flexibility, and sustainability. With a surer map to follow at that time, it should become clearer whether the proposed LVE project makes sense in the context of other proposed surface storage projects and any potential improvements to Delta conveyance—and also whether local officials should consider resubmitting to local Bay Area voters and CCWD's board whether the LVE project's scope should be expanded to include broader statewide water supply and ecosystem objectives.

While we find the modest scope of the project in its current form somewhat disappointing, Farm Bureau nonetheless thanks CCWD and the Bureau of Reclamation for their perseverance on the technical and environmental studies for the proposed Los Vaqueros Expansion. With these studies now in hand and additional studies still to come, we encourage the agencies to consider the potential for greater integration of a possible, reformulated project as an element of a comprehensive water supply and ecosystem solution for the state as a whole.

Thank you for the opportunity to provide our comments and concerns regarding the proposed Los Vaqueros Reservoir Expansion.

Sincerely,



Christian C. Scheuring
Managing Counsel

CCS\KEF\JEF\mmm

LOS VAQUEROS RESERVOIR EXPANSION PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT/
ENVIRONMENTAL IMPACT REPORT (DRAFT EIS/EIR)
PUBLIC HEARINGS

COMMENT CARD

APR 2009
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CONTRA COSTA WATER
DISTRICT
CALFED

Comments may be submitted today or mailed to:

Marguerite Naillon
Contra Costa Water District
P.O. Box H2O
Concord, CA 94524
Attn: Los Vaqueros Reservoir Expansion Project DEIS/EIR
Fax: (925) 686-2187
lvstudies@hotmail.com

OR

Louis Moore
Bureau of Reclamation
2800 Cottage Way, MP-700
Sacramento, CA 95825
Attn: Los Vaqueros Reservoir Expansion Project DEIS/EIR
Fax: (916) 978-5094
wmoore@mp.usbr.gov

Please submit comments by 5:00 p.m. on Tuesday, April 21, 2009.

Name: Richard M. Anderson
Affiliation: Delta Pedalers Bicycle Club/East Bay Bicycle Coalition
Address: 2158 Westward Place, Martinez, CA 94553
Phone: (925) 372-5889
E-mail: Mutagooska@juno.com

Comments:

Cyclists need to be able to access the water-shed area from either entrance and visitor area and to be able to ride completely through the water shed area from entrance to entrance.

1

Please use the reverse side or attach any additional pages

Richard M. Anderson
Delta Peddlers Bicycle Club/East Bay Bicycle Coalition
2158 Westward Place
Martinez, CA 94553

925-372-5889

mutagooska@juno.com

Cyclists need to be able to access the watershed area from either entrance and visitor area and to be able to ride completely through the watershed area from entrance to entrance.

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wmoore@mp.usbr.gov

Please submit comments by 5:00 p.m. on Tuesday, April 21, 2009.

Name: John Diaz COKER

Affiliation: DELTA PEDALERS Bicycle Club

Address: 3788 ENEA DRIVE; Pittsburg, CALIF.

Phone: (925) 439-1190

E-mail:

Comments:

I HAVE ENJOYED REGULARLY bicycling within the RESERVOIR ROAD ~~AFTER~~ SINCE it has BEEN PERMITTED. My FRIENDS AND I WERE SURPRISED AND UPSET WHEN CONTRARY to THE ORIGINAL PRE-VOTE PROMISES, cycling WAS ORIGINALLY PROHIBITED. ~~IF YOU HAD PAVED ROAD ACCESS FROM THE NORTH GATE~~ to the south gate it would be WELL APPRECIATED AND WELL USED. THE SAME SHOULD OCCUR FOR BIKE TRAIL ACCESS.

1

2

Please use the reverse side or attach any additional pages

John Diaz Coker
Delta Peddlers Bicycle Club
3788 Enea Drive
Pittsburg, CA

925-439-1190

"I have enjoyed regularly bicycling within the reservoir road since it has been permitted. My friends and I were surprised and upset when, contrary to the original pre-vote promises, cycling was originally prohibited. If you had paved road access from the North gate to the South gate it would be well appreciated and well used. The same should occur for bike trail access."

CONTRA COSTA WATER DISTRICT

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lvstudies@hotmail.com

OR

Louis Moore
Bureau of Reclamation
2800 Cottage Way, MP-700
Sacramento, CA 95825
Attn: Los Vaqueros Reservoir Expansion Project DEIS/EIR
Fax: (916) 978-5094
wmoore@mp.usbr.gov

Please submit comments by 5:00 p.m. on Tuesday, April 21, 2009.

Name: CONNIE DAVIS
Affiliation: Delta Peddlers
Address: 2918 Windsong Lane Ant. 94531
Phone: 756-2983
E-mail: NONE

Comments:

I want access to the Water Shed on my Bicycle I want to go to the North + South Basin across - I want to ride my Bike between the Two If you allow Cows to the Watershed you should allow Bikes!

1
2
3

Please use the reverse side or attach any additional pages

Connie Davis
Delta Peddlers
2918 Winding Lane
Antioch, CA 94531

756-2983

"I want access to the Watershed on my bicycle. I want to go to the North and South Visitor across. I want to ride my bike between the two. If you allow cows to the watershed you should allow bikes!"

S - No
w/ VAS

CONTRA COSTA WATER DISTRICT

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Fax: (916) 978-5094
wmoore@mp.usbr.gov

Please submit comments by 5:00 p.m. on Tuesday, April 21, 2009.

Name: STEVE DIPUTADO

Affiliation: DELTA PEDALER BIKE CLUB

Address: 2609 WHITETAIL DRIVE, ANTIOCH CA

Phone: 925 778-6617

E-mail: Stevedip1@Comcast.net

Comments:

~~We~~ Want MORE ACCESS FOR BIKES TO THE WATERSHED, ~~Sorry~~ WANT TO BE ABLE TO RIDE FROM SOUTH GATE TO NORTH GATE without going on Vasco. Also WANT Access to trails for Mountain Bikes. IF YOU ALLOW COWS ACCESS THEN BIKES SHOULD BE GIVEN ACCESS ALSO.

1

2

3

Please use the reverse side or attach any additional pages

Steve Diputado
Delta Peddlers Bike Club
2609 Whitetail Drive
Antioch, CA

925-778-6117

stevedip1@comcast.net

Want more access for bikes to the watershed. Want to be able to ride from South gate to North gate without going on Vasco. Also want access to trails for mountain bikes. If you allow cows access then bikes should be given access also.

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Fax: (916) 978-5094
wmoore@mp.usbr.gov

Please submit comments by 5:00 p.m. on Tuesday, April 21, 2009.

Name: Phil Pardson

Affiliation: Delta Pedelars

Address: 5514 Marlin Ct. N. Bay

Phone: 925-634-6654

E-mail: fiddler10@comcast.com

Comments:

Badly needed! Bicycle Access in the Water Shed between South and North Visitor Centers. Unpaved is Fine

1

Please use the reverse side or attach any additional pages

Phil Paulson
Delta Peddlers
5514 Marlin Ct
Discovery Bay
fiddler10@comcast.com (probably .net)

Badly needed! Bicycle access in the Watershed between South and North Visitor centers. Unpaved is fine.

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Please submit comments by 5:00 p.m. on Tuesday, April 21, 2009.

Name: Dave Stoeffler
Affiliation: Delta Padalers Bicycle Club
Address: 703 Stewart Way, Brentwood
Phone: 925-634-1793
E-mail: dstoeffler@sbcglobal.net

Comments:
'Need more bicycle access to Los Vaqueros! Need to ride in LV property between each end of the reservoir.

1

Please use the reverse side or attach any additional pages

Dave Stoeffler
Delta Peddlers Bicycle Club
703 Stewart Way
Brentwood

925-634-1793

dstoeffler@sbcglobal.net

"I need more bicycle access to Los Vaqueros! Need to ride in LV property between each end of the reservoir."

CONTRA COSTA WATER DISTRICT

APR 2009
RECEIVED
CONTRA COSTA WATER DISTRICT
CALFED

LOS VAQUEROS RESERVOIR EXPANSION PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT/
ENVIRONMENTAL IMPACT REPORT (DRAFT EIS/EIR)
PUBLIC HEARINGS

COMMENT CARD

Comments may be submitted today or mailed to:

Marguerite Naillon
Contra Costa Water District
P.O. Box H2O
Concord, CA 94524
Attn: Los Vaqueros Reservoir Expansion Project DEIS/EIR
Fax: (925) 686-2187
lvstudies@hotmail.com

OR

Louis Moore
Bureau of Reclamation
2800 Cottage Way, MP-700
Sacramento, CA 95825
Attn: Los Vaqueros Reservoir Expansion Project DEIS/EIR
Fax: (916) 978-5094
wmoore@mp.usbr.gov

Please submit comments by 5:00 p.m. on Tuesday, April 21, 2009.

Name: Kathryn Thomas
Affiliation: Delta Pedalers Bicycle Club
Address: 1067 Chelmsford Dr. Brentwood CA 94513
Phone: 925-308-7786
E-mail: kate_p@sbcglobal.net

Comments:

Would like to see more bicycle access within the park. Like to ride from north to south sides of park w/out having to use Vasco Rd. Also wider shoulder/bike line along Walnut Blvd. leading to Marsh Gk. road and then to Camino Diablo.

1

2

Please use the reverse side or attach any additional pages

Kathryn Thomas
Delta peddlers Club
1067 Chelmsford Dr
Brentwood, CA 94513

925-308-7786

Kate-p@sbcglobal.net (kate_p@sbcglobal.net?)

Would like to see more bicycle access within the park. Like to ride from North to South sides of park without having to use Vasco Road. Also wider shoulder/bike lone along Walnut Blvd leading to Marsh Creek Road and through to Camino Diablo.

------ Forwarded Message
From: Los Vaqueros <lvstudies@hotmail.com>
Date: Tue, 21 Apr 2009 15:47:33 -0700
To: Andrea Nocito <a.nocito@circlepoint.com>
Conversation: Los Vaqueros Reservoir Expansion Project Draft EIS/EIR
Subject: FW: Los Vaqueros Reservoir Expansion Project Draft EIS/EIR



Subject: Los Vaqueros Reservoir Expansion Project Draft EIS/EIR
Date: Tue, 21 Apr 2009 15:26:18 -0700
From: twc@eslawfirm.com
To: lvstudies@hotmail.com

Dear Mr. Moore,

Please find attached a copy of Delta Wetlands Project's comments in response to the Los Vaqueros Reservoir Expansion Project Draft EIS/EIR. A hard copy will follow via U.S. Mail.

Thank you,

Teresa Chan

Please note our new address:

Teresa Chan
Ellison, Schneider & Harris LLP
2600 Capitol Avenue, Suite 400
Sacramento, CA 95816-5905
(916) 447-2166
(916) 447-3512 (Fax)
twc@eslawfirm.com
http://www.eslawfirm.com



DELTA WETLANDS PROJECT



April 21, 2009

Via Electronic Mail and U.S. Mail
Louis Moore
Bureau of Reclamation
2800 Cottage Way, MP-700
Sacramento CA 95825-1898

Re: Los Vaqueros Reservoir Expansion Project Draft Environmental Impact Statement/Environmental Impact Report

Dear Mr. Moore:

The Delta Wetlands Project has reviewed the Draft Environmental Impact Statement/Environmental Impact Report (DEIS/R) for the Los Vaqueros Reservoir Expansion Project (LVE), a project owned and operated by Contra Costa Water District (CCWD).

CCWD has been an active commenter on the development of the Delta Wetlands Project. The Delta Wetlands Project will divert and store water on Webb Tract and Bacon Island and create and enhance wetlands to manage wildlife habitat on Bouldin Island and most of Holland Tract. The stored water will be provided to municipal, industrial and agricultural users within the Central Valley Water Project and State Water Project service areas. The stored water may also be released to enhance Delta outflow and water quality. CCWD and the Delta Wetlands Project entered into a protest dismissal agreement that will ensure that any potential adverse effects to CCWD from operation of the Delta Wetlands Project will be avoided or mitigated through compliance with the Water Quality Management Plan and other plans and agreements. The LVE DEIS/R does not discuss the Delta Wetlands Project. 1

A Final EIR (2001 SCH # 1988020824) and Final EIS (2001) were prepared for the Delta Wetlands Project. The Final EIR is being updated in response to *Central Delta Water Agency v. State Water Resources Control Board,* 124 Cal. App.4th 245 (2004). The Delta Wetlands Project Place of Use EIR will analyze the effects of providing water to the proposed places of use, banking water within the Semitropic Groundwater Storage Bank and Antelope Valley Water Bank, and will update prior analyses based on new information and changed circumstances. The U.S. Bureau of Reclamation (Reclamation) was mailed a copy of the NOP. We encourage Reclamation to consider the Delta Wetlands Project documents in preparing the Final EIS/R for LVE, as discussed below. 2

Anson B. Moran, General Manager
1660 Olympic Blvd., Suite 350
Walnut Creek, CA 94596
Telephone (415) 730-5637

With regard to the LVE DEIS/R, the Delta Wetlands Project submits the following comments:

1. The Delta Hydrology and Water Quality section in the DEIS/R must assess the potential cumulative impacts with the Delta Wetlands Project. The DEIS/R claims to have determined cumulative impacts by "considering the reasonably foreseeable projects described in Section 4.1.2." (p. 4.2-68) The DEIS/R then goes on to list the projects and assumptions included in the model analyses of 2030 level of development in CalSim II and DSM2. The Stockton Drinking Water Supply Project (DWSP) and the Bay Delta Conservation Plan (BDCP) were specifically excluded based on lack of specific information of operations. However, the Delta Wetlands Project was neither included in the modeling, nor specifically considered and excluded. Unlike DWSP and BDCP, specific, quantitative information is available about the operations of the Delta Wetlands Project. As stated earlier, the Delta Wetlands Project operations and potential impacts are analyzed in the Final EIR and Final EIS. 3

2. The DEIS/R states that "[n]one of the alternatives would involve diverting more water from the Delta than allowed under existing water rights or changing the ownership or priority of those water rights" (p. 3-4), however, the changes to the "timing and location of diversions . . . may necessitate modification of existing water right permits held by CCWD; U.S. Department of the Interior, Bureau of Reclamation, Mid-Pacific Region (Reclamation); and/or California Department of Water Resources (DWR)" (pp. 3-4 to 3-5). The DEIS/R does not provide specific enough information to assess the potential impacts of the water right changes that may be required for the LVE project. Please clarify what water right approvals have already been obtained but have not yet been exercised and those that have not yet been obtained but are required to operate the proposed LVE project. 4

3. The Modeling Assumptions appendix indicates that single-year transfer agreements will be utilized to make up the difference between CCWD's annual demand and its CVP allocation. It is not readily apparent from the model results in Appendix C4 how much water CCWD intends to divert through water transfers on an annual basis and whether CCWD can feasibly acquire the amount needed under current regulatory conditions. Please clarify. 5

4. The water supply model includes an input of Delta surplus available for diversion (see p. C2-7). The DEIS/R does not define how Delta surplus water is quantified. Please clarify. 6

Sincerely,



Anson B. Moran
General Manager

LOS VAQUEROS RESERVOIR EXPANSION PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT/
ENVIRONMENTAL IMPACT REPORT (DRAFT EIS/EIR)
PUBLIC HEARINGS

CONTRA COSTA WATER DISTRICT

SPEAKER CARD

DUBLIN - MARCH 26, 2009

Name: Steve Eng

Affiliation: BTCEB, EBATC

Address: 3377 Mt Diablo Blvd
Lafayette, CA 94549

Phone: 925-283-2453

E-mail: Steve-eng@sbcglobal.net

Please submit your speaker card to the registration desk or meeting facilitator. The hearing officer will use the cards to invite participants to provide verbal comments during the public hearing.

(1)

LOS VAQUEROS RESERVOIR EXPANSION

PUBLIC HEARING ON DRAFT EIS/EIR

DUBLIN-SAN RAMON SERVICES DISTRICT

7051 Dublin Boulevard, Boardroom

Dublin, California 94568

Thursday, March 26, 2009

REPORTED BY: LESLIE CASTRO, CSR NO. 8876

A P P E A R A N C E S

Richard J. Woodley - Regional Resources Manager
Bureau of Reclamation Mid-Pacific Region

Sharon McHale - Project Manager
Bureau of Reclamation

Marguerite Naillon, P.E. - Project Manager
Contra Costa Water District

PUBLIC OUTREACH

Charles Gardiner - CirclePoint Project Manager

--oOo--

I N D E X

SPEAKER PAGE NO.

Steven Eng.....6

---oOo---

The CCWD board of directors will consider certifying the final EIS/EIR under CEQA and approving a project following this review period.

Now, today, we only have one speaker. So what I will do is call our speaker to the front. And we normally put a time limit on our speakers, we have one hour for comments, so I'll forego any time limits such as that unless we end up with other speakers who decide they want to come up.

When you're called, please clearly state your name and affiliation into the microphone and spell your first and last name for the court reporter.

Please remember this is a formal hearing and the court reporter is recording your comments. Please speak clearly so your comments can be captured accurately. And if necessary, I can indicate if time is up.

So we don't have any elected officials who have indicated they want to speak. So, again, anybody who wants to provide comments and have not submitted a speaker card, please go to the registration table immediately and we can get you on the list.

With that, I call Mr. Steven Eng, and let you make your comments.

MR. ENG: Thank-you. It won't be an hour. Thanks for hearing me out.

My name IS Steven Eng. It's spelled S-T-E-V-E-N, last name is spelled E-N-G.

I represent myself, but I'm also a member of the Bicycle Trails Council of the East Bay and East Bay Area Trails Council.

And I am here to ask you guys to consider expanding your trails for multi-use, mainly so we bikers, equestrians and hikers can use the area around the reservoir.

I know after you complete the expansion, you will restore the trail network and not so we don't lose any recreational opportunities, but you also have an opportunity to consider maybe doing some more trails that more people can use, specifically, you know, that are assessable to bikes.

Lots of trails are there right now, but a lot of them are actually not available to bikes, and you guys have an opportunity to change that. I know you guys support biking because I just got a mailer from an organization saying that you sponsor a time trial road race at the reservoir. So maybe you guys can do a little more trails for mountain biking, also.

Thank-you.

MR. WOODLEY: Thank-you.

Unless there's somebody who's reconsidered and

1



Ist comment of the day

Andrea Nocito, Senior Project Associate

a.nocito@circlepoint.com * 415.227.1100 x104

415.994.4670 Blackberry

CirclePoint

135 Main Street, Suite 1600, San Francisco, CA 94105

-----Original Message-----
From: Los Vaqueros [mailto:lvstudies@hotmail.com]
Sent: Tue 4/21/2009 8:05 AM
To: Andrea Nocito
Subject: FW: Comments - CALFED Los Vaqueros Reservoir Expansion Studies Website

> From: morrisolder@comcast.net
> To: LVStudies@hotmail.com
> Subject: Comments - CALFED Los Vaqueros Reservoir Expansion Studies Website
> Date: Tue, 21 Apr 2009 03:42:47 -0400
>
> SENDER'S NAME: Morris Older
>
> SENDER'S EMAIL: morrisolder@comcast.net
>
> SENDER'S ADDRESS: 50 La Encinal
>
> SENDER'S CITY: Orinda
>
> SENDER'S STATE: CA
>
> SENDER'S ZIP: 94563
>
> SENDER'S PHONE #: () -
>
> SENDER'S FAX #: () -
>
> COMMENTS:
> To the Contra Costa Water District,
>
> The proposed expansion of the Los Vaqueros Reservoir promises negative impacts to trails and recreation areas around the reservoir that are not fully mitigated bythe proposed replacements listed in the EIR.
>
> The CCWD's Resource Management Plan for Los Vaqueros, enacted in September, 2001 promised "public access at reasonable costs that are distributed equally among all users." The development of 39 miles of hiking trails, but only 15.8 miles of multi use trails made a mockery of this commitment, denying equestrians and mountain bikers access to most trails at and around the Los Vaqueros Watershed. The inundation of trails near the reservoir in the proposed expansion offers the opportunity to address this inequality, but the plan proposes only to replace hiking trails with more hiking trails. The District should make good on this earlier commitment if the reservoir is expanded by opening the "new, optional 14.5 mile Eastside Service Access Road/hiking only trail" referred to in the first alternative as a full multi-use trail

1

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open to bicycles and equestrians as well.
>
> Combining this "optional" trail with the proposed trail in the EIR could create a fully multi-use loop trail around the reservoir. In addition, to mitigate the 5 year loss of recreation, CCWD should establish a multi-use trail link between Brushy Peak Regional Preserve and the Los Vaqueros Watershed, a link which could enable a true trail connection between Brushy Peak and Morgan Territory if the 15 miles of replacement trail are situated with that in mind. Although the draft EIR notes that "the trails are lightly used," opening them up to all users equally will result in higher usage rates comparable to those on neighboring EBRPD trails with similar topography and climate.
>
> Furthermore the closure of the trails for 3 years and the reservoir for 5 years will send 25,000 visitors, including thousands of fishermen, per year to nearby facilities, including Del Valle, managed by EBRPD and others. EBRPD and other nearby agencies will thus be required to bear the cost of additional staffing, increased fish stocking, and potential overcrowding, and thus deserve to be mitigated by CCWD for the cost incurred due to the closure of Los Vaqueros.
>
> Sincerely,
> Morris Older, Acting Chair
> On behalf of the East Bay Area Trails Council

2 Cont.

3

4

LOS VAQUEROS RESERVOIR EXPANSION PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT/
ENVIRONMENTAL IMPACT REPORT (DRAFT EIS/EIR)
PUBLIC HEARINGS

CONTRA COSTA WATER DISTRICT

SPEAKER CARD

CONCORD - MARCH 31, 2009

Name: BRUCE D. OHLSON

Affiliation: EAST BAY BICYCLE COALITION

Address: 3829 Los Altos Place
Pittsburg CA 94565

Phone: 925-439-5848

E-mail: BRUCEOLEOHLSON@HOTMAIL.COM

Please submit your speaker card to the registration desk or meeting facilitator. The hearing officer will use the cards to invite participants to provide verbal comments during the public hearing.

(2)

LOS VAQUEROS RESERVOIR EXPANSION

PUBLIC HEARING ON DRAFT EIS/EIR

Heald College Conference Center

5130 Commercial Circle, Main Conference Room

Concord, California

Tuesday, March 31, 2009

REPORTED BY: DEBORAH FUQUA, CSR #12948

A P P E A R A N C E S

Pete Lucero - Public Affairs Officer
Bureau of Reclamation Mid-Pacific Region

Sharon McHale - Project Manager
Bureau of Reclamation

Marguerite Naillon - Project Manager
Contra Costa Water District

PUBLIC OUTREACH:

Charles Gardiner - CirclePoint Project Manager

---o0o---

I N D E X

SPEAKER PAGE NO.

Anne Farrell..... 7

Bruce Ohlson..... 11

---o0o---

environment, we must respectfully request that the Los Vaqueros Reservoir Expansion environmental documentation incorporates the supply of recycled water to the Shell and Tesoro refineries in Martinez as a component of each and every Expansion alternative.

Thank you.

PETE LUCERO: Thank you, Ms. Farrell.

Mr. Ohlson, please step up. Thank you.

BRUCE OHLSON: Good evening, Hearing Director and Project Managers. My name is Bruce Ohlson. I'm a citizen of Pittsburg. I'm a member of the board of directors of the East Bay Bicycle Coalition, and I'm on the advocacy committee of the Delta Pedalers Bicycle Club. I also want to disclose that I'm on the Planning Commission for the City of Pittsburg, but tonight I'm speaking for the bicyclists.

We respectfully request and suggest that it would be eminently reasonable to be able to bicycle on a trail from the north paved public access to the south paved public access. That would be a very small mitigation to include. It wouldn't cost a whole lot.

I'm here tonight requesting this because the

1

Water District tends to not like bicyclists. And we have -- our current rules do not allow bicycling in most of the watershed, and we respectfully request the permission -- the construction of a trail from one end to the other -- not expensive.

1 Cont.

And if you allow any vehicles anywhere in the watershed or cattle anywhere in the watershed, it certainly wouldn't hurt to allow a bicyclist or two in there.

2

Thank you very much.

PETE LUCERO: Thank you, Mr. Ohlson.

Are there any speakers who have not turned in or filled out a blue card who would like to?

(No response)

PETE LUCERO: In that case, we'll go off the record, and we will re-adjourn at the end of the hour in order to make sure we have closed out this hearing officially.

Do you have another speaker? Oh.

Okay. We're off the record. Thank you.

(Recess taken)

PETE LUCERO: On the record. We are at the end of

LOS VAQUEROS RESERVOIR EXPANSION PROJECT
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COMMENT CARD

Comments may be submitted today or mailed to:

Marguerite Naillon
Contra Costa Water District
P.O. Box H2O
Concord, CA 94524
Attn: Los Vaqueros Reservoir Expansion Project DEIS/EIR
Fax: (925) 686-2187
lvstudies@hotmail.com

OR

Louis Moore
Bureau of Reclamation
2800 Cottage Way, MP-700
Sacramento, CA 95825
Attn: Los Vaqueros Reservoir Expansion Project DEIS/EIR
Fax: (916) 978-5094
wmoore@mp.usbr.gov

Please submit comments by 5:00 p.m. on Tuesday, April 21, 2009.

Name: Bruce "Ole" Ohlson
Affiliation: EAST BAY BICYCLE COALITION
Address: PITTSBURG
Phone: 925-439-5848
E-mail: BRUCEOLEOHLSON@HOTMAIL.COM

Comments:

IT IS REASONABLE TO ALLOW BICYCLISTS TO RIDE ON A TRAIL BETWEEN THE NORTH VISITOR AREA / DAM AND THE SOUTH VISITOR AREA. This Trail could be paved or Unpaved, it doesn't matter. It need not →

3

Please use the reverse side or attach any additional pages

be flat and follow the edge of the Water. It just needs to connect the North and South Visitor Facilities and allow legal bicycle Access.

3 Cont.

*Please submit comments by 5:00 p.m. on Tuesday, April 21, 2009.

Monica Castro

From: Marguerite Naillon
Sent: Tuesday, April 21, 2009 11:29 PM
To: Monica Castro
Subject: Fw: Los Vaqueros Comment letter from CNPS

Attachments: LV EIR Comments CNPS.pdf



LV EIR Comments CNPS.pdf (432 ...



----- Original Message -----
From: Lech Naumovich - EBCNPS <conservation@ebcnps.org>
To: Marguerite Naillon; lvstudies@hotmail.com <lvstudies@hotmail.com>; wmoore@mp.usbr.gov <wmoore@mp.usbr.gov>
Sent: Tue Apr 21 22:58:00 2009
Subject: Los Vaqueros Comment letter from CNPS

Please accept our comments regarding the Los Vaqueros Expansion.

--
Lech Naumovich
Conservation Analyst

California Native Plant Society
East Bay Chapter
510.734.0335
www.ebcnps.org

EBCNPS
PO Box 5597
Berkeley, CA 94705

"dedicated to the conservation of native flora"

California Native Plant Society
East Bay Chapter
Conservation Committee

APR 2009
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CONTRA COSTA WATER
DISTRICT
CALFED

Marguerite Naillon
1331 Concord Avenue
PO Box H20
Concord, CA94524

RE: Los Vaqueros Reservoir Expansion Project DEIR/EIS

After an initial conversation that supported our letter, EBCNPS is disappointed with the decision by the Contra Costa Water District (CCWD) and the Bureau of Reclamation not to extend the deadline for comments. We were verbally informed "that there is a very good chance the comment period will be extended because we understand how much information is in the EIR/EIS document" (personal communication, Naillon, 3/24/09). On 4/8/09 with less than two weeks left in the comment period, we were informed that we were to receive no extension because the Bureau of Reclamation was against extending the comment period.

In addition, on March 24th, 2009, EBCNPS asked for compliance documents from the CCWD, (Mitigation and Monitoring Reports from the first Reservoir project) in order to evaluate the past planning efforts. No such public documents have been delivered. We are making a second request for the public reports from the mitigation and monitoring of the initial 1999 Los Vaqueros project.

EBCNPS believes that the lead agency has not been responsive to the public, and has even misled the public as to the amount of time allowed to comment on this project. We believe that it would be in the best interest of both the lead agency and the public to grant a reasonable amount of time to comment on this 1,000+ page report.

1

Pursuant to the California Environmental Quality Act (CEQA), EBCNPS supplies the following comments on the adequacy of the EIR/EIS.

General Considerations

The proposed project impacts some of the Bay Area's most valuable oak and grassland habitat. We cannot support a project that will inundate valuable woodlands and native grasslands in a region where most have been extirpated for similar anthropogenic needs. In addition, the project forever destroys a possible corridor for San Joaquin kit fox, which has recently been observed on both sides of this passage. The public has been sent a clear message by CCWD that it only supports environmental management when it is convenient for the project.

2

> "As shown in Table ES-7, all action alternatives (Alternatives 1, 2, 3, and 4) would result in the following significant and unavoidable impacts:
> • Loss of grassland area along the west side of the reservoir that is a potential (**although undocumented**) movement corridor for the endangered San Joaquin kit fox." [ES4.6]

2 Cont.

The phrase, "although undocumented," is a curious addition since documentation is not a requirement to indicate potential habitat or movement corridors. It's also a notable inconsistency since the CCWD does not use the phrase "although undocumented" in all its other references including annual reports, the website, and outreach publications. Most importantly, it would be useful for the CCWD to decide whether it has valuable habitat regardless of the project.

The **primary objective** of this project is stated as:

> "Develop water supplies for environmental water management that supports fish protection, habitat management, and other environmental water needs." [ES1.1]

Yet, nowhere in the report is there a section that is titled "Water Supplies for Environmental Management"." After searching the document, we were unable to locate **how** this project will augment water supplies for environmental management. In fact, we cannot even find current standards and protocols for release of water supplies for environmental management. The CCWD fails to address the potential benefits of the project by stating the following.

> "The evaluation of benefits described in this report is intended to provide information for potential project participants and to provide a basis for evaluating potential environmental impacts. If the lead agencies decide to pursue the project following this environmental analysis, additional analyses of the extent of these benefits will be necessary for potential project partners, including state and federal government agencies, to determine their level of interest and willingness to make a financial commitment to the proposed project." [ES2]

3

Describing impacts of a project whose operating schedule and parameters aren't clearly stated does not allow for the level of environmental analysis that will be useful to the public and agencies. We believe that if the lead agency claims this project has an environmental benefit, then it is irresponsible not to document the benefits and analyze a "best scenario" operating plan before such claim is made. Therefore, we ask that if the CCWD is to claim the above **primary objective**, we would ask the CCWD share with the public the following:

a. current water available for "environmental water management"
b. change in water availability for "environmental water management"
c. What environmental indicators and methods will be used to determine "environment benefit" from the improved water management?
d. What species or group of species will the improvements benefit, and at what cost to other species that may not be included in the analysis?
e. What performance standards will be used for the "environmental water management"?

f. How will the CCWD adjust for global warming impacts if they become more significant than modeled? Will the water agency have a "cap" on available water?

EBCNPS believes that these parameters need definition in order to determine the environmental impact of this project. As it is written, the EIR is insufficient for analyzing environmental impacts.

A finished Mitigation and Monitoring Reporting Program is required by CEQA at the time of approval for the FEIR. Will the CCWD produce this document and when will the public have access to it?

3 Cont.

Specific Considerations

Impacts to Byron Vernal Pool Preserve: EBCNPS is concerned that there is no mention of impacts to the Byron preserve from the Bethany pipeline. This developing preserve has significant habitat and special status species that will be affected by this project.

Insufficient Botanical Survey Protocols: Botanical surveys for special status plant species must be conducted during the period in which the species are in bloom. Since few lists of species found and survey dates are offered, EBCNPS believes that the CCWD did not follow correct protocol for rare and special status plant surveys. We ask that complete site lists with survey dates be released. We assume that since the only survey for the Transfer Bethany pipeline was in the spring, there would be no way to detect whether Congdon's tarplant, big tarplant, or any number of *Atriplex spp.* occurred in the project area.

4

Impacts to Locally Rare Plant Species: Without proper lists, EBCNPS must assume that botanical surveys and reports did **not** take into account locally rare, unusual, or significant species. These plants are required to be listed by CEQA. Please see Dianne Lake's publication of Rare and Unusual Plants of the East Bay.

Oversimplification of plant communities which obscures the potential diversity at the site: We believe that the richness of our biological diversity only comes to light when proper classification is used. Additionally, this allows for more effective mitigation if the proposed project were approved.

Climate Change Impacts: Although the CCWD attempts to assess climate change impacts, the effect of building the reservoir (disturbed soils release carbon and greatly impact carbon balances) and the actual reservoir's contribution to climate change were not described in the DEIR. The CCWD fails to look at the direct impact of the project on the current day emissions and climate change.

5

Cumulative Impacts: The EIR/EIS does not address the cumulative impacts of the following major projects in the area, although the CCWD is cognizant that some of these projects are underway and will require additional water resources from a local provider. Nor does the lead

6

7

agency admit to any **direct** growth inducing impacts of the project [4.20.2] Yet, the impacts of this expansion are clear as this reservoir, with increased capacity, has been mentioned in numerous studies, local City Council meetings, and noted in EIR documents from projects like the ones listed below. EBCNPS believes the growth inducing impacts are significant and unmitigable. 7 Cont.

Byron Vernal Pools Regional Preserve
Tres Vaqueros Wind Farm Re-powering Project (immediately adjacent to the project site)
Aviano Development in Antioch
Roddy Ranch Development in Antioch
Sand Creek Development in Antioch
Development of Pittsburg Hillsides in Pittsburg
Cypress corridor and related adjacent tracts in Brentwood

Conclusions

The initial Los Vaqueros project of 1999 destroyed one of the Bay Area's most intact valley oak savannas. Figure 1 overlays two aerial images – one from 1993, and one from 2007. One can clearly see the great oaks drowned in the outline of the current reservoir. Those trees are now nothing more than a memory.

In 1991 reknowned author, Gordy Slack, best summed up the apparent tradeoff at the time of the initial flooding of the Los Vaqueros valley:

"The loss of the [Los Vaqueros] valley bottom (including more than 1,000 mature oaks, some as many as 800 years old) would be substantial, they [CCWD] reasoned, but the protection of the rest of the watershed would justify it."[1]

Now it is clear that the CCWD will not protect the rest of the watershed, unless one considers "permanent flooding" a form of protection.

EBCNPS believes that the EIR/EIS is not sufficient in analyzing the impacts of this project. The lead agency did not fulfill the basic guidelines of CEQA [Pub. Res. Code § 21061]; If an environmental document fails to fully inform decision makers, and the public, of the environmental consequences of the proposed actions, it does not satisfy the basic goals of either statute. 8

Sincerely,

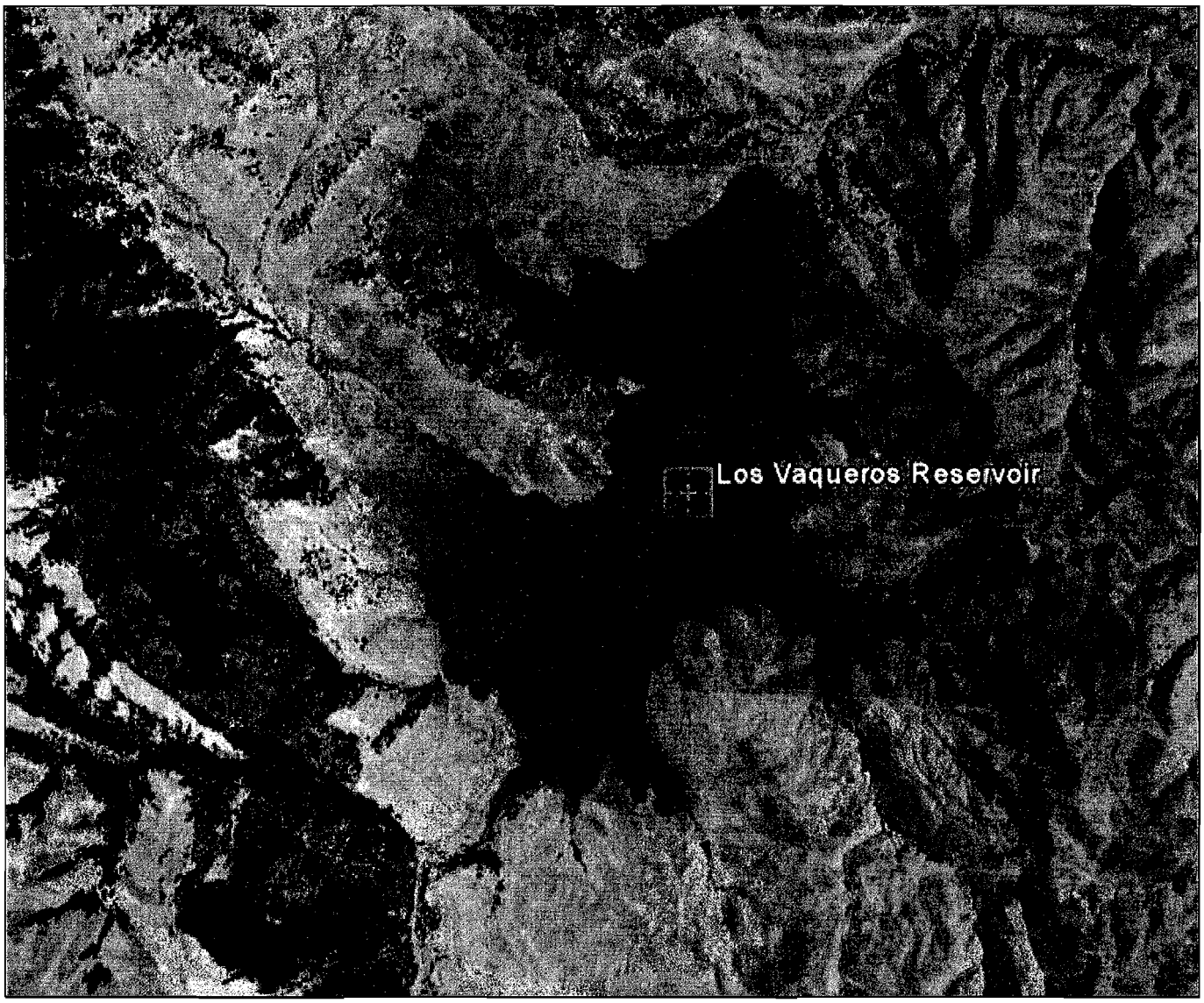
[1] The entire text of this article is included as Figure 2, an appendix to this comment letter.

EBCNPS Conservation Committee



Lech Naumovich
East Bay Conservation Analyst
California Native Plant Society
(510) 734 – 0335
conservation@ebcnps.org

Figure 1: Historical photos of oak and riparian losses in the Los Vaqueros Valley





Close-up of the Northwestern most "arm" of the Los Vaqueros reservoir where many oaks upwards of 800 years in age were inundated.

EBCNPS Conservation Committee

Figure 2: Reprint of text from California Wild 52:2

Drowning the LosVaqueros, Again
Gordy Slack

The rain begins to slow as I head east on Highway 4 near Brentwood. As I pass through the entrance to the Contra Costa Water District's Los Vaqueros Watershed the sun emerges, turning the dull, oak studded hills into a verdant, almost ultraviolet display. I pull over to look for a rainbow and find instead, peering over one of these green, green hills, the snow-covered peak of Mount Diablo.

If I could spare a few days, I could hike from here to the top of Mount Diablo some 20 miles northwest, and then on to Walnut Creek, without leaving protected land.

This 18,500-acre valley, called Los Vaqueros, falls between the towns of Livermore and Brentwood, only about one hour's drive east of San Francisco. In addition to what may be the world's highest concentration of resident golden eagles, this singularly beautiful place hosts San Joaquin kit foxes, red-legged frogs, Alameda whipsnakes, California tiger salamanders, badgers, burrowing owls, prairie falcons, fairy shrimp, and an impressive variety of other plants and animals, many of them threatened or endangered. Accommodating these creatures is a mosaic of habitats that includes sagebrush and chaparral, riparian and alkali wetlands, grasslands, and blue and valley oak woodlands.

Also in this valley is a brand new 100,000-acre-foot reservoir, the first major reservoir to be built in California in a decade and a half.

In a compromise they hoped would spare most of the watershed from development, many Bay Area environmentalists supported (or at least didn't oppose) the reservoir project back in 1988, when a ballot measure raising funds for it was passed. Though an ardent enemy of most dams, U.S. Congressman George Miller, for example, signed the ballot argument in favor of the Los Vaqueros project. The Sierra Club and Audubon Society were silent on the issue. The loss of the valley bottom (including more than 1,000 mature oaks, some as many as 800 years old) would be substantial, they reasoned, but the protection of the rest of the watershed would justify it. The Contra Costa Water District (CCWD), which bought, built, and operates the reservoir, also promised to create a network of recreational trails in the watershed and to mitigate for the loss of the valley's bottom by replant-ing oak woodlands, creating new wetlands, and restoring riparian habitat above and below the reservoir. Making Los Vaqueros especially valuable as habitat is the fact that it is one of the biggest pieces of a jigsaw of preserved land in the East Bay, reaching more than 20 miles from Mount Diablo State Park and Walnut Creek's open space to the northwest, to Brushy Peak Regional Park.

Mitigation for the reservoir has included the planting of acorns and seedlings in what might one day be several hundred additional acres of valley oak and blue oak habitat. Cottonwoods, red willows, California rose, California buckeye, and elderberry have been planted along creeks. About 19 acres of seasonal and perennial wetlands have been created in the watershed, and another 30 acres of existing wetland have been fenced off from cattle. These and other environmental mitigations have come at a price, about $20 million.

When the reservoir proposal was first put on the ballot, the 1982 battle over the Peripheral Canal was still a recent memory. There were some skeptics who opposed the reservoir in Los Vaqueros from the beginning, suspecting that it would be a foot in the door for big water interests who would later return to enlarge the reservoir and weave it into the state's water system, benefiting Central Valley mega-farmers

and southern Californian water users more than anyone else. One of the most controversial proposals in California's controversy-riddled water-management history, the Peripheral Canal would have carried fresh, north Delta water 50 miles to the south, where it would have been stored in reservoirs, such as Los Vaqueros, and then carried to the State Water Project canal and on to urban and agricultural centers further south. Unwilling to siphon any more water from the Delta's ailing ecosystems to feed southern California's growth, 60 percent of California's voters (95 percent in Contra Costa County) said no to the canal.

But the south's thirst persists.

Los Vaqueros is ideally positioned for above-ground, off-stream storage in a peripheral canal-type setup. It is near the southern end of the Delta and six miles from the Clifton Court Forebay, the beginning of the California Aqueduct. And, in 1997, before the new dam was completed, state and federal officials were already publicly discussing the possibility of a much bigger dam at Los Vaqueros and a ten-fold increase-from 100,000-acre-feet to a million acre-feet-in the amount of water stored in the valley. (For comparison, Hetch Hetchy, San Francisco's Sierran reservoir, holds about 300,000 acre-feet of water. An acre-foot is the amount of water that covers an acre to a depth of one foot, and the amount used annually by an average California family.)

CalFed is a coalition of 14 agencies and organizations representing the federal government and state and local governments, agriculture, urban water users, water districts, and environmental organizations. The coalition was formed in 1995 to forge solutions to the Delta's worsening water quality and water supply wars. In December 1998, CalFed released its Bay-Delta Plan, and Los Vaqueros, Shasta, and Friant reservoirs were recommended as sites that could be expanded for storing more water in wet years, to release in dry ones.

One thousand four hundred acres are currently under water at Los Vaqueros. If the CalFed inundation of the valley takes place, it will submerge another 3,000 acres. Virtually all of the mitigation done for the smaller reservoir will be drowned. So will much of the recreation and open space promised to voters in the original reservoir deal. So will the 40 or so significant archeological sites, holding clues to ancient native Californian use of the watershed.

It may never be clear whether or not the CCWD had planned, or hoped, to increase the size of Los Vaqueros right from the start, but that they are entertaining the possibility now is abundantly clear. According to documents requested by the *Contra Costa Times*, the CCWD has been energetically working with CalFed to develop a plan for expanding Los Vaqueros.

Meanwhile, what had been an ambitious multi-use recreation plan for the watershed that included horse and bike trails, extensive hiking trails, fishing, boating, and swimming, was cut down to a minimum of hiking and multi-use trails. "The current recreation plan is about a tenth of what it was planned to be," says Tim Donahue, chairman of the Mount Diablo Chapter of the Sierra Club.

Donahue was a member of an advisory committee that provided recommendations regarding the watershed recreation program. The committee, composed of two dozen recreational and environmental organizations, from boaters to birders, was recruited by the CCWD. When the committee presented their recommendations, their suggestions for multi-use trails were rejected in place of a far more restrictive recreation plan.

Donahue suspects that the water district sought to minimize recreational use of the watershed in order to prevent a strong constituency of users from forming. Such a constituency of invested users could

represent a major threat to the district, were it to try expanding the reservoir along the lines of the CalFed proposal. It would be a lot harder to take recreation away from people than to avoid giving it to them in the first place, says Donahue.

Gina Oltman, spokesperson for CCWD, says that recreation must be balanced with environmental protection and the water district's primary goal, preserving water quality. Asked if the CCWD would approve the expansion, Oltman said the board of the water district would only consider it if the water district were to retain control of the reservoir, if the project would enhance the Delta's environmental health, and if it were to be paid for by the state and federal governments. Furthermore, she said, CCWD would have to get voters' approval. For voters to accept such a proposal they would have to be promised lots and lots of clean and, above all else, cheap, water. (Despite promises of cheaper water when the first Los Vaqueros reservoir was proposed, CCWD has some of the costliest water in northern California.)

Barry Nelson, Save the San Francisco Bay's Senior Fellow, is worried about CCWD's interest in the expansion. In addition to inundating much of the remaining watershed, Nelson says, the CalFed plan may also further encourage over-tapping of the Delta instead of emphasizing water conservation incentives as a way out of California's water mess.

"I haven't seen any credible evidence that more surface storage is needed," says Nelson. Furthermore, the expansion project is part of a new wave of dam building: "Building new dams is the hottest new proposal from CalFed. A few years ago new dams weren't even on the radar screen. Now proposals are everywhere," Nelson says. "There's a long history of promising dams that will give environmental benefits, but those benefits have never been realized. The Red Bluff diversion dam, for instance, was sold to the public as an environmental dam and it's been an absolute catastrophe.

"They say a bigger Los Vaqueros would hold water that could be used to maintain fresh-water-dependent habitats in the dry season. But if we're really after environmental protection and restoration, building more dams, or bigger ones, would hardly be the best bang for our buck."

----- Original Message -----
From: John Negrete <johnnegrete@hotmail.com>
To: Marguerite Naillon; Jennifer Allen
Sent: Wed Apr 22 00:56:10 2009
Subject: Comment from John Negrete on Draft EIS/EIR on the Proposed Expansion of the LVR

Comment on Draft EIS.doc



Thank you for all your help.

John Eustacio Negrete

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Email: johnnegrete@hotmail.com

Nevada County Superintendent of Schools
112 Nevada City Hwy
Nevada City, CA 95959

Windows Live™ Hotmail®:…more than just e-mail. Check it out.
<http://windowslive.com/online/hotmail?ocid=TXT_TAGLM_WL_HM_more_042009
>

Comment on Draft EIS/EIR for the Proposed Expansion of the Los Vaqueros Reservoir

I have been visiting and studying the "Vasco Caves", Kellogg Creek, and Brushy Creek Watersheds for over 20 years. It was on my 16th birthday, May 21, 1996 that the Vasco Caves in the Kellogg Creek watershed found me. This led to a life long passion to understand and learn from these incredible places and their inhabitants.

This proposal is written and researched by me but it supported by Native American organizations and individuals (both native and non-native). Any mistakes made in this comment are mine and mine alone. Due to time constraints certain groups and tribes could not get access to this document for the committee to approve or deny. But there is a growing community of native and environmental group who are not only going to oppose the project but take educational actions to make people aware of what has been done in the past and what could happen in the future.

The main buttress of my argument is that the cumulative effect of expanding the Los Vaqueros Reservoir would cause numerous significant impacts that could not be mitigated. I have spent the last month going over all of the original documents from the original reservoir project and all the monitoring documents that the CCWD made available to me.

However, there were two gaping holes in my research concerning the status of species of special concern and cultural resources due to either a lack of understanding of who was responsible for the original mitigations. In the case of the EBRPD (East Bay Regional Park District) I was not allowed to view any of the biological surveys that they have conducted over the past 10 years that they have managed the Vasco Cave Ecological Preserve. I was by both CCWD and EBRPD that the other was responsible for the requirements determined by the Biological Opinion legal document created for the original reservoir.

The other hole had to do with the realigned Vasco Road which follows along Brushy Creek, which had been previously one of, if not, the most remote year creek in the Bay Area. The construction of this road (12.6 miles long with 200 foot right a ways) have numerous significant impacts according to the USFWS, DFG, and the lead federal agency of the project, the Bureau of Reclamation. Numerous species of special concern (some on the endangered list had their northern most occurrence and most viable populations left. The center of their previously completely remote and isolated existence would be drastically reduced and cut off from migration routes from this new road.

The only studies I could find concerning Brushy Creek from the CCWD was three years of studies of the Tiger Salamander. Due to the populations of the Kit Fox, Tiger Salamanders, and many other species losing critical irreplaceable habitat along with what is termed habitat fragmentation that science has determined to be a major factor in species decline. 1

I walked over two thirds of Brushy Creek less than a month ago right after we had some big rains and to my surprise thee stream bed was not only eroded in most places but held no running water or even standing water for that matter. Of all the years I had visited the creek before there had never been an empty stream bed. In fact, it was large enough for a sea lion who had gotten turned around ended up over six miles up Brushy Creek.

There also was more garbage than I have seen along any creek located in Costa County. Mile after mile I could not walk more than a few feet without having to maneuver around all forms of garbage. I am not just talking about gargage that is typically thrown from passing cars but countless dump sites which included construction materials, furniture, and what ever other items one usually encounters at illegal dump sites. I was told by every agency I could contact (CCWD, EBRPD, Contra Costa County, U.S. Bureau of Reclamation, etc.) and not one could tell me who

was responsible for making sure the environmental, hydrological, and cultural monitoring and mitigation was done along Brushy Creek.

The USFWS, DFG, and the U.S. Bureau of Reclamtion all considered the realignment of Vasco Road to have significant impacts on numerous species of special concern. Their ain mitigation measure was to create under crosTsings varying in height from 36" to 96 inches and lengths well over 100 feet. The majority of the under crossings were specifically created for the Kit Fox and Tiger Salamander with the smaller sized under crossings. To ensure that the migrating wildlife actually used these under crossings were used by the targeted species a multi-staged fence was specially created. The lower portion was to prevent Tiger Salamanders (along with numberous other reptiles and amphibians) from going through holes that they could pass through. The next section of fencing was made so that kit foxes would not be able to go through this fence. These fences following most of the length of the realigned Vasco Road were designed to funnel the targeted species into these under crossings.

1 Cont.

For those not aware of the "new" Vasco Road it is a 4 lane highway which drivers regularly travel over 70 and even 80 miles per hour on. How any animal would hope to successfully cross this barrier would be miraculous. In 1995 approximately 18,700 cars were using the new Vasco Road daily, the projections for use of the road in 2025 shows drastic increases in both commuter and commercial traffice more than doubling. According the CCWD own documents this would make the current roadway obsolete.

Even though the CCWD has been adamant that they do not have any responsibilities concering any aspect or the realigned Vasco Road (except for the one admition that they do have to monitor the special fencing along the roadway into perpetuity. (personal comm. Mike Mueller (Los Vaqueros Watershed Manager: 4/7/2009) I will show that from CCWD own EIR/EIS that this statement is not true unless changes have been made that I was not able to find after 100's of hours of research.

This first example and only example of environmental monitoring CCWD ever did after construction of the road was complete I believe draws a pointed dearth of data showing that CCWD has done nothing with its only environmental research along the new Vasco Road and that with the California Tiger Salamander receiving an even higher status of protection. That CCWD consitently nearly never does anything more that is required of them even if the effects from their lack of action would if fact cost them many times more in studies and mitigations. This does not even bring up the many headlines in local newspapers and paphplets handed out to the public stressing how much they care about the wildlife and cultural resources from this project and that they are going above and beyond their legal requirements to ensure the survival of this incredible landscape so full of bio-diversity.

I am now going to refer to the CCWD monitoring reports for the Tiger Salamander for the first three years of the realigned Vasco Roads existence.. The first document I will refer to and quote is :

1 Cont.

Results of the First Year Monitoring of Measures to Reduce Mortality to the California Tiger Salamander on the Relocated Vasco Road Alingment. Jones and Stokes.

"89% (78) of the 152 salamanders observed along Transects 2-7 were in the road, while the remainder where in the adjacent upland habitats." (these means they were found squashed by cars on the roadway). There were no observation of any salamander making it across the road safely, but this does not mean that none of them did"

This next finding by U.S. Fish and Wildlife approved biologist hired by the CCWD (I was impressed with how honest they were with there data considering the obvious conflict in interest. However, the overall success of the fencing project by Jones and Stokes I did find laughable). Side note: Jones and Stokes no longer is hired by CCWD.

"Sixteen salamanders were observed using under crossings. Under crossings used included a 48 inch diameter crossing constructed as a kit fox crossing and a 36 inch under crossing both on Transect 2 and an 8 foot cattle crossing on Transect 3. On unfenced tranced 1, where the second largest number of salamander observations were made, no salamanders observations were made, no salamanders were observed using the 48 inch under crossing" *(Considering the numbers of salamanders found dead {89%} and the equally disturbing number of salamander using the undercrossings seems to me that anyone with common sense would see that this very important mitigation which enabled the realignment of the 12.6 mile road by changing a significant impact into an "avoidable impact". I would say that as Jones and Stokes mentioned that the mitigation measure was meeting its goal is no reading the information correctly. In their defence, anyone who works with statistics or biololigal surveys, they are nearly impossible to collect data that is definitively quantifiable due to so many changing and existing factors that make observations more of a chance event. For instance, you would obviously see salamander dead on the road much easier that you would moving through tall grasses, but you should have no problem determining if the undercrossings are being used by any sizable number of creatures. Another observation the biologists made was the fencing itself was found to be inadequate in numerous places. For example, burrowing animals created holes under the fence, traffic accidents knocking down fences which could exist for nearly 6 months without action.*

1 Cont.

The following except from the document leaves no doubt as to the success of CCWD mitigation measures that they are legally bound to meet. And if they do not meet they mitigation agreement they could be feasibly liable for any "takes" (deaths) of protected species due to the failure of their mitigation plan. What they were supposed to do, nearly 10 years ago, was to come up with some other form of mitigation or face the serious consequences for either ignoring or creating the circumstances

that have increased the population decline from unaturhorized "takes" of a federally and state protected species.

....the low numbers of salamanders observed within the culverts (16) to the number observed on the roadway (190) , suggests the effect was slight (pg, 13) *(Note:190 "salamanders observed on the road way" is a very nice way to say ran over by a car or big rig.)*

"Only one salamander was observed successfully crossing the roadway. We could not always determine how the salamanders killed on the road in fenced segments gained access to the roadway. They most likely went under the fence or traveled along the fence and moved onto the road at the fence ends."

I understand that this was the first study done after construction of the road was completed so the next 2 studies will show what happened to the tiger salamander population over three years due to the construction activities and components of the original Los Vaqueros Reservoir.

1 Cont.

I would also like to share why they chose this mitigation for the tiger salamander. During their breeding season they migrate to pools of water where they breed. At least one of these breeding ponds was destroyed by the roadway but even more significant (this statement comes from CCWD's on biologist) is the placement of a highway right in the heart of their migration path.

The next two years of studies were put together in one volume which is entitled:

RESULTS OF THE SECOND AND THIRD YEAR MONITORING OF MEASURES TO REDUCE MORTALITY TO THE CTS ON THE RELOCATED
VASCO ROAD ALINGMENTS

JONES AND STOKES, JUNE 1999

These two years of studies definitively show a well over a 100% drop in Tiger salamander populations on both year's 2 study and year's 3 study. Not one tiger salamander was ever observed using the under crossings specifically designed for them as part of the mitigation measures to prevent significant impacts to the salamanders population and viability as a species in this previous northern stronghold of the species.
According to DFG, the area from Brushy Peak following Brushy Creek onto the Alkali flats near Byron Hot Springs and Byron Airport southern limit of this species territory.

"A total of 64 (year 2) and 26 (Year 3) salamanders were observed in both transects for an approximant frequency of 12 (year 2) and 3 (year 3) per 1,000 feet of surveyed roadway. This is substantially fewer salamanders than were observed in monitoring year 1 (292 of transects 1 and 3 combined.)"

"A total of 31 (year 2) and eight (Year 3) dead salamanders were found on both transects, which represents 48% (year 2) and 31% (year 3) of all salamanders observed. This is in contrast to Year 1 where 102 dead salamanders were found on Transects 1 and 3, which represented 35% of all salamanders observed."

"On transect 1 (the control), the percent dead increased from 39% to 61% TO 80% during year 1 through 3. The opposite trend occurred on transect # where the percent dead changed from 32% to 43% to 19% during years 1 through 3."

"Three salamanders were observed using under crossings during the nighttime surveys. The only under crossing that salamanders used were observed using was the 8 foot cattle crossing near station 620 on Transect 3."

"….there were a number of areas where the exclusion fence had been burrowed under by small mammals. In addition, erosion uphill from the salamander fencing on Transect 4 has resulted in soils

1 Cont.

piling up behind the fence making it easier for small animals, including salamanders, to climb over the fence and onto the road."

"…..This suggests that the exclusion fencing does not direct salamander movements towards the under crossings. However, only a few salamanders were observed using the under crossings."

I choose to chose this study to start with and to address one of the roadblocks I came upon with anyone holding some kind of stake in this project succeeding. I am going to make my own graph/diagram to show a bit more clearly how drastic the Tiger salamander is heading toward extinction in on of its strongest footholds in the northern San Juaquin Valley. Yes there are populations that exist in the area of the headwaters of Kellogg Creek. But with the new construction activity, inundation losses of habitat and migration routes, and increased harassment from people due to the drastically expanded recreation plan which puts people within a stones through of the most sensitive areas of the watershed.

1 Cont.

CCWD YEAR 1 TIGER SALAMANDER STUDY RESULTUS

Year 1	Total of 306 counted	(89% found dead on road)
Year 2	Total of 95 counted	(91% found dead on road)
Year 3	Total of 34 counted	(78% found dead on road)

These numbers to me look like the population of Tiger salamanders have fallen off a cliff. On top of that, over 80% of the total found are all dead.

I would also like to add as scientist and statisticians are again aware that there are year to year changes that could explain some of the changes that these numbers represent. I'd be very surprised that anyone could

come up with a complete explanation besides the new road for such drastic drops in population. The most common reasons for year to year population fluctuation is due to amount of rainfall. For nearly all cases, Tiger Salamanders migrate during the rainy days, so if there is a dry year there would be a reason for some of the population to decline, but during this three year period there were no drastic differences in rainfall totals. Year three was a few inches less than year 1 and 2 but was not considered to be a large enough factor to explain away these precipitous drops towards regional extinction.

What sickens me the most was that no government agency whose responsibility to read these reports and make modifications if they feel are necessary. I am thinking about getting some kind of legislation that requires documentation of the individual who chose to ignore this clearly dangerous trend. I cannot wait to see what the count would be this year or next. I have been told by Mike Mueller (Los Vaqueros Watershed Manager {Pers. Comm. 4/7/09}) that when he used to commute along Vasco Road he never saw a Tiger Salamander dead on the road. Either he missed seeing them or they are no longer migrating to their breeding habitat and very well may be regionally extinct.

1 Cont.

As I mentioned earlier in my comments that the fence was also made for the Kit Fox population which was known to activily live, hunt, and breed along the Brushy Creek corridor. During the original LVR EIR/EIS there were no spottings of kit foxs' anywhere on the reservoir's Area of Potential Effect (APE). During the entire time of construction of the reservoir, myself along with numerous photography professionals and film students attempted to document as much of the area before it was destroyed (some might say changed). From the largest stand of Valley Oaks left in the state, aged 150 years to some who say were over 500 years old (pers. comm.. with a very mad logger at doing this job)w1
The reason I have brought this up besides the historical value of all the documentation is that we have pictures of kit fox tracks along the dirt roadbed of the realigned road being buil

Due to the extensive cultural resources I believe that documentation that this sacred complex contains not only unique, endemic, and an unbelievable component I do not want to mention in a public forum. I have gone over every anthropological and archeological article I could either find or order about similar sites and they all were completely looted or excavated by the 1940's. There is a strong chance of finding a peoples' history that has been so drastically fragmented and the minutia of artifacts from the tribal nations of this place are scattered all over the world.

What we have here is what an archeologists or a native elder would call a place that has so much to teach us and the power to change peoples lives and understanding of the world. I went from a punk rock teenager in constant trouble into a spiritual and academic researcher because of this site. It was the best birthday of my life when this place found me.

From the professionals in the related fields that I have gotten to know and share my observations and they along with the people whose land this was once legally theirs and know it at least is accessible with a daunting mountain of paperwork, meetings, and numerous government agencies to have to go through.. They actually finally have Native people administering government programs for their own people because even being the poorest minority in the U.S.A, the tribal peoples of this country have difficulty trusting govement agencies in this country so I humbly suggest to the EBRPD and CCWD hiring either a Native person (Documented or not) or non-native who has an established history with strong connections with Central California indigenous nations, a history working with at risk native youth (our elders and prophecies have repeatedly singled them out as future leaders), and most important of all a very personal experience and understanding of the sacred. In the past I know that the districts have gone through the policies and procedures that



they have to follow in hiring anyone. Once again I would at least ask that you consider about having a more open process (not middle and upper management making decisions behind closed doors). I would even go so far as have some Most Likely Descendants along with young people (both at risk and either college bound or already attending) be part of the hiring committee.

It has always been my impression that both CCWD and the EBRPD do not have anyone at a high enough management level who has a good understanding of the Native American Religious Freedom Act, the treatment of tribal nations or what has been a growing movement of regional alliances of Native Americans from not only California, but from every other state in the country; this movement is having more and more of part of their mission statements encourage non-native organization members but also board members. It is through cooperation and actually creating programs that continue to the multi-generational healing through creating a community tied to the landscape with the ropes of love and spirituality.

2 Cont.

I am running out of time so I want to get to two specific and major violations of both agencies Resource Management Plans concerning Vasco caves. During the construction of the original project I was monitoring the caves because no one else was. To my utter horror I discovered that one of the most intact site was looted to the depth of 6-8 feet and over an approximate area of 20 x 20 feet. I also found buckets and hypodermic syringes left behind. A police report was made with EBRPD police and spoke before the EBRPF board. But to this very day artifacts continue to runoff with every rain and the hole (although) it has greatly shank over the years, invites more looting to occur. On more than one occasion I have asked that this site at least be repaired and have volunteered the sacred labor myself but always told that they would take care of it.

Another, and what some would consider to be even more important damage to the site has been the vandalism specifically focused on the

3

rock art of Vasco Caves. This did not start until the general public began to visit and know where the sites were. On my own, it took years for me to find all the sites that have been found so far, so to me there must be a correlation between someone gaining knowledge of their location and then coming back and putting "Joe was here" over the paintings.

Inundation of either sized enlarged reservoir projects would inundate two rock art sites that have both been documented and had numerous articles written about them.

CCWD plan to expand recreation access to east side of the reservoir where the caves exist in both the Kellogg Creek and Brushy Creek watersheds. This roads goes against CCWDs' own goals of protecting them from access and providing a buffer between them and any recreational feature. The maps show some slightly different routes but I was told the only one that would be used would be one that ran between the shoreline of the reservoir and the caves. How people would be prevented from continuing more vandalism to a group of caves which have been protected so far due to their isolation.

3 Cont.

With all the proposed major projects in the area in planning or already in construction (i.e. the Byron Airport, new housing projects along with traffic, I believe that this cumulative loss of habitat will lead the loss of many species of special concern of having any hope of a future in southern Alameda and Contra Costa.

4

Thank you for all your time and effort and all the district employees who were so very helpful in making documents available to me.

Sincerely,

John Negrete
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347 Nile Street, 4
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----- Original Message -----
From: Los Vaqueros <lvstudies@hotmail.com>
To: Andrea Nocito
Sent: Tue Apr 21 14:31:18 2009
Subject: FW: Los Vaqueros Reservoir Expansion Project DEIS/EIR

Subject: Los Vaqueros Reservoir Expansion Project DEIS/EIR
Date: Tue, 21 Apr 2009 14:06:08 -0700
From: echambers@pcl.org
To: lvstudies@hotmail.com
CC: MMcIntyre@pcl.org



Dear Ms. Naillon,

Thank you for the opportunity to comment. The Planning and Conservation League's comment letter it attached to this e-mail. Please contact me if the is a problem with the attachment.

Thank you,

Evon Parvaneh Chambers
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April 20, 2009

Marguerite Naillon
Special Projects Manager
Contra Costa Water District
P.O. Box H2O
Concord, CA 94524



RE: Los Vaqueros Reservoir Expansion Project DEIS/EIR

Dear Ms. Naillon,

The Planning and Conservation League (PCL) thanks Contra Costa Water District for sending a copy of the draft Los Vaqueros Reservoir Expansion Project DEIS/EIR to our office. After review of your joint DEIS/EIR it is apparent that you understand the uniqueness and fragility of the Delta as a precious resource to our state, however it is not clear that the protection and the enhancement of this resource is a priority. In order to comply with CEQA all reasonable and feasible mitigation measures must be listed in the EIR. There is no mention of recycled water, conservation, storm water capture and the adoption of all Best Management Practices as a means to achieve project objectives by reducing reliance on Los Vaqueros Reservoir water and reclaiming water supply within the Contra Costa water district. The current project alternatives proposed in this Draft DEIS/EIR has PCL deeply concerned that the expansion and the associated infrastructural changes will open flood gates for mismanagement and over allocation. 1

PCL has the following points of concern:

Over-pumping out of an already over-stressed, collapsing Delta ecosystem

Where are the safeguards to ensure that the system will not be abused? This project reads to be similar to the Environmental Water Account from the CalFED process that failed miserably despite its noble intentions. If Alternative 1 or 2 are adopted and built out, the storage capacity of Los Vaqueros will almost triple, the expanded pipeline capacity will more than double and it will result in the construction of a new 170 cfs intake facility, as well as a new 470 cfs South Bay connection pulling South Bay contractors online. There are no safeguards mentioned to prevent both Los Vaqueros pumps at Old River and CVP and SWP pumps at Banks to all be operating at the same time nor language that addresses the augmentation of water transfers south of the Delta. The ability to have both Los Vaqueros and SWP/CVP intakes at full capacity does have a significant impact to the Delta ecosystem and must be analyzed within the DEIS/EIR. 2

Nearly 200 AF of the 275 AF of supply in the EIR is labeled as "environmental water management." This term is quite misleading. One would conclude that a supply labeled "environmental water management" is a supply dedicated for environmental use. In the EIR environmental water management is described as water diverted from the Delta through state-of-the-art fish screens and surplus water stored for use during a mandated 30-day no diversion restriction. However once the water is in reservoir, the majority is dedicated to municipal and industrial use in times of drought or uncertainty in water supply.

The description of environmental water management in the EIR does not adequately define the environmental benefits of environmental water management water. It addition, it appears this water is instead intended to meet the objective of water supply reliability. The EIR should examine all reasonable and feasible measures to achieve water supply reliability with fewer environmental impacts for example, demands in times water supply uncertainty can be mitigated by improving the recycled water capacity, conservation, storm water capture and the adoption of all Best Management Practices.

3

Recycled Water

Recycled water must be included in the EIR as a means of achieving the project objectives. CCWD is fortunate to have the capacity and much of the infrastructure in place to augment that supply up to 44,000 AF/yr working jointly with Central Contra Costa Sanitary District. Recycled water is a viable option to achieve all of the objectives listed in your EIR and thus warrants inclusion and analysis in this document.[1]

4

<u>The following questions must be addressed in the DEIS/EIR:</u>

What is the impact to the project alternatives if the Peripheral Canal or similar conveyance structure is built?

5

How much water do the fish need?

What flow regimes – quantity, direction, temperature, turbidity and other water quality parameters - are needed in different locations at different times of the year and in different types of water years to restore native aquatic species that spend all or a part of their life stages in the Bay Delta Estuary?

6

[1] Information provided by Central Contra Costa Sanitary District

3

We encourage Contra Costa Water District to address the concerns described in this comment letter and adopt all reasonable and feasible mitigation measures. Please do not hesitate to contact PCL with any questions or concerns.

Thank you,



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April 21, 2009

Marguerite Naillon
Contra Costa Water District
P.O. Box H20
Concord, CA 94524

Re: Los Vaqueros Reservoir Expansion Project DEIS/EIR

Ms. Naillon,

Save Mount Diablo (SMD) appreciates the work of staff in the preparation of the draft Environmental Impact Report (draft EIR) for the Los Vaqueros Reservoir Expansion Project and the opportunity to make comments on the document.

Save Mount Diablo's Position

In reviewing the draft Environmental Impact Report for the Los Vaqueros Expansion project, Save Mount Diablo believes that there are major issues with the proposed project which are not adequately addressed and are in need of further review.

The draft Environmental Impact Report asserts that, with the exception of the inundation of a San Joaquin kit fox corridor and the loss of 22 acres of Important Farmland, mitigation measures have been identified which reduce the project's impacts to a less than significant level.

Save Mount Diablo disagrees with this assessment and believes that many of the mitigations proposed in the draft EIR do not sufficiently mitigate the impacts of the project.

Summary of Save Mount Diablo's Comments

The draft EIR does not assign the appropriate amount of significance to the project's impacts on the conservation easements that were dedicated or were supposed to be dedicated as part of the mitigation program for the original reservoir project. Eliminating conservation easements and destroying the resources they are meant to protect sets a dangerous precedent that undermines the protection of sensitive resources throughout California. In other words, CCWD agreed to permanently protect sensitive resources with conservation easements, easements which they now propose to violate and resources which they now propose to destroy. Save Mount

Diablo believes that the applicant should be required to achieve a replacement mitigation ratio of between 15:1 to 20:1 to replace lands protected by conservation easements that will be lost as a result of the project; currently the applicant is proposing a ratio of up to 3:1.

Save Mount Diablo believes the mitigation measures to address the impacts to San Joaquin kit fox habitat and movement corridors must be substantially improved. While Save Mount Diablo agrees with the assessment that the loss of a kit fox corridor cannot be mitigated to a less than significant level, we believe that rather than simply preserving additional habitat, CCWD should preserve an entire privately owned kit fox corridor in East Contra Costa County to address these impacts to the maximum extent possible.

Many of the proposed mitigation measures do not sufficiently address the project's impacts to biological resources. The draft EIR does not assign an adequate level of significance to the cumulative temporary impacts of the project and, as a result, mitigation compensation ratios are often too small. A number of the mitigation measures include mitigation and monitoring programs which postpone full review of impacts and mitigations to a future undetermined date and remove analysis from the CEQA process. Furthermore, the draft EIR does not identify the affect re-filling the reservoir would have on special status species that use the empty reservoir for the three years it is drained, as a significant impact. Save Mount Diablo also believes that the draft EIR is incorrect in its analysis that the project would not have any growth inducing or cumulative impacts.

The draft EIR does not consider the full range of impacts on recreational facilities and opportunities in the Watershed and surrounding areas. The East Bay Regional Park District 2007 Master Plan includes the proposed Byron Vernal Pools Park in the grasslands to the east of the reservoir and the Morgan Territory to Brushy Peak Regional Trail crossing the southern portion of the watershed. The draft EIR makes no mention of either of these planned recreational resources and, as a result, the project's impacts to recreation are not fully evaluated.

Save Mount Diablo's Interests

Save Mount Diablo is a non-profit conservation organization founded in 1971 which acquires land, for addition to parks on and around Mt. Diablo, and monitors land use planning which might affect protected lands. We build trails, restore habitat, and are involved in environmental education. In 1971 there was just one park on Mt. Diablo totaling 6,788 acres; today there are thirty-nine parks and preserves totaling almost 90,000 acres. We include almost 7,000 donors and supporters.

The Los Vaqueros Watershed is part of a large swath of protected open space which stretches from Shell Ridge in Walnut Creek through Mount Diablo State Park and Morgan Territory Regional Preserve to the Watershed and then south through Brushy Peak in Livermore.

This stretch of land is part of a ring of preserved lands that nearly encircles the mostly undeveloped and agriculturally zoned Marsh Creek-Morgan Territory Area and includes Mt. Diablo State Park, EBRPD's Clayton Ranch land bank, Black Diamond Mines Regional Preserve, Roddy Ranch Open Space, Fox Ridge Manor, Los Meganos State Historic Park (also knows as Cowell Ranch/John Marsh State Historic Park), Round Valley Regional Preserve, and Morgan Territory Regional Preserve.

Save Mount Diablo works to expand these open space corridors by establishing connections to other parks and preserves in the area. Additionally, we work to enhance the biological resources and expand recreational opportunities within protected open spaces. One of the ways in which we accomplish these goals is to comment on development proposals in the vicinity of open spaces to address potential impacts and ensure that sufficient mitigation measures are implemented.

The Los Vaqueros Reservoir Expansion project would result in impacts to wildlife habitats and movement corridors, recreational opportunities, and a variety of other resources in the area. In addition, Save Mount Diablo believes the project would have growth inducing impacts because it would remove a barrier to growth in Contra Costa County and the Bay Area—the reality that despite its contracted amount of water from the Bureau of Reclamation, CCWD and other potential partners with other contracted supplies are sometimes unable to pump given environmental restrictions. With greater storage, flexibility and certainty of water supply, additional growth will be possible. Furthermore, the project would set a precedent by flooding areas that are covered in conservation easements thereby destroying the resources meant to be protected and weakening easements as an effective conservation tool in California.

Los Vaqueros Watershed with Surrounding Open Space



Save Mount Diablo is interested in ensuring that the environmental impact report includes sufficient protections for sensitive resources both within and outside of the watershed, adequately addresses the potential growth inducing impacts of the project and sets high standards for replacement mitigation requirements when conservation easements are eliminated.

Conservation Easements from Previous Mitigation Measures

Save Mount Diablo believes the draft EIR does not adequately address the project's impacts on conservation easements in the Los Vaqueros Watershed (Watershed) that were dedicated as part of the mitigation measures for the original reservoir project.

The draft EIR states that "4,150 acres of land in the watershed have been conveyed to CDFG as a kit fox conservation easement, and 1,856 acres have been proposed to be conveyed" (Los

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Vaqueros DEIR, 4.6-135) as mitigation for the biological resources impacts of the previous reservoir project.

According to the draft EIR, 496.7 acres of the 4,150 acres of conservation easements would be permanently inundated by the reservoir expansion or impacted by the construction of associated facilities and infrastructure. The draft EIR identifies the loss of easement areas as a potentially significant impact, but claims that the mitigation measures proposed reduce the impacts to a less than significant level.

Mitigation Measure 4.6.7c states: "CCWD shall replace any acreage of existing kit fox easement affected by the project with an equivalent amount of acreage within the watershed to maintain under conservation easement the full amount required for the original Los Vaqueros Reservoir Expansion Project. In addition, CCWD shall provide compensation for conservation easement acreage affected at a ratio of up to 3:1, including conservation easement lands that are isolated by the project." (Los Vaqueros DEIR, 4.6-140)

Save Mount Diablo believes that discussion of the conservation easements in the draft EIR does not fully recognize or assign the appropriate level of significance to the project's impacts. As a result, the draft EIR does not adequately assess the level of mitigation necessary to offset these impacts and proposes an insufficient compensation ratio to preserve habitat similar to what would be lost as a result of the project.

Conservation easements are a widely utilized tool encouraged by California statute and by the Contra Costa County General Plan for providing permanent protection for sensitive biological resources, especially in areas outside of the county Urban Limit Line.

The reservoir expansion project proposes to flood nearly 500 acres of land protected by easements, eliminating the preservation value of the easements and destroying the resources that are meant to be permanently protected. As a result, the project essentially devalues the conservation easements in the watershed, diminishes the mitigations for the impacts of the previous reservoir project, and sets a dangerous precedent for the effectiveness of conservation easements throughout the state. Given the significance of these impacts, Save Mount Diablo believes that the proposed mitigation measures do not adequately reduce the impacts to a less than significant level and larger compensation ratios are appropriate.

Devaluing Conservation Easements in the Watershed – The draft EIR does not assign any greater level of significance to the loss of land protected through a conservation easement than it does to the loss of other land. The mitigations proposed to reduce impacts on easements to a less than significant level include the preservation of an equivalent amount of land preserved within the watershed and additional land preserved at a compensation ratio of "up to 3:1." By proposing a 3:1 mitigation ratio, the draft EIR is merely proposing the replacement ratio that is generally required for the loss of habitat for many special status species.

Essentially, the draft EIR does not recognized any difference in value between lands protected through conservation easement and lands that are not, therefore devaluing the preservation value of the easements. Save Mount Diablo believes the loss of conservation easements should be valued at a greater level and mitigation measures should reflect the higher value of these lands.

Diminished Mitigations for the 1997 Reservoir Project – The 1997 Los Vaqueros Reservoir Project flooded over a thousand acres of land which contained a variety of sensitive biological

1 Cont.

resources including a broad wildlife corridor for San Joaquin kit fix, wetlands features, oak woodland, and grassland habitat for special status plant and animal species. Mitigation commitments to address impacts on San Joaquin kit fox, bald eagle, California red-legged frog, Alameda whipsnake, longhorn fairy shrimp, and vernal pool fairy shrimp were implemented to require the dedication of conservation easements covering 5,837 acres within the Watershed. The conservation easements were meant to permanently protect habitat for these species in order to compensate for the loss of lands offering similar habitat.

The proposed reservoir expansion would eliminate nearly 500 acres of these easements and destroy the habitat they are meant to protect, undermining the mitigations from the 1997 project. As a result, the impacts of that project would no longer be sufficiently mitigated. Further impact could be a tipping point resulting in loss of special status species such as the kit fox from the area. The mitigation measures for the proposed reservoir expansion should reflect the fact that impacts from both the original reservoir construction and the current expansion project need to be mitigated.

Dangerous Precedent for Conservation Easements – Proposing a project that includes the elimination of conservation easement sets a dangerous precedent. The purpose of a conservation easement is to permanently protect the biological resource values of a piece of land and in this case is meant to mitigate the loss of land with similar habitat resources. Conservation easements are not meant to be placeholders for future projects or future phases of a project. Contra Costa Water District placed thousands of acres of land under conservation easements as mitigation and is now proposing the use of part of that easement land for purposes other than the protection of sensitive resources.

If a project which allows for the removal of the preservation value on a piece of protected land is approved, what would prevent other applications from being submitted requesting the same type of project? There are projects throughout Contra Costa County that have been mitigated through the dedication of conservation easements. If the Los Vaqueros Expansion project is allowed to undermine the value of a conservation easement, it is likely that project proposals will be submitted throughout the County requesting the same approval, essentially rendering conservation easements useless as a tool for conservation. Rather than cumulatively protecting habitat sufficient for the survival of special staus species, even "permanently" protected habitat will continue to be piece-mealed, fragmented and degraded.

Mitigation measures for undermining conservation easements at Los Vaqueros should require significant compensation ratios to deter other applicants from considering it to be a viable option.

SMD CONSERVATION EASEMENT COMMENT 1: Replacing the easement areas with equivalent land within the watershed and providing compensation at a ratio of "up to 3:1" for additional mitigation lands is not nearly enough to mitigate the loss of conservation easements and the precedent that would be established. **Save Mount Diablo believes that the compensation ratio for impacts to conservation easement lands preserved as mitigation for the previous reservoir project should be 15:1 to 20:1.**

Mitigation ratios need to reflect the fact that CCWD needs to mitigate for the original project since they have undermined the previous mitigations. Additionally, the mitigations need to set a precedent that overriding the preservation measures of a conservation easement is discouraged and will require the preservation of a significant amount of additional land to be mitigated.

1 Cont.

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Lastly, it is important that conservation easements are maintained as an effective tool for the preservation of natural lands and biological resources for land trusts and government agencies.

SMD CONSERVATION EASEMENT COMMENT 2: Mitigation Measure 4.6.7c proposes to replace any easement land that will be impacted by the project with an equivalent amount of acreage within the watershed and compensate "for conservation easement acreage at a ratio of up to 3:1." (Los Vaqueros DEIR, 4.6-140) Other than the equivalent amount of land being preserved within the Watershed, the mitigation does not designate a location for the mitigation lands.

2 Cont.

Save Mount Diablo believes the mitigation measures should require the mitigation lands for the project be located in eastern Contra Costa County but outside of the existing watershed boundaries –land within the watershed is already protected for water quality protection; its use would result in a net loss of habitat rather than actual mitigation. In order to sufficiently mitigate impacts, preserved areas should protect resources in areas that are at higher threat of development or that would help create connections between existing preserved lands.

SMD CONSERVATION EASEMENT COMMENT 3: According to the draft EIR, the required amount of dedicated conservation easement for the previous reservoir project was 5,837 acres. "As of December 2008, 4,150 acres have been conveyed to CDFG and an additional 1,856 acres are proposed to be conveyed to CDFG." (Los Vaqueros DEIR, 4.6-65)

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Why have the 1,856 acres of easements not yet been dedicated to the Department of Fish and Game? **Save Mount Diablo believes that the Los Vaqueros Expansion project should not receive regulatory approval until all of the conservation easement mitigation requirements for the previous reservoir project have been fulfilled, or before new mitigation areas have been legally encumbered—otherwise there will be a temporal loss of protected habitat which itself could be a significant impact.** If there is some specific impediment that has prevented CCWD from dedicating these easement areas to CDFG and would prevent dedication before the expansion project moves forward, it should be described in the EIR.

Biological Resources

The Los Vaqueros Watershed is part of a large and mostly undeveloped stretch of land in the southeastern portion of Contra Costa County, which contains a variety of sensitive biological resources and provides suitable habitat for a number of special status plant and animal species.

The area is defined by public lands preserved for the protection of sensitive resources and recreational opportunities, with rolling grasslands used for cattle grazing stretching to the south into the Altamont Hills. The Watershed is adjacent to the Los Meganos State Historic Park and Round Valley Regional Preserve to the north, Morgan Territory Regional Preserve to the west, Brushy Peak Regional Preserve to the south, and Vasco Caves Regional Preserve to the east. The Watershed and surrounding parks and preserves create a large expanse of protected habitat making the presence of special status animal and rare plants species more likely.

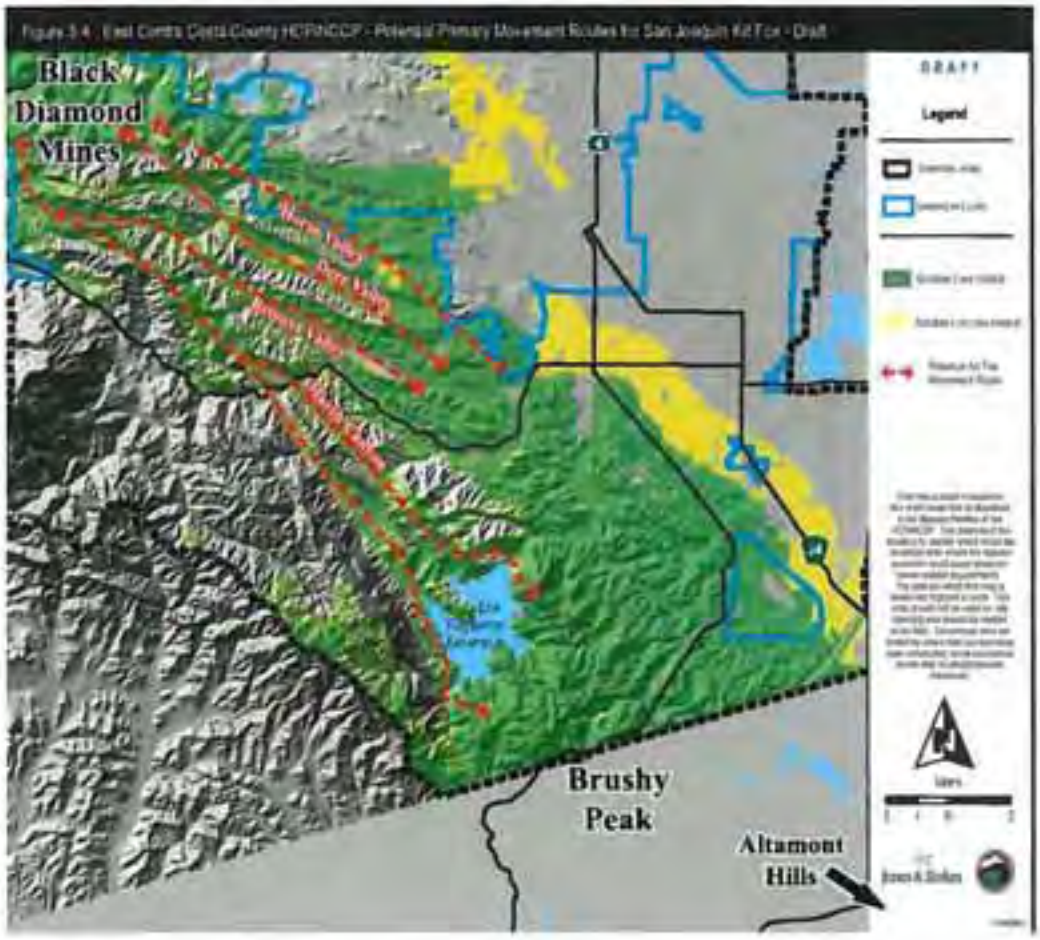
The reservoir expansion project would inundate up to 1,000 acres of land within the reservoir, eliminating habitat and movement corridors for a number of special status species. Additionally, the associated facilities including the pump station, transfer facility, power facilities and pipelines would have significant impacts on a number of biological resources located outside of the Watershed.

The draft EIR includes an extensive discussion and analysis of the project's impacts on special status species and their habitat within the watershed and in the surrounding areas. The document identifies 18 potentially significant impacts on biological resources resulting from the proposed reservoir expansion and associated infrastructure.

Although the draft EIR correctly identifies most of the project's impacts, Save Mount Diablo believes that the project will have additional impacts that were not considered in the environmental review.

Furthermore, the document contends that all but one of these impacts could be mitigated to a less than significant level through avoidance, protection, restoration, and habitat enhancement. According to the report, only the loss of the San Joaquin kit fox corridor on the western side of the reservoir cannot be mitigated to a less than significant level.

Save Mount Diablo disagrees with this assertion and believes that many of the mitigation measures proposed do not adequately mitigate the project's impacts on biological resources within or outside of the Watershed. Save Mount Diablo believes that many of the mitigations proposed in the draft EIR fall short of mitigating these impacts to a less than significant level.



Impacts to San Joaquin Kit Fox Movement Corridors and Habitat

The Los Vaqueros Watershed is a significant part of a large corridor of protected lands stretching across thousands of acres in Contra Costa and Alameda Counties providing habitat and allowing for the wide dispersal of a number of special status wildlife species, including the San Joaquin kit fox. The draft EIR identifies movement corridors for the kit fox through the Watershed and the surrounding areas allowing for mobility between protected open spaces to the northwest and the core of the kit fox range to the southeast into the San Joaquin Valley. According to the draft EIR, "recent distribution data from CDFG, USFWS (unpublished GIS data), and the CNDDB (CDFG, 2008) suggest possible fox populations in the Black Diamond Mines area, near Brushy Peak, and along the eastern fringe of the Altamont Hills." (Los Vaqueros DEIR, 4.6-129) The Los Vaqueros Watershed is centrally positioned between these locations and serves as an important connection of protected land between them.

Unfortunately, "Reservoir expansion and in-watershed facilities would permanently impact 976.2 acres of annual grasslands habitat and 149.5 acres of oak woodland habitat; both of these habitats are thought to provide kit fox denning, foraging, or dispersal habitat," (Los Vaqueros DEIR, 4.6-129) totaling 1,125.7 acres of habitat lost.

The most significant impact on the San Joaquin kit fox resulting from the reservoir expansion is the loss of the movement corridor on the western side of the Watershed due to inundation. The draft EIR identifies the loss of a movement corridor as one of only two of the project's impacts which could not be mitigated to a less than significant level.

While Save Mount Diablo agrees that the loss of a San Joaquin kit fox corridor is an impact that can not be mitigated to a less than significant level, we believe that the mitigation measures proposed are inadequate and could be substantially improved.

As expansive development in Eastern Contra Costa and Alameda Counties continues to convert open space areas into developed uses, wildlife habitat and movement corridors are becoming increasingly fragmented and cut off from one another. Loss of, or impacts on, even a single one of the few remaining wildlife corridors could be critical in cutting off Mt. Diablo wildlife populations to the north from the rest of the Diablo range to the south.

There are only a few remaining San Joaquin kit fox movement corridors which connect Black Diamond Mines Regional Preserve and other protected open spaces in eastern Contra Costa to the Altamont hills area and the San Joaquin Valley. This project would result in the elimination of one of those few remaining corridors.

As a result, Save Mount Diablo believes any mitigation other than the preservation of an entire kit fox movement corridor is insufficient.

Mitigation Measure 4.6.7b proposes to mitigate impacts to San Joaquin kit fox habitat outside of the dedicated conservation easements either by "acquiring and dedicating lands into conservation easements or purchasing mitigation credits." (Los Vaqueros DEIR, 4.6-139) The mitigation measure goes on to state that "mitigation ratios applied for impacts on San Joaquin kit fox shall be 1:1 to 1.1:1 for temporary impacts; 1:1 to 2:1 for long-term temporary impacts; and 1:1 to 3:1 for permanent impact" based on anticipated impacts to suitable habitat.

Save Mount Diablo believes that by proposing a range of compensation ratios with the final ratio to be determined in the future, Mitigation Measure 4.6.7b does not identify adequate mitigations

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to address the impacts to kit fox habitat and movement. In order to properly mitigate for the project's impacts on kit fox habitat outside of the conservation easement areas, the mitigation measures should require a minimum of a 3:1 ratio for all impacts regardless of whether they are temporary or permanent. Furthermore, a determination about how many acres of habitat will be impacted and how many acres of similar habitat will need to be protected should be included as part of the CEQA process and determined before adoption of the EIR.

"Mitigation through land acquisition and habitat protection is proposed to preserve and enhance other existing regional movement corridors, particularly those with documented use." (Los Vaqueros DEIR, 4.6-131) Acquiring and preserving compensation lands for the loss of 1,125.7 acres of San Joaquin kit fox habitat – 578.5 acres of easements at 15:1 to 20:1 and 547.2 acres outside of the easements at 3:1 – would present CCWD with the opportunity to preserve an entire San Joaquin kit fox corridor as mitigation for the project's destruction of one of the few remaining corridors in East Contra Costa County.

4 Cont.

Save Mount Diablo has identified some of the most important and unprotected kit fox corridors connecting Black Diamond Mines and other preserved areas to the core kit fox habitat in the Altamont Hills further to the southeast.

Horse Valley, Deer Valley, and Briones Valley each stretch east from Black Diamond Mines Regional Preserve south of Antioch towards Los Meganos State Historic Park and the Los Vaqueros Watershed. These three parallel valleys serve as potential kit fox movement corridors and are mostly undeveloped with grassland covering the south facing slopes and valley floors and oak woodland covering the north facing slopes.



Horse Valley – The western portion of Horse Valley is protected within the boundaries of Black Diamond Mines and the northern part of the Roddy Ranch Open Space. Roddy Ranch Golf Course presents a barrier to wildlife movement through the valley and, if approved, the Roddy Ranch project currently being considered by the City of Antioch would fragment the corridor separating Black Diamond Mines from the grasslands to the east.

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Deer Valley – Deer Valley stretches from Black Diamond Mines in the west across Deer Valley Road toward Los Meganos State Historic Park. Portions of Deer Valley on the west side of Deer Valley Road are protected by the Roddy Ranch Open Space and the valley is identified as a potential location for preservation to compensate for the potential Roddy Ranch development in Horse Valley. There are only a few minor barriers to wildlife movement in Deer Valley including a ranch house, agriculture buildings, and orchards, but most of the valley is undisturbed grassland.

Briones Valley – Briones Valley is a wide grassland valley which is partially disturbed by development along Briones Valley Road near Deer Valley Road. However, the development is concentrated south of Briones Creek leaving a sufficient amount of space for kit fox passage through the Valley into Los Meganos State Historic Park.

Of the three valleys, preservation of Briones would offer the best opportunity to connect existing preserved lands. The southern portion of the Roddy Ranch Open Space protects the ridgeline between Deer Valley and Briones Valley and portions of the valley's south facing slopes. East Bay Regional Park District's newly acquired Fox Ridge Manor, which preserves over 220 acres of land in Briones Valley, is separated from the Roddy Ranch Open Space by only a half of a mile and shares a corner connection with Los Meganos State Park. If the mitigation lands for the reservoir expansion project were located in Briones Valley, preservation of a considerable amount of acreage could complete this connection and ensure that at least one San Joaquin movement corridor in East Contra Costa County would never be lost.

4 Cont.

Marsh Canyon - Marsh Canyon is a relatively undeveloped grassland corridor with oak covered northeast facing slopes. Located in the Marsh Creek-Morgan Territory area, Marsh Canyon stretches southeast across the Marsh Creek riparian corridor and Marsh Creek Road into Round Valley Regional Preserve toward the Watershed. Other than a few residences along Marsh Creek Road, Marsh Canyon appears to be free of development or any other barriers to the movement of the kit fox.

Grasslands East and South of the Los Vaqueros Watershed – With the expansion project inundating the kit fox corridor on the western side of the reservoir, the grasslands to the east of the reservoir become an even more important part of the stretch of open space connecting in East Contra Costa to the Altamont Hills and San Joaquin Valley. Compensation mitigation lands could be preserved to expand protected lands to the east and to the south of Vasco Caves and Brushy Peak to enhance the connection to the kit fox's core habitat.

Vasco Road Wildlife Corridors – Vasco Road presents a major barrier to San Joaquin kit fox movement in the grasslands to the east of the Watershed. Studies show that undercrossings meant to provide safe passage for wildlife across Vasco Road have not been successful and a number of special status species are killed trying to cross the road. Mitigation measures to offset the project's impacts the movement of San Joaquin kit fox in the area must address the issue of Vasco Road and attempt to address this critical issue.

SMD BIOLOGICAL RESOURCES COMMENT 1: The draft EIR does not sufficiently mitigate the project's impacts on San Joaquin kit fox habitat and movement corridors. The reservoir expansion will result in the loss of over 1,100 acres of kit fox habitat and one of the few remaining undisturbed kit fox corridors in East Contra Costa County. **Although Save Mount Diablo agrees that the loss of a movement corridor cannot be mitigated to a less than**

significant level, we believe that project mitigations should include the preservation of an entire kit fox corridor in East Contra Costa County.

Furthermore, project mitigations should address Vasco Road as a major barrier to kit fox movement in the area and include fees for improvements of existing wildlife crossings along Vasco Road.

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Mitigation and Monitoring Plans
Many of the mitigations proposed in the draft EIR include Mitigation and Monitoring plans which would postpone the full study of the project impacts on resources and identification of adequate mitigations to an unidentified future date.

The draft EIR identifies the project's potential to impact a number of special status species and their habitat. Impact 4.6.6, for example, identifies the fact that project construction would result in direct and indirect impacts on listed vernal pool fairy shrimp and their habitat, but claims that these impacts could be reduced to a less than significant level.

One of the measures proposed requires CCWD to "develop and implement a mitigation, monitoring, and management plan, with input from regulatory agencies that shall outline long-term management strategies and performance standards to be attained to compensate for habitat losses resulting from the project." (Los Vaqueros DEIR, 4.6-119) Many of mitigation measures in the draft EIR propose Mitigation and Monitoring plans with similar language. In essence, the purpose of these plans is to analyze the impacts of the project and outline the details of monitoring thresholds and mitigation requirements based on those impacts.

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The purpose of the draft EIR is to assess the project's potential impacts and to propose mitigations to potentially minimize the impacts to a less than significant level. However, the document defers full analysis of the projects impacts to specific resources to mitigation and monitoring plans with no specific date identified for the creation, review, and approval. In doing so, the draft EIR has not sufficiently analyzed the project's impacts and the mitigation measures proposed do not adequately mitigate the impacts to a less than significant level.

SMD BIOLOGICAL RESOURCES COMMENT 2: Save Mount Diablo believes that these Mitigation and Monitoring plans should be included in the EIR in order to receive sufficient review before approval. If the plans have not been approved by the regulatory agencies before the completion of the environmental impact report, the document should not be approved. Delaying and removing such analysis from the CEQA process makes the draft EIR inadequate in its review of the project's impacts. Incorporating the Mitigation and Monitoring plans into the EIR would allow for full and adequate consideration of the projects impacts and mitigations as part of the CEQA process.

Inadequate Compensation Ratios
The draft EIR often proposes a range of compensation scenarios with different ratios relating to different factors for the mitigation measures. For example, when considering the loss of oak woodland, the document proposes a 2:1 mitigation ratio for restoration and a 3:1 mitigation ratio for preservation. Similarly, the mitigations for impacted wetlands require a 2:1 ratio for restoration and a 3:1 ratio for creation of new wetlands. The document also assigns different mitigation ratios for permanent impacts than it does for temporary impacts.

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Draft EIR analysis identifies a number of impacts which are considered to be temporary, particularly the impacts associated with the facilities and infrastructure outside of the watershed. Considered cumulatively, these temporary impacts would have a substantial affect on the area's sensitive resources and should be considered with a higher level of significance.

SMD BIOLOGICAL RESOURCES COMMENT 3: Given the size of the project and the sensitivity of the resources in the Watershed and surrounding lands, all mitigation measures – regardless of whether resources are restored or preserved or whether they are mitigating impacts which are permanent or temporary - should be mitigated at the highest compensation ratio based on consultation with regulatory agencies.

6 Cont.

Mitigation Compensation Inconsistency

The draft EIR is not consistent with the level of mitigation required for impacts to different species and their habitat. While some of the project's impacts on special status species and their habitat require avoidance and compensation measures, others do not require compensation mitigation at all and consider avoidance to be sufficient.

Impacts 4.6.5, 4.6.14, and 4.6.15 identify the project's impacts on the habitat of the Western pond turtle's, the San Joaquin coach whip, the coast horned lizard, the American badger, San Joaquin pocket mouse, and special status bat species. The mitigations for the loss of habitat for these species does not include compensation through preservation of land with similar habitat characteristics, while the loss of habitat for the San Joaquin kit fox and the California red-legged frog does.

In the case of impacts to San Joaquin coach whip and the coast horned lizard, the need to provide compensatory mitigation is even more important. The dEIR states that "Both species are relatively uncommon and difficult to detect, even when present." It goes on to say that "Some individuals may be undetected or enter sites after surveys and would be subject to harm." (Los Vaqueros DEIR, 4.6-167) The fact that the species are "difficult to detect" and "would be subject to harm" makes avoidance as the only proposed mitigation measure inadequate. Compensatory land with suitable habitat for both species should be preserved.

7 Cont.

SMD BIOLOGICAL RESOURCES COMMENT 4: Save Mount Diablo believes that any impact affecting the habitat of special status species should include mitigation which seeks to avoid the impact and mitigation which requires the preservation of compensatory lands, where avoidance is not possible.

Impacts to Previous Restoration Mitigation

The previous reservoir project included mitigations which required the restoration of sensitive resources such as sensitive plants communities and wetlands resources. The proposed reservoir expansion would impact some of the resources that were restored as part of the previous mitigation measures.

According to the dEIR, the reservoir expansions would result in "The inundation of 125 acres of mitigation (i.e., planted) valley oak savannah, 3.03 acres of valley oak woodland, and 9.02 acres of oak woodland. Additionally, about 4.1 acres of mitigation valley oak would be permanently lost to construction of the dam and associated Inlet/Outlet Pipelines." (Los Vaqueros DEIR, 4.6-87)

8

Additionally, the project would result in the loss of 5.05 prior onsite wetland mitigation commitments for riparian habitat and freshwater emergent wetland habitat.

The draft EIR specifically identifies and discusses the project's impacts to these resource mitigation commitments from the previous project. However, the mitigation measures do not mention or address these impacts other than to assign mitigations for the loss of sensitive plant communities and wetlands resources in general. Currently the draft EIR is proposing a range of mitigation ratios from 2:1 to 3:1 for all sensitive plant communities and wetlands, regardless of whether they were part of prior mitigation commitments.

Eliminating resources which were created to mitigate the previous reservoir project undermines and forfeits the mitigations for the prior project, leaving the project's impacts unmitigated. Applying the same replacement ratio that is assigned to non-mitigation resources does not recognize the fact that mitigation measures need to compensate for the impacts of both the current project and the previous project.

SMD BIOLOGICAL RESOURCES COMMENT 5: Similar to the impacts on the conservation easements which were dedicated as part of prior mitigation measures, impacts to resource mitigation commitments should be mitigated a higher level than other resources. **Save Mount Diablo believes that the 141.15 acres of mitigated sensitive plant communities and 5.05 acres of mitigated wetlands resources that will be impacted by the reservoir expansion should be mitigated at a ratio of 10:1.**

8 Cont.

California Red-Legged Frog and California Tiger Salamander Aestivation Habitat
According to the draft EIR, the expansion of the Los Vaqueros Reservoir and the construction of new pipelines connecting the New Delta Intake and Pump Station, the Expanded Transfer Facility, the Los Vaqueros Reservoir, and the Bethany Reservoir would result in the loss of over 1,370 acres of upland aestivation and migratory habitat for the California red-legged frog and the California tiger salamander.

Mitigation Measure 4.6.4b asserts that "the MSCS (Multi-Species Conservation Strategy) does not require compensation for loss of California red-legged frog and California tiger salamander aestivation habitat." (Los Vaqueros DEIR, 4.6-114) However, the mitigation measure also states that "CCWD shall mitigate for the loss of aquatic breeding sites that will be filled or otherwise affected by the project ***as well as mitigate for impacts on associated California red-legged frog upland habitat by providing compensatory habitat.***" [Emphasis added] (Los Vaqueros DEIR, 4.6-114)

9

It appears as though Mitigation Measure 4.6.6b contradicts itself when addressing the impacted upland habitat of the California tiger salamander and the California red-legged frog.

Safe dispersal and movement between breeding locations is important to biodiversity and the survival of special status species. The creation of compensatory wetlands to provide breeding habitat for the California red-legged frog and the California tiger salamander is less valuable if the species cannot safely move from one wetlands area to another.

The draft EIR states that some of the compensation wetlands will likely be located outside of the watershed. Although the MCSC does not require aestivation habitat, it is essential that these compensation wetlands be located in areas that are already preserved or aestivation habitat surrounding and connecting these wetlands is preserved and protected.

SMD BIOLOGICAL RESOURCES COMMENT 6: Save Mount Diablo believes that the mitigations should include compensation for the loss of the 1,370 acres of upland aestivation and migratory habitat for the California red-legged frog and the California tiger salamander at a ratio of 3:1.

9 Cont.

Avian Mortality

Avian mortality is a significant issue in the Altamont Pass area and in Eastern Contra Costa County where thousands of wind turbines cover the landscape and present hazards for special status bird and bat species. The addition of more towers in the vicinity would compound the issue and potentially increase bird mortality in the area.

Three of the four project alternatives include the construction of new power facilities to serve equipment and facilities associated with the expansion of the Los Vaqueros Reservoir. The power facilities would include poles and powerlines that "pose a danger to raptors as a result of electrocution and collision hazards, and are a recognized source of raptor mortality." (Los Vaqueros DEIR, 4.6-162)

10

Mitigation Measure 4.6.12b requires CCWD to "follow Avian Protection Plan guidelines for powerlines" which includes a variety of design standards to increase visibility of the power towers. This mitigation measure specifies the ways in which the towers will be built and designed to prevent avian mortality resulting from collision or electrocution. However, the mitigation measure does not include a monitoring plan to determine whether the building and design measures are effectively minimizing avian mortality.

SMD BIOLOGICAL RESOURCES COMMENT 7: SMD believes a Monitoring Plan should be included as part of MM 4.6.12b and should be reviewed and adopted along with the EIR, not at a future date after the EIR is approved. The monitoring plan should be subject to approval by the California Department of Fish and Game and the U.S. Fish and Wildlife Service. Furthermore, this Monitoring Plan should include additional mitigations which will be implemented if it is determined that the initial mitigation measures are ineffective.

Impacts to Pacific Flyway Waterfowl and Shorebird Species

Mount Diablo Audubon Society documented 72,212 birds at the Los Vaqueros Watershed in their 2006 Christmas count which were dependent on the fresh water of the reservoir. However, the dEIR asserts that the impact of draining the reservoir would be less than significant because there are so many other large bodies of water in the vicinity to which the over 70,000 birds using the reservoir would disperse.

11

"During dam construction, water dependent migratory birds are expected to use other nearby reservoirs and water bodies as foraging and stopover locations. The closest such features are the Delta and Clifton Court Forebay, but foraging and stopover habitat is also available at Lake Del Valle, the Livermore Chain of Lakes, San Antonio Reservoir, San Leandro Reservoir, Suisun Bay, and San Francisco Bay, among other locations." (Los Vaqueros DEIR, 4.6-173)

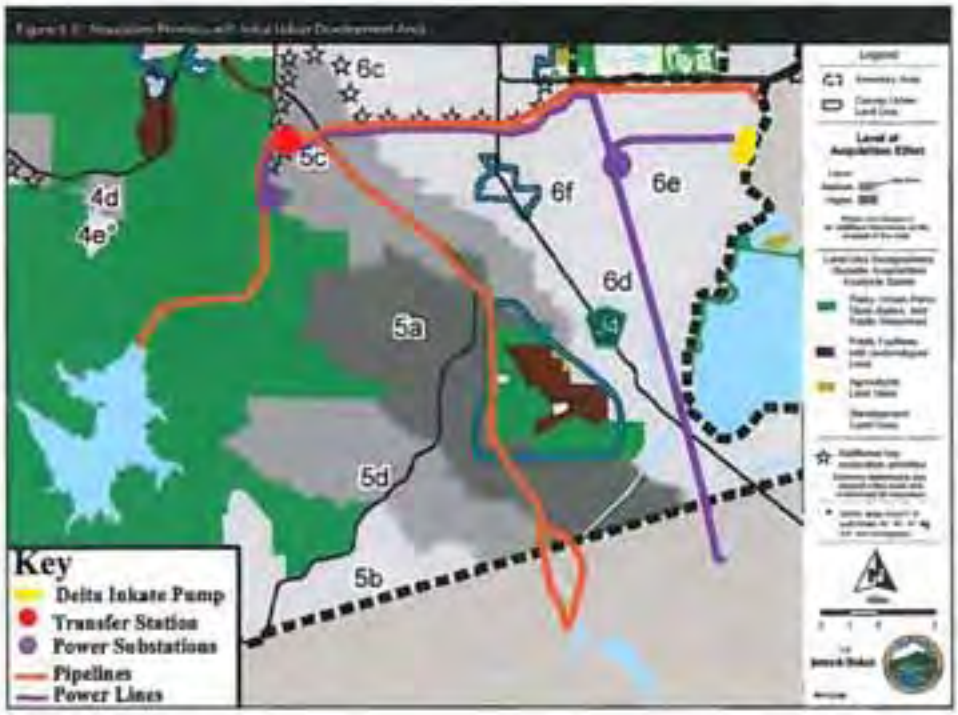
Save Mount Diablo disagrees with this assertion. The dispersal of over 70,000 birds to the area's other water bodies would likely have a significant impact on the resources at those other locations. Each of these other bodies of water would experience a significant increase in the bird population and there would be more competition for foraging habitat and prey.

SMD BIOLOGICAL RESOURCES COMMENT 8: The EIR should study the ways in which the surrounding bodies of water would be impacted as the result of draining the Los Vaqueros reservoir and dispersal of thousands of birds.

11 Cont.

East Contra Costa Habitat Conservation Plan

Most of the discussion in the draft EIR concerning the East Contra Costa Habitat Conservation Plan focuses on the fact that the watershed is located outside of the action area and defined mitigation areas and the compensation lands that will be preserved as mitigation won't compete with acquisition goals of the HCP.



12

The draft EIR does not adequately address the project's impacts to sensitive resources outside of the Watershed and how these impacts relate to the HCP. The document dismisses the significance of these impacts by stating that habitat impacts outside the Los Vaqueros Watershed are mostly temporary and associated with project pipelines." (Los Vaqueros DEIR, 4.6-174) As was discussed above, the pipelines, transfer station, power facilities, and intake and pump station represent expansive cumulative affects which will be significant regardless of whether the impacts are temporary.

SMD BIOLOGICAL RESOURCES COMMENT 9: Save Mount Diablo believes that the project impacts on resources outside of the watershed should be subject to mitigation under the HCP. According to the draft EIR a total of 266.8 acres outside of the watershed would be impacted by the pipelines, transfer stations, pumps, and all other associated facilities. **Appropriate fees relating to the impacted 266.8 acres should be paid to the HCP.**

Impact Not Considered in the Draft EIR

13

Three of the four proposed alternatives include draining the reservoir for at least three years during the construction of the new dam. It is likely that wildlife will use the empty reservoir lands as habitat during project construction. In fact, the draft EIR promotes the empty reservoir as part of a wildlife corridor that can be used by the San Joaquin kit fox to avoid the temporary construction impacts of the equipment and facilities to the east.

However, the draft EIR includes no discussion about how wildlife would be impacted once the reservoir is re-filled. Will there be biological surveys to determine the presence of wildlife in the empty reservoir? If special status species are present, will they be removed from the area and then excluded with fencing before the reservoir is re-filled?

SMD BIOLOGICAL RESOURCES COMMENT 10: The EIR should consider the impacts to wildlife species that may be present in the empty reservoir once the dam construction is complete and the reservoir is re-filled.

13 Cont.

Cumulative Impacts

The draft EIR asserts that the Los Vaqueros Reservoir Expansion project would not contribute cumulative impacts on special status species and their habitats because mitigation measures minimize most of the project impacts to a less than significant level.

"Given the scope of the mitigation program to be implemented for this project to address effects on biological resources, the effects of the project are considered less than significant after mitigation and the project would not make a cumulatively considerable contribution to potential cumulative effects on biological resources and habitat in the region." (Los Vaqueros DEIR, 4.6-176)

Save Mount Diablo contests this assertion and believes that the Los Vaqueros expansion project will result in significant contributions to cumulative impacts in the area. As was stated above, we do not believe that the mitigation measures currently proposed adequately mitigate for the project's impacts on special status species and their habitat. However, even if the EIR were to incorporate stronger mitigation measures to more adequately address impacts, the project would still contribute to cumulative impacts in the region.

14

Roddy Ranch Project - The draft EIR discusses proposed projects elsewhere in the region which would contribute to the permanent or temporary loss of kit fox habitat or movement corridors. This discussion does not include the proposed Roddy Ranch development which would spread 674 houses throughout Horse Valley and eliminate an entire kit fox corridor. If both projects are approved, two of the few remaining corridors connecting Black Diamond Mines to the Altamont Hills through protected lands such as Brushy Peak and Vasco Caves would be eliminated.

The threat of cutting Black Diamond Mines off from the rest of the kit fox range is becoming increasingly dangerous. The EIR should consider the cumulative impacts of both the Los Vaqueros Reservoir Expansion and the proposed Roddy Ranch development.

Tres Vaqueros – Contra Costa County is currently considering an application submitted by Tres Vaqueros Wind Farm LLC (LP09-2005), which is proposing a repowering project adjacent to the Los Vaqueros Watershed. The project would replace 85 wind turbines with 42 larger turbines and increase the generating capacity of the windfarm to three to four times its current capacity. Included in the project would be the construction of approximately 13.25 miles of new roads to access the turbines.

The construction of these roads would have potential impacts on special status plant and animal species in the area. Grading and paving associated with road construction would cause erosion and an increase in run off pollution, impacting wetlands resources. Vehicles accessing the site for construction and maintenance would travel along these roads and present a hazard to special status species movement in the area, including the San Joaquin kit fox.

The EIR should consider the cumulative impacts of these projects to special status species in the area. Particularly, how will San Joaquin kit fox movement be impacted if the corridor on the western side of the reservoir is flooded and there is an increase in fragmentation of the grassland areas on the eastern side of the reservoir?

Tamayo-Nunn – The County is also considering the minor subdivision (MS08-0010) of a property adjacent to the CCWD transfer station.

Three of the four alternatives include the expansion of a transfer facility which would involve a new pump station, an additional storage tank, and new surge tanks, all of which would require the excavation of 270,000 cubic yards of soil, concrete pouring, steel working activities, and the storage of building materials on-site.

Areas of Briones loamy sand are found in close proximity to the transfer facility. The East Contra Costa Habitat Conservation Plan considers sand deposits an uncommon landscape feature. According to the HCP, "uncommon landscape features within the inventory area may provide important habitat for many covered species and may generally support unique suites of species." (ECCHCP Ch. 6, Pg. 6-10) As an example, the silvery legless lizard - a state and federal species of special concern - occurs primarily in areas with sandy or loose loamy soils. These soils are also especially suitable for denning by San Joaquin kit fox.

As a result of their uniqueness, and the habitat they provide for special status species, these areas have a higher level of importance under the HCP and should be given specific consideration in the biotic review for the project.

How would the subdivision of the Tamayo-Nunn property along with the expansion of the CCWD transfer station cumulatively impact the area's sensitive resources?

SMD CUMULATIVE IMPACTS COMMENT 1: Save Mount Diablo does not believe that the draft EIR has sufficiently analyzed the full list of projects proposed in the vicinity of the Los Vaqueros Expansion Project. As a result, the document does not adequately consider the project's contribution to cumulative impacts on the area's sensitive resources.

14 Cont.

Growth Inducing Impacts

The CEQA Guidelines state that an environmental impact report (EIR) should discuss the ways in which a proposed project may induce growth (Section 15126.2[d]). Growth inducement is defined by the CEQA Guidelines as:

> *[T]he ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth ... It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.*

15

The draft EIR asserts that the project would not have any growth inducing impacts. Save Mount Diablo disagrees with this assertion and believes that by ignoring the potentially growth inducing impacts the draft EIR does not adequately assess the impacts of the project or propose sufficient mitigations.

The dEIR admits that "increasing water supply reliability for Bay Area water providers does have the potential to remove an obstacle to growth." (Los Vaqueros DEIR, 4.20-2) However, the document then goes on to assert that the project would not, in fact, be growth inducing because the expanded water reliability is meant to provide agencies with the amount of water for which they had already planned. The project "would not provide these agencies with a new source of water or an amount beyond that which they had previously planned to receive." (Los Vaqueros DEIR, 4.20-9)

In essence, agencies planned growth based on a higher level of water availability than they have been receiving. The expansion of the Los Vaqueros Reservoir and construction of a new pipeline to the Bethany Reservoir to serve South Bay water agencies would provide them with the amount of water for which they planned. The draft EIR argues that the project would not have any growth inducing impacts because it would not allow for more growth than has been planned.

SMD GROWTH INDUCING IMPACTS COMMENT 1: Save Mount Diablo believes that the logic used in the draft EIR to determine that project would have no growth inducing impacts is flawed. **Rather than focusing on the level of planned development, the draft EIR should focus on the level of development actually possible given actual water reliability. An increase in water reliability will remove a barrier for growth and lead to a higher level of development in the Bay Area.** As a result, the Los Vaqueros Expansion project would have growth inducing impacts that are not considered or mitigated in the draft EIR.

15 Cont.

According to the draft EIR, the Los Vaqueros Reservoir Expansion would also provide additional storage of water for emergencies. "Emergency storage does not have a growth inducing potential because it would not be used to meet the demands of any particular agency or area, but rather would be made available in the event of a natural disaster or other emergency based on needs and conditions specific to the emergency." (Los Vaqueros DEIR, 4.20-10)

While the intention of the project may be that increased water storage would be used for emergency purposes, are there any provisions or mandatory requirements restricting the water to this use? As the population of the Bay Area continues to grow, demand for water availability will increase and pressure may be placed on CCWD to allow for use of the water stored in the Los Vaqueros Reservoir to support growth.

16

SMD GROWTH INDUCING IMPACTS COMMENT 2: If part of the intention of the Los Vaqueros Expansion is to provide storage of water for emergency purposes, the project should include an official document which describes the policies and standards of the uses of the water in the reservoir.

Recreation and Open Space

As was mentioned above, the Los Vaqueros Reservoir is a major piece of an expansive stretch of preserved open space which offers a variety of recreational opportunities to the public. The Watershed contains 55 miles of trails and is crossed by the Diablo Trail which passes through six parks and preserves and will eventually be expanded to the 60-mile Diablo Grand Loop Trail.

17

The draft EIR includes a discussion addressing the potential impacts to planned regional recreational facilities as a result of the construction of the pipelines and power facilities associated with the project.

The review of regional recreational opportunities in the draft EIR refers to the East Bay Regional Park District 2007 Master Plan Map and considers the project's impacts to two proposed regional trails on that map – The Delta Trail Extension and the South Pacific Railroad Trail. However, the Park District's 2007 Master Plan Map shows additional planned recreational facilities in the area which are not included in the draft EIR's discussion of impacts to recreation.

Byron Vernal Pools - The East Bay Regional Park District 2007 Master Plan Map shows the Byron Vernal Pools as a proposed park or preserve in the grasslands to the east of the Watershed. The Los Vaqueros Reservoir Expansion project includes construction of new pipelines connecting Los Vaqueros to the Bethany Reservoir and the Delta as well as new powerlines serving the expanded transfer station in the vicinity of the proposed park area.

The draft EIR does not mention the Byron Vernal Pools in its analysis of the Los Vaqueros project's potential impacts on recreational opportunities in the area. The EIR should include such analysis.

17 Cont.

The Juan Batista de Anza National Historic Trail – The Master Plan Map also shows the Morgan Territory to Brushy Peak Regional Trail connecting through Los Vaqueros Watershed as a segment of the Juan Batista de Anza National Historic Trail. The Juan Bautista de Anza National Historic Trail, which stretches from the Mexico-Arizona border to San Francisco, passes through the Los Vaqueros Watershed. The Trail follows the path taken by Juan Bautista de Anza in 1775-1776 as he explored what was then the Alta California region of New Spain. The Trail provides Californians with a direct connection to our Spanish history and is an important part of California's cultural heritage.

The draft EIR does not make any mention of the Juan Batista de Anza Historic trail or discuss any impacts that the reservoir expansion would have on this cultural and recreational resource. Furthermore, the document does not address how the reservoir expansion may affect a regional trail connection from the Diablo Trail to Brushy Peak through the Watershed.

SMD RECREATIONAL IMPACTS COMMENT 1: The EIR should consider the Los Vaqueros Expansion project impacts to all existing and planned recreational opportunities in the area including East Bay Regional Park District's proposed Byron Vernal Pools and the Morgan Territory to Brushy Peak Regional Trail. Furthermore, mitigations should include the creation of a multi-use trail connection from Morgan Territory to Brushy Peak.

Thank you for your consideration of our comments.

Sincerely,

Troy Bristol
Land Conservation Associate
Save Mount Diablo

6.5 Individuals

6.5 Individuals

TABLE 6.5-1
INDIVIDUALS WHO SUBMITTED COMMENTS ON THE DRAFT EIS/EIR

Comment Format	Comment ID	Name of Commenter
Email	I_Birnbaum	Mark Birnbaum
Mail	I_Chapman	David and Brenda Chapman
Mail	I_Collier	Gary Collier
Email	I_Desmond	Michael Desmond
Email	I_Fontaine	Dave Fontaine
Email	I_Graham	Betty Lu Graham
Email	I_Gunn	Joyce Gunn
Email	I_Harris	Adrienne Harris
Email	I_Horejsi	Dr. Brian L. Horesji
Email	I_Mankin	Bob Mankin
Email	I_Navarro	Steven Navarro
Email	I_Netzer	Ralph Netzer
Email	I_Osterling	Ralph Osterling
Email	I_Pilkington	Corin Pilkington
Email	I_Quigley1	Dick Quigley
Email	I_Quigley2	Dick Quigley
Email	I_Saephan	Mey Saephan
Email	I_Sagehorn	Michael Sagehorn
Email	I_Vandeman	Mike Vandeman
Email	I_Vincent	Tammy Vincent

From: Mark Birnbaum [mailto:mbirnbaum@snader.com]
Sent: Thursday, April 09, 2009 6:58 AM
To: wmoore@mp.usbr.gov
Subject: Los Vaqueros Reservoir Expansion EIR

Dear Mr. Moore;
I'm writing to voice my concern relating to the proposed expansion of the Los Vaqueros Reservoir as outlined in its EIR. As a cyclist, I am quite concerned that as proposed, the only access between the north and south visitor areas of Los Vaqueros is on Vasco Road. This road has the well deserved reputation as being an extremely unpleasant and unsafe road for cyclists. As part of the expansion of the reservoir from 100,000 acre feet to 270,000 acre feet, a mitigation is needed for cyclists. An off road trail, with a paved or unpaved surface, suitable for both road bikes and mountain bikes is needed, to connect the two visitor areas. Such a trail would enhance the safety of cyclists and encourage more cyclists to take advantage of the recreational aspects of the Los Vaqueros area. It would also discourage cyclists from attempting to cycle between the two visitor areas on illegal trails or to attempt cross country riding, both of which are very damaging to the landscape. 1

Please keep me informed as to what action is taken on this matter, and what I can do to help insure that a safe bicycling facility is constructed as part of this project.

Sincerely,

Mark Birnbaum
10 Meadowbrook Ct.
Novato, CA 94947

APR 2009
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CONTRA COSTA WATER DISTRICT
CALFED

LOS VAQUEROS RESERVOIR EXPANSION PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT/ ENVIRONMENTAL IMPACT REPORT (DRAFT EIS/EIR) PUBLIC HEARINGS

COMMENT CARD

Comments may be submitted today or mailed to:

Marguerite Naillon
Contra Costa Water District
P.O. Box H2O
Concord, CA 94524
Attn: Los Vaqueros Reservoir Expansion Project DEIS/EIR
Fax: (925) 686-2187
lvstudies@hotmail.com

OR

Louis Moore
Bureau of Reclamation
2800 Cottage Way, MP-700
Sacramento, CA 95825
Attn: Los Vaqueros Reservoir Expansion Project DEIS/EIR
Fax: (916) 978-5094
wmoore@mp.usbr.gov

Please submit comments by 5:00 p.m. on Tuesday, April 21, 2009.

Name: David & Brenda Chapman

Affiliation:

Address: 200 Longwell Road, Brentwood, CA 94513

Phone: 925-550-7513

E-mail: friesian@gmail.com

Comments:

We attended two of the meetings concerning the new dam and pipeline and expressed our concern at that time. We own land that the pipeline crosses and of course the pipeline and the building of the pipeline impacts our use of our property

1

Please use the reverse side or attach any additional pages

Any expansion of the permanent easement or placement of temporary construction easement affects our improvement plans for use of this property - such as placement of building site, septic system, the existing well, etc. There will also be economic impacts as well in the loss of grazing + exercise area for our horses.

Because of these concerns we would like to ask to be included in the planning of this project to help minimize the impact of the placement of the pipeline as it concerns our property.

1
Cont.

*Please submit comments by 5:00 p.m. on Tuesday, April 21, 2009.

David and Brenda Chapman
200 Longwell Road
Brentwood, CA 94513

925-550-7513

Friesian@gmail.com

We attended two of the meetings concerning the new dam and pipeline and expressed our concern at that time. We own land that the pipeline crosses and of course the pipeline and the building of the pipeline impacts our use of our property.

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Because of these concerns we would like to ask to be included in the planning of the project to help minimize the impact of the placement of the pipeline as it concerns our property.

APR 2009
RECEIVED
CONTRA COSTA WATER
DISTRICT
CALFED

Manager the Nation
Contra Costa Water District
Po Box H20, Concord CA 94524-2089

To whom it may concern:

While I have no extensive concerns regarding this document; and it's purpose, I feel the document is disingenuous and mis leading.

My main and most prominent concern is the abject failure of the document to recognize and restate the topics that are not only flooding into the floodplains and estuary of the Delta system.

The document failed to address PCB's & the immense quantities of radioactive nuclei des that have been released purposely by the various literary sites throughout the vicinity, but the worst violator continuing gross violation is the superfund site @ McClellan Park the former McClellan A.F. force base; where PCB's Radionuclides and only God knows what has been released to downstream not to mention the Farallon Islands and the problems up north in Seattle with Radioactive

1

isotopes from goverment facilities.

I would like to express my express concern why are professionals would concern themselves with porportic the delta is a natural ecosystem and we need to address the salmon and delta smelt populations.

The delta smelt population are likely being compromised by high flows which allow predatory fish to devour them. It is incredulous that these so called "professionals can't figure out the once exuberant environment in the delta has been reduced to the point that commercial fishing industries have been exterminated by incompetence!

If these "experts" paid for by industry want to save the delta system they should speak out in unison in restoring the delta to its natural flows & habitat reflective of the period prior to 1942 when the radicton began filtering and high flows were the rule.

Lets get a peripheral canal to by pass polluted waters so we can poison southern California and retake our state from those who

1 Cont.

2

3

~~Change the~~
who guaranteed our water charges
~~for~~ for no need but to satisfy Liberal
interests. Where is our TAXPAYER if it
is not the City it's the State of CA
who confiscates it! We in California
don't just need a tax rebellion, we need
a Fee revolution!

Gary Collier

To Whom It May Concern:

While I have no extensive concerns regarding this document; and its purpose, I feel the document is disingenuous and misleading.

My main and most prominent concern is the abject failure of the document to recognize and restate the topics that are not only floating into the floodplains and estuary of the Delta system.

The document failed to address PCBs and the immense quantities of radioactive nucleotides that have been released purposely by the removed military sites throughout the vicinity, but the worst violator and continuing gross violation is the superfund site at McClellen Park the former McClellen Air Force Base, where PCBs, radionucleotides and only God knows what has been released to downstream not to mention the Farrallon Islands and the problems up north in Seattle with radioactive isotopes from the government facilities.

I would like to express my express concern why any professionals would concern themselves with purporting the Delta is a natural ecosystem and we need to address the salmon and Delta Smelt populations.

The Delta Smelt populations are likely being compromised by high flows which allow predatory fish to devour them. It is incredulous that these so called “professionals” can’t figure out the once exuberant environment in the Delta has been reduced to the point that commercial fishing industries have been exterminated by incompetence.

If these “experts” paid for by industry want to save the Delta system they should speak out in unison in restoring the Delta to its natural flows and habitats reflective of the period prior to 1942 when the radiation began flowing and high flows were the rule.

Let’s get a peripheral canal to bypass polluted waters so we can poison Southern California and retake our state from those who who quadrupled our water charges for no need but to satisfy liberal interests. Where is our TARP? If it is not the City it’s the State of CA who confiscates it! We in California don’t just need a tax rebellion; we need a fee revolution.

Gary Collier

From: Michael Desmond [mailto:mikedesmond@comcast.net]
Sent: Tuesday, April 07, 2009 7:17 PM
To: wmoore@mp.usbr.gov
Subject: Los Vaquros improvements

Please consider a bicycle / pedestrian trail from the north Visitor Center to the south Marina, preferably asphalt paved, which would greatly improve recreational access around the reservoir and also provide an excellent alternate bicycle route from east Contra Costa to Alameda County bypassing the treacherous Vasco Road shoulder route. 1

Thanks for your consideration.

Michael Desmond
mikedesmond_94509(at)yahoo.com

> From: fontfam@comcast.net
> To: LVStudies@hotmail.com
> Subject: Comments - CALFED Los Vaqueros Reservoir Expansion Studies Website
> Date: Sat, 18 Apr 2009 14:33:38 -0400
>
> SENDER'S NAME: Dave Fontaine
>
> SENDER'S EMAIL: fontfam@comcast.net
>
> SENDER'S ADDRESS:
>
> SENDER'S CITY: Dublin
>
> SENDER'S STATE: CA
>
> SENDER'S ZIP: 94568
>
> SENDER'S PHONE #: () -
>
> SENDER'S FAX #: () -
>
> COMMENTS:
> I think the exapnsion of the reservior is required to help manage calif. water resourcces.
>
> However,
>
> 1. Every effort must be taken to preserve, mitigate or relocate endangered and threatened species AND 1
>
> 2. The existing reservoir and surrounding area must be kept open for recreation use with the exception of the limited areas which are invovled in dam construction. 2
>
> Closing the whole area for extended periods of time is unnecessary and unacceptable.
>
> Dave Fontaine
>



Rediscover Hotmail®: Now available on your iPhone or BlackBerry Check it out.
<http://windowslive.com/RediscoverHotmail?ocid=TXT_TAGLM_WL_HM_Rediscover_Mobile2_042009>

>>> betty graham <heybettylu@yahoo.com> 4/20/2009 10:52:33 AM >>>
My comments on the Los Vaqueros Project Expansion draft EIS-EIR are attached.

I recommend the No Action Alternative as the preferred alternative. The No Action Alternative avoids the significant, adverse environmental impacts associated with increasing diversions through the CCWD and USBR intakes at Rock Slough (unscreened), Old River, and AIP; and the significant, adverse environmental impacts associated with the expansion of Los Vaqueros Reservoir. Overriding public considerations for the other project alternatives are not identified. Increasing diversions through the CCWD and USBR intakes at Rock Slough (unscreened), Old River, and AIP does not provide a net environmental benefit to the Delta. Expansion of Los Vaqueros Reservoir will inundate restoration oak woodland, wetland, and riparian habitat constructed to mitigate for Los Vaqueros Project habitat losses. Construction of additional restoration habitat within the Kellogg Creek watershed is likely not feasible, practicable, nor achievable. 1 2

Thank you for the opportunity to comment on this draft EIS-EIR.

Betty Lu





April 17, 2009

Ms. Marguerite Naillon
Contra Costa Water District
P.O. Box H2O
Concord, CA 94524-2099
lvstudies@hotmail.com

Re: Comments on the Los Vaqueros Reservoir Expansion Project Environmental Impact Statement and Environmental Impact Report.

Dear Ms. Marguerite Naillon:

I am writing to provide written comments on the subject document. My general comment is that the document does not: disclose the environmental impacts of the proposed action in sufficient detail to allow for informed decision making, describe a full range of practicable alternatives, and conform to the requirements of NEPA and CEQA. 3

My specific comments are:

1) The proposed expansion of Los Vaqueros Reservoir is said to inundate an additional 1000 or 400 acres of terrestrial habitat for the 275 thousand acre foot (TAF) or 260 TAF alternatives. This expanded area of inundation will impact existing sensitive habitat (oak woodland, riparian, wetland, and other habitat) and will inundate the oak woodland, riparian, and wetland habitat constructed by CCWD as mitigation for the Los Vaqueros Project. The subject document does not fully describe the cumulative impacts of the Los Vaqueros Project and its proposed expansion and the proposed mitigation is not adequate. Further, the subject document does not discuss the feasibility of replacing sensitive habitat, in-situ and in-kind, within the Kellogg Creek watershed nor the suitability of Kellogg Creek watershed lands for such mitigation. 4

2) The subject document implies that CCWD will implement changes in its operation of the unscreened Rock Slough facilities without identifying such changes as a mitigation measure and fails to report that USBR and CCWD have not yet achieved the mitigation requirements of the Los Vaqueros Project. Although fish monitoring at the Rock Slough intake has demonstrated on-going entrainment of listed fish species, USBR and CCWD have repeatedly sought relief from their obligations to screen the Rock Slough intake. 5

3) Limitations on diversions at the CCWD Old River intake include a 75 day prohibition on diversions to storage and a 30 day prohibition on diversions to storage and to direct use at the Rock Slough, Old River, and AIP intakes (USBR/CCWD intakes) Diversions are also limited by the availability of unallocated water and suitable water quality at the USBR/CCWD intakes. In the event that the Delta-Transfer pipeline (or equivalent) is not constructed or water is not available, the South Bay contractors will not be served by the proposed action and the claimed environmental benefits won't be 6

achieved. CCWD may not achieve is stated goal of mitigating all environmental impacts to a level of insignificance and achieving a net environmental benefit for the Delta. Further, the so-called "state of the art" fish screens at the Old River, and future AIP and Delta intakes are not benign and may not provide the promised benefits of "*protecting fish and reducing fish losses*". 7 8

4) The CCWD Old River intake and the proposed Delta intake are each located within the direct influence of the Discovery Bay wastewater outfall. The subject document fails to discuss or disclose the effects of wastewater discharges on source water quality of the public drinking water supplies served by the proposed action. 9

5) The existing Los Vaqueros Reservoir facilities provide more than 70 thousand acre feet of water for water quality blending and emergency supply. The loss of these project benefits during project construction and reservoir refilling (4 or more years) may not be adequately mitigated by the available supply under EBMUD-CCWD agreement(s) (3200 acre feet/year). Adequate mitigation for the loss of Los Vaqueros Project benefits during construction and subsequent refilling should be assured. 10

In summary, the No Action Alternative avoids the significant adverse impacts associated with: increasing diversions through the CCWD and USBR intakes at Rock Slough (unscreened), Old River, and the new Alternative Intake; and the expansion of Los Vaqueros Reservoir. Overriding public considerations in support of the other project alternatives are not identified. The No Action Alternative should be the preferred alternative.

Thank you for your attention to these comments.

Sincerely,

Betty Lu
1496 Palm Ave.
Richmond, CA 91805

cc. Mr. Louis Moore
USBR
2800 Cottage Way, MP-700
Sacramento, CA 95825-1898
wmoore@mp.usbr.gov

From: joycegunn@hotmail.com
To: wmoore@mp.usbr.gov; lvstudies@hotmail.com
Subject: Los Vaqueros expansion
Date: Tue, 14 Apr 2009 16:18:43 -0700

I would like to comment on the EIR for the Los Vaqueros Reservoir. Since you will build up the existing dam, not remove the existing dam and visitor center to build the new dam in a new place, it seems this would provide an excellent opportunity to create additional bicycle and pedestrian access.

In my opinion, it would be nice to have more bicycle access in the watershed. In particular, it would be nice to be able to bicycle from the south visitor area to the north visitor area on either an unpaved trail or a paved multi-use path. Bicycleable connections to neighboring parks would be very nice, too.

1

Joyce Gunn
120 Heron Dr, Pittsburg
Life is not measured by the number of breaths we take, but by the number of moments that take our breath away.

--Will Smith as Alex Hitchins, in "Hitch"



From: axharris@sbcglobal.net
To: lvstudies@hotmail.com; wmoore@mp.usbr.gov
Subject:
Date: Sun, 19 Apr 2009 19:33:36 -0800

re: Comment on Los Vaqueros EIR

As a Contra Costa cyclist, I am always looking for opportunities to cycle for my hea
As part of the CEQA process on the Los Vaqueros project, I would urge the following modifications:

More bicycle access is needed in the watershed. In particular, it would be nice to be able to bicycle from the south visitor area to the north visitor area on either an unpaved trail or a paved multi-use path. Bikeable connections to neighboring parks would be very nice, too. 1

Sincerely,
Adrienne Harris

Adrienne Harris
Creating a sustainable future
(510) 237-4466 - direct
http://www.richmondbpac.org
http://www.northrichmondshoreline.org
http://www.bikesyes.org
http://www.khamaid.org
"I am building myself. There are many roots. I plant, I pick, I prune. I consume." -Wendy Rose, HOPI/MIWOK
'BE THE CHANGE' -Barack Obama
'Healthy parks, healthy people' - Whitney Dotson, EBRPD

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From: Brian L. Horejsi [mailto:b2horejsi@shaw.ca]
Sent: Wednesday, April 08, 2009 7:55 AM
To: wmoore@mp.usbr.gov; lvstudies@hotmail.com
Subject: opposed to mountain biking

Louis Moore,
Bureau of Reclamation
Sacramento, CA

and

Marguerite Naillon
Comtra Costa Water District
Concord, CA

Dear Mr. Moore and Ms. Naillon;

I want to go on record opposing the use of mountain bikes in the Los Vaqueros Reservoir watershed.

Contrary to popular media and biking proponent claims, mechanzied use of land by machines such as mountain bikes, is destructive. 1

There are many well documented elements to this destruction, but destruction of vegetation on unpaved trails, and on the edges of paved trails, with subsequent erosion and water pollution / sedimentation consequences are notable amongst them.

Other issues include the aggressive "entitled" behavior of bikers that produces serious and unresolvable conflict with all other users, wildlife displacement and harassment, illegal behavior (such as trail poaching and "renovation") and conflicts and costs associated with trail management enforcement.

I trust you will consider these issues and rule against expanded mountain bike use in the Los Vaqueros. I would at the same time urge you to reconsider any existing use by mountain bikes and take all necessary measure to confine this activity.

Sincerely,
Dr. Brian L. Horejsi
Frequent user of public lands



-----Original Message-----
From: Los Vaqueros [mailto:lvstudies@hotmail.com]
Sent: Tue 4/21/2009 11:34 AM
To: Andrea Nocito
Subject: FW: More Comments on the Los Vaqueros Draft EIS/EIR
_____

Subject: More Comments on the Los Vaqueros Draft EIS/EIR
Date: Tue, 21 Apr 2009 11:20:05 -0700
From: Bob@cadpros.com
To: 'lvstudies@hotmail.com'; 'wmoore@mp.usbr.gov'
CC: 'dist3@bos.cccounty.us'

Let me also add that I am vehemently against the construction or upgrade of any pipelines via this project which would directly or indirectly allow transfer of Delta water to the SWP or CWP canals. CCWD has no business positioning themselves to become water brokers for agencies outside of the residents they are here to serve.

Any effort on that front I view as a complimentary or alternative to the revised Peripheral Canal or Dual Conveyance or whatever goofball name the government agencies have now attached to that attempted water grab. I am strongly against any effort in that vein.

1

Let's make sure this project results in benefits to the citizens of Contra Costa County and is not just some disguised effort to promote a larger agenda for water interests down south.

Thank you.

Bob Mankin

From: Bob Mankin
Sent: Tuesday, April 21, 2009 10:55 AM
To: 'lvstudies@hotmail.com'; 'wmoore@mp.usbr.gov'
Cc: 'dist3@bos.cccounty.us'
Subject: Comments on the Los Vaqueros Draft EIS/EIR

Ms. Naillon/Mr. Moore;

I just submitted the following comments via the website expressing my concerns on the draft. I am submitting these again here via email so that I might also copy my local Supervisor to have these on record. I welcome any additional information you can provide which might address my concerns.

As a resident of Discovery Bay and an avid fisherman, I have a specific interest in the fishing aspect of the facility. Your expansion plan would require draining of the lake prior to construction, yet when I read the section on recreational impacts it mentions nothing about mitigation for the existing fish population. Are you intending to drain the lake and simply let these fish die in the process? Is there a program or mitigation effort to move these fish to other waters?

I would remind you of the Prospect Island fish kill from a couple of years ago in the Delta when Federal and State agencies decided to drain the flooded island without proper advance planning for existing fish populations. It was a complete PR disaster as hundreds of thousands of game fish were needlessly lost and left to die in the resulting shallow pools. Please tell me that CCWD and USBR are not about to repeat that

2

stupidity here.

Lest you argue that these are all "put and take" planted fish, the lake record for striped bass was recently shattered with the catch of a 45 lb fish. By all available estimates, that is a 16-17 year old fish in a 10 year old lake, showing that you clearly have some migratory fish that were trapped or somehow pumped into this lake. You could perhaps even have some migratory salmon in this lake and in light of the current collapse of salmon populations in the Delta, loss of even a few fish would not be viewed very favorably at all within the fishing or environmental communities.

2 Cont.

If I have missed a section of the report which addresses these concerns, I would welcome whatever information you can point me to that addresses them.

Thank you for your consideration of my comments and issues.

Respectfully,

Bob Mankin

Discovery Bay



-----Original Message-----
From: Los Vaqueros [mailto:lvstudies@hotmail.com]
Sent: Tue 4/21/2009 11:02 AM
To: Andrea Nocito
Subject: FW: Comments - CALFED Los Vaqueros Reservoir Expansion Studies Website

> From: bob@cadpros.com
> To: LVStudies@hotmail.com
> Subject: Comments - CALFED Los Vaqueros Reservoir Expansion Studies Website
> Date: Tue, 21 Apr 2009 13:54:56 -0400
>
> SENDER'S NAME: Bob Mankin
> SENDER'S EMAIL: bob@cadpros.com
> SENDER'S ADDRESS: 3554 Keystone Loop
> SENDER'S CITY: Discovery Bay
> SENDER'S STATE: CA
> SENDER'S ZIP: 94505
> SENDER'S PHONE #: (925) 240-0500
> SENDER'S FAX #: () -
>
> COMMENTS:
> As a resident of Discovery Bay and an avid fisherman, I have a specific interest in the fishing aspect of the facility. Your expansion plan would require draining of the lake prior to construction, yet when I read the section on recreational aspects and impacts it mentions nothing about mitigation for the existing fish population. Are you intending to drain the lake and simply let the existing fish population die in the process? Is there a program to move these fish to other waters?
>
> I would remind you of the Prospect Island fish kill from a couple of years ago in the Delta when Federal agencies decided to drain the flooded island without planning in advance for existing fish populations. It was a complete PR disaster as hundreds of thousands of game fish were needlessly lost and left to die in the resulting shallow pools. Please tell me that CCWD is not about to repeat that stupidity here.
>
> Lest you argue that these are all "put and take" planted fish, the lake record for striped bass was recently shattered with the catch of a 45 lb fish. By all available estimates, that is a 16-17 year old fish in a 10 year old lake, showing that you clearly have some migratory fish that were trapped or somehow pumped into this lake. You could perhaps even have some migratory salmon in this lake and in light of the current collapse of salmon in the Delta, loss of even a few fish would not be viewed very favorably at all within the fishing or environmental communities.
>
> If I have missed the section of the report which addresses these concerns, I would welcome whatever information you can point me to that addresses them.
>
> Thank you for your consideration of my comments and issues.
>
> Respectfully,
>
> Bob Mankin

> Date: Fri, 10 Apr 2009 01:21:03 -0700
> From: snavarro@laspositascollege.edu
> To: lvstudies@hotmail.com
> CC: snavarro5@comcast.net;
snavarro.inet.GWPRIME@laspositascollege.edu
> Subject: work on dam
>
> To whom it may concern:
> Hi,
> I live in Brentwood and work in Livermore, so I drive down Vasco Road five to six days per week.
> 1. when the original work on the dam was underway, I was driving down
> that road every day and there were frequent delays (as in 2-3 days per
> week). This is unacceptable in an already un-tolerable traffic commute into and out of Brentwood 2. the trucks slow everything down and they are dangerous (dropping debris and pitting our windshields with rocks falling from their truck beds) 3. the extra stress is not what any of us need. Who is considering the above mentioned items??? 1
> 4. why are we going backwards and now building a dam that should have been built this large in the first place?? 2
> 5. it is already difficult to get to work in a reasonable time and this work will defiantly make the commute worse!!
> 6. if the larger dam fails in an earthquake the water floods where?? BRENTWOOD and the surrounding area, where I live! 3
> 7. Vasco road is already unsafe and dangerous, this construction will
> make it worse and will complicate an already untenable work commute 8.
> a one lane road cannot hold the traffic that is going through it to
> get in and out of Brentwood, Antioch, Oakley Dis. Bay and the rest of
> the surrounding community 9. any further disruption to our traffic
> problems is unacceptable 10. unless you build a separate road that we
> can safely and efficiently commute on to Livermore and points beyond 4 5
>
>
> Thanks,
> Steve Navarro
> Brentwood CA.
>
>
> Steven Navarro M.A., A.T.C.
> Las Positas College
> Athletic Director and Cross-Country Coach
> 925-424-1252
> 925-456-0113

From: rlnetzer@sbcglobal.net
To: lvstudies@hotmail.com
Subject: Los Vaqueros Res.
Date: Mon, 13 Apr 2009 10:05:47 -0700

Of course you should consider enlarging Las Vaqueros Reservoir, probably, the larger storage plan. This State is suffering and will continue to suffer from severe water shortages until something is done to increase storage capacity. For years we have been constrained from doing this by environmental opposition. The American River Dam north of Sacramento is a good example. A small percentage of the population is more concerned with the well being of some insignificant thing or things at the expense of the entire population. No river in California should be allowed to run free without some storage facility capable of conserving water during run off periods. Anyone who cannot see the value of enlarging Los Vaqueros which would benefit the entire area but cause the temporary halting of recreational activities, needs their sense of values examined. 1

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<http://windowslive.com/RediscoverHotmail?ocid=TXT_TAGLM_WL_HM_Rediscover_Storage1_042009>

From: Los Vaqueros [mailto:lvstudies@hotmail.com]
Sent: Thursday, February 26, 2009 8:14 AM
To: Marguerite Naillon
Subject: FW: Comments - CALFED Los Vaqueros Reservoir Expansion Studies Website

> From: ralph@ralphosterling.com
> To: LVStudies@hotmail.com
> Subject: Comments - CALFED Los Vaqueros Reservoir Expansion Studies Website
> Date: Wed, 25 Feb 2009 19:52:03 -0500
>
> SENDER'S NAME: Ralph Osterling
>
> SENDER'S EMAIL: ralph@ralphosterling.com
>
> SENDER'S ADDRESS: 1650 Borel Place
>
> SENDER'S CITY: San Mateo
>
> SENDER'S STATE: CA
>
> SENDER'S ZIP: 94402
>
> SENDER'S PHONE #: (650) 573-8733
>
> SENDER'S FAX #: (650) 345-7890
>
> COMMENTS:
> The LV is a well managed project with good public access. I presume that will continue to expand. with the expansion, added large valley oaks will probably be lost. as part of the mitigation, I recommend an intensive program to reestablish oak woodlands and oak resources on the upper watersheds. Most of the surrounding area is devoid of and in need of oak reestablishment for the long term. 1
> Thank you for the opportunity to comment.
>

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2nd comment of the day. I'll send over others as they come in. So far, just two this morning.

Andrea Nocito, Senior Project Associate

a.nocito@circlepoint.com * 415.227.1100 x104

415.994.4670 Blackberry

CirclePoint

135 Main Street, Suite 1600, San Francisco, CA 94105



-----Original Message-----
From: Los Vaqueros [mailto:lvstudies@hotmail.com]
Sent: Tue 4/21/2009 8:05 AM
To: Andrea Nocito
Subject: FW: Los Vaqueros Comments

> To: lvstudies@hotmail.com
> From: cp48@humboldt.edu
> Subject: Los Vaqueros Comments
> Date: Tue, 21 Apr 2009 07:36:40 -0700
>
> Hello, attached are my comments on the Los Vaqueros Project
>

Memo To: Mr. Louis Moore, Bureau of Reclamation, 2800 Cottage Way, MP-700, Sacramento, CA 95825-1898

Memo From: Corin Pilkington – California fisheries enthusiast and environmental engineer

Subject: Comments on Los Vaqueros Expansion Project Draft EIS/EIR



Summary

The purpose of this memo is to provide a written response on Los Vaqueros Expansion Project Draft EIS/EIR, and to comment on the technical content of the document. This critique focuses on the content of the hydrology, purpose and need, alternatives, and the project construction sections. Areas of concern include the absence of an environmentally preferred alternative, the complete drainage of the reservoir, unclear significance criteria, and the lack of description on how the Los Vaqueros project relates to other projects in the Delta region.

DEIR/DEIS Analysis

The document follows the suggested NEPA and CEQA DEIR/DEIS format. There are two lead agencies identified for the project: the CCWD under CEQA and the BOR under NEPA. The purpose of the document is clearly stated and adheres to the intent of NEPA and CEQA, except for the lack of defining the environmentally preferred alternative. Furthermore, the document incorporates the necessary sections put forth by NEPA/CEQA and accommodates readers with proper language and writing format.

The Purpose & Need Section demonstrates the reasons for developing the project. However, how other Delta projects relate to the Los Vaqueros Expansion Project (VEP) would be useful in determining the relative relevance and magnitude of the VEP.

The purpose and need section provides relevant information to the project and provides detailed background information and discussion to justify the project.

Furthermore, the development of the purpose of the project is adequately conveyed and introduces the many programs associated with the Delta environmental and reliability conditions (e.g. CALFED Bay Delta Program and Delta Vision).

The document would benefit from more detail on how the project relates to these other Delta programs and what other specific projects are underway or in the development stages that would also serve the objectives of the Los Vaqueros Expansion Project. Other projects could be compared or ranked in order of contribution to the purpose and need, thus defining the importance of this particular project in a network of other projects meant to improve Bay Delta conditions (qualitatively or quantitatively). Including a more detailed presentation of the Delta projects under consideration would further the understanding of VEP and clearly demonstrate its importance in the complex future of the Delta. 1

The alternatives section is thorough and well presented, including a good description of the alternative screening process. However, the absence of a defined environmentally preferred alternative is concerning because this alternative is critical when the primary objective of the project is to improve environmental conditions.

The action alternatives are thoroughly presented, sufficiently varied, and supported with pictures and tables. A table outlining how the alternatives meet project objectives is well designed and helpful in comparing alternatives. The alternatives screening process is presented in detail and informs the reader how the selected alternatives were developed and the constraints that define the range of expansion/improvement, such as the reason why 275 TAF is the maximum considered storage expansion.

However, the environmentally preferred alternative is not yet defined, due to insufficient data and analysis. This missing component of the report is crucial to the decision-making process, public scoping, and comment period, thus the release of the document seems premature. By defining the environmentally preferred 2

alternative and how/why it was selected, the DEIS could compare and analyze the benefits and tradeoffs of the other alternatives with another base alternative (besides the "no action/project" alternative). The proposed alternative would be the environmentally preferred since the objective of the project is to improve environmental conditions in the Delta, but this is not stated.

The action alternatives include land inundation, increased energy consumption, immediate resource requirements, and are associated with multiple beneficial uses too complex to assess and compare without identifying the alternative with the least environmental impact. Moreover, Alternatives 1, 2 and 3 involve the complete draining of the reservoir during the 3 to 4 year construction period, which further complicates the impacts that may coincide with the project.

2 Cont.

Alternatives 1, 2 and 3 include construction requirements that include the complete drainage of the reservoir; this would cause decreased storage in a system that is already in a water budget deficit and contradicts the need of the project.

Because of California's current degraded water system and dry condition, the proposed alternative (Alternative 1) and Alternatives 2 and 3 raise concern because they require the emptying of the reservoir for 3 to 4 years during construction. The impact the absence of storage, on a system short of storage and water to meet capacity, during the 3 to 4 years is unclear in the document.

The draining of the reservoir directly contradicts the project need, and alternatives that do not empty the reservoir may be more appropriate (i.e. Alternative 4 or a variation of). The extent of the impact from decommissioning the reservoir for the estimated 3-4 years is not clearly discussed and does not seem negligible. The implication of taking the reservoir out of the Delta system for 3-4 years when the state is already in, by most accounts, a dire condition, would seem to be a risk (construction time can be underestimated and water availability to refill the reservoir is unknown) and may cause a "significant impact".

3

The bigger picture of how this expansion project relates to the other Bay Delta projects (discussed previously in purpose and need section of this letter) would help clarify why the decommissioning of the Los Vaqueros for up to 4 years is not relevant (i.e. if in fact it is not) or can be hydraulically substituted for. However, if the absence of the reservoir is not critical than I must question weather the project needs to be reconsidered in respect to public money and the other Delta project options that focus on critical components of the Delta system.

3 Cont.

In the significance criteria definitions the word "substantial" is used without being defined, and this results in an unclear definition of the threshold of significant impact.

The Significance Criteria Section describes the criteria in which alternatives were evaluated for significant impact (Section 4.5.2). However, the word "substantial" is used in the criteria definition and this leaves the reader wanting additional criteria or definitions for the word "substantial" in order to evaluate the alternatives' potentials to create "significant impact". In the groundwater criterion, "substantial" is clearly defined, similarly the next criterion, associated with drainage, should have a definition for "substantial". However, in the drainage criterion "substantial" is used but not defined at all. To clear subjectivity from an analysis is difficult, however it seems reasonable to develop and state some bases for threshold besides "substantially alter the existing drainage pattern…" .

4

The hydrologic analysis and impacts associated with the project are thoroughly discussed with explanations of the methods, assumptions and approach. However, could Los Vaqueros operators (and other Delta operators) be used as a resource when Los Vaqueros is added and modeled in CalSim II, and can they help with interpreting CalSim IIs monthly time steps?

The DEIS clearly discusses the utilized method of assessing the impacts of the project. The process of developing future conditions is well presented, and

appropriately includes multiple future conditions in the analysis. Additionally, to consider multiple potential regulation changes was important and critical due to the nature of increasingly restrictive regulation.

The majority of the assessment was conducted with the aid of California Simulation Model II. The limitations of the model are stated and the implications of the limitations are addressed. The models use of monthly time steps is concerning, but it is made clear that the model is our only peer-reviewed source for modeling the Delta. However, it would seem that because the model can only provide averaged operational guidelines, experienced Los Vaqueros and other Delta operators would be a useful resource in determining effects of changes on the reservoir capacity on daily operations, and the implications of the benefits and impacts stated in this section. A review of comments made by operators with hands on experience would be useful in the benefits or impacts section. 5

Recommendations:

The recommendations contained in this memorandum are as follows:

- Include an Environmentally Preferred Alternative and resubmit the DEIS/R for another review.
- Include the relative importance of the Los Vaqueros Expansion Project compared to other potential Delta projects.
- Redefine the drainage significance criterion.
- Reevaluate the impacts associated with draining the reservoir for up to 4 years.
- Consider including reservoir operators in the modeling process and analysis in order to translate monthly averages into daily operational implications.

From: Allison Batteate
Sent: Wednesday, March 25, 2009 1:05 PM
To: Marguerite Naillon; Fran Garland
Subject: FW: CCWD Eir/EIS

Hello - Mark Mueller suggested I forward the comments regarding the EIR/EIS below from Dick Quigley to you.

From: Mark Mueller
Sent: Wednesday, March 25, 2009 12:51 PM
To: Allison Batteate
Subject: RE: CCWD Eir/EIS

Yes, please forward his comments to you directly to both Fran and Marguerite.

Thanks,

Mark Mueller
Los Vaqueros Watershed Manager
Contra Costa Water District
Office-925-240-2361
Fax-925-513-2084

From: Allison Batteate
Sent: Wednesday, March 25, 2009 11:07 AM
To: Mark Mueller
Subject: FW: CCWD Eir/EIS

This is the input I received from Dick Quigley. He is on the BOD of Zone7 and is a horse trail enthusiast (as you can see). Maybe we should pass these comments on to Marguerite or Fran?

From: Dick Quigley [mailto:rlquig1@comcast.net]
Sent: Wednesday, March 25, 2009 11:03 AM
To: Allison Batteate
Subject: Re: CCWD Eir/EIS

Thanks!
Glad we visited at your Los Vaqueros event. Ranchers and equestrians are good stewards of the working landscape! Would love to see more educational/recreational & health oriented activities at Los Vaqueros.

Would be wonderful to find a way to open the trail from Brushy Peak to Los Vaqueros. Multi-use trail groups would love it and distance events would be possible. From closest property lines appears to be a very short distance.
Easement kind of stuff? Might CCWD entertain partnering with EBRPD/LARPD or property owners?

An expanded off stream storage facility will require significant trail and recreation mitigation, or re-mitigation. Expanded multi use (horses & Mt. bikes) and regional connections to contiguous, or closely adjacent public (recreational) landscape might produce a win win.

1

My historical understanding of the "Los Vaqueros Water Shed" is that it does not "Shed" much. May be 5-7 % or so, and the balance is imported from the CVP, Shasta via the Delta. The balance and major

2

portion is imported creating an artificial Biological regime. It is Federal water as opposed to State Water. Is my understanding true? 2

From a Biological water quality stand point, I understand that water quality samples of the delta water is quality fingerprinted routinely for several factors. I would guess that the CCWD delta water fingerprint is close to that of Del Valle at Harvey Banks. I would expect it to have a trace higer salt signature due to significant western intake location. Is my suspicion true? 3

I attended last nights meeting for the poster session only, and was not able to stay for the presentation. Thanks again!
Dick
(925)846-0339
On Mar 23, 2009, at 3:45 PM, Allison Batteate wrote:

Hi Dick

Don't forget to send me your "biological type" questions so we can be sure to have answers for you at the meeting tomorrow.

It was good to see you at Vaquero Day! If you have any input to improve the event next time around, please let me know.

Allison Leal Batteate
Los Vaqueros Watershed
Contra Costa Water District
925-240-2360

From: Allison Batteate
Sent: Wednesday, April 01, 2009 11:30 AM
To: Marguerite Naillon; Mark Mueller
Subject: FW: 12 great iPhotos 4/1/09 Brushy Peak hike (Quigley Lunn)

FYI

Karen Sweet is RCD (Alameda Co. Resource Conservation District)
Tim Barry, I believe, is City of Livermore (maybe Park n Rec)
Bob Coomber & D. Bengston are active in trails meetings
Kim Fisher is a horseback trail rider
David Lunn works at Zone 7 and is a trail enthusiast

From: Dick Quigley [mailto:rlquig1@comcast.net]
Sent: Wednesday, April 01, 2009 11:12 AM
To: Jim Townsend; Beth Wilson; Tim Barry; Allison Batteate; Karen Sweet; theath214@sbcglobal.net Heath; Morris Older; Bob Coomber; Rich Cimino; Rich Guarienti; D Bengston
Subject: Fwd: 12 great iPhotos 4/1/09 Brushy Peak hike (Quigley Lunn)

Begin forwarded message:

From: Dick Quigley <RLQuig1@comcast.net>
Date: April 1, 2009 10:56:01 AM PDT
To: Terry L Hughes <terry.l.hughes@lmco.com>, Barbara Hoffman <birdhousesbybarb@aol.com>, sandymarci@earthlink.net, diane offutt <dianeocr@sbcglobal.net>, Kim Fisher <firejax@hotmail.com>
Cc: D Lunn <david327lunn@sbcglobal.net>
Subject: 12 great iPhotos 4/1/09 Brushy Peak hike (Quigley Lunn)

Dave and I hiked this this morning!
This is no April fools joke! If we can open, it can open access to Morgan territory and round valley.
It may serve a significant gap removal for the Delta De Anza trail.
Time is now to get involved with CCWD DEIR and public process.
DQ

1



IMG_0375.JPG Trail up (West Side}



IMG_0376.JPG Hawk taking off in flight



IMG_0377.JPG Los Vaqueros Watershed Key host



IMG_0378.JPG Cattle and pole are the corner boundary of EBRPD Brushy Peak



IMG_0379.JPG CCWD welcome wagon sign!



IMG_0380.JPG Corner post



IMG_0381.JPG Ride walk bike under Vasco Rd to Los Vaqueros possibility



IMG_0382.JPG EBRPD Boundary corner



IMG_0383.JPG



IMG_0384.JPG We walked the 80 paces to the CCWD corner across we believe land fill land.



IMG_0385.JPG Boundary corner ready for a friendly trail gate



IMG_0386.JPG Pondering how close it is and how to get their from here! **A KEY TRAIL GAP TO CLOSE**

From: Los Vaqueros [mailto:lvstudies@hotmail.com]
Sent: Tuesday, March 24, 2009 11:37 AM
To: Marguerite Naillon
Subject: FW: Comments - CALFED Los Vaqueros Reservoir Expansion Studies Website

> From: yem_saephan@yahoo.com
> To: LVStudies@hotmail.com
> Subject: Comments - CALFED Los Vaqueros Reservoir Expansion Studies Website
> Date: Tue, 24 Mar 2009 01:40:50 -0400
>
> SENDER'S NAME: Mey Saephan
>
> SENDER'S EMAIL: yem_saephan@yahoo.com
>
> SENDER'S ADDRESS:
>
> SENDER'S CITY:
>
> SENDER'S STATE:
>
> SENDER'S ZIP:
>
> SENDER'S PHONE #: () -
>
> SENDER'S FAX #: () -
>
> COMMENTS:
> Are there other considerations on how much customers are required reduce their water usage? I ask this question because, my family has already reduced water usages probably by 20% or more. I think it would be unfair to ask customers who have already reduced their water usages to reduce their water usages 20% more on top of what they are already doing. This would be very difficult to do. I wonder if the water district should take into consideration the number of people in a family or families who have reduced their water usage already. Otherwise I it would be easier for us to return to regular usage, prior to conservation, so that when we have to reduce our water usage it would return to what we are currently using.
>

1

Windows Live™ SkyDrive: Get 25 GB of free online storage. Check it out.

>>> <deltarugby@yahoo.com> 4/7/2009 1:44 PM >>>
Any consideration to expand capacity should also include the EBMUD's expansion of the site's non motorized recreation opportunities

Los Vaqueros should expand its role to include an outdoor education site for area schools, hiking, camping and trails for cycling. An area for youth group camping would help area youth

A range for shooting sports and limited access to district lands for hunting would also serve local residents.

1

Michael Sagehorn
Sent from my Verizon Wireless BlackBerry

-----Original Message-----
From: Mike Vandeman [mailto:mjvande@pacbell.net]
Sent: Tuesday, April 07, 2009 6:42 PM
To: wmoore@mp.usbr.gov; lvstudies@hotmail.com
Subject: Los Vaqueros Reservoir

Please restrict bicycles and other vehicles to paved roads! 1

Bicycles should not be allowed in any natural area. They are inanimate objects and have no rights. There is also no right to mountain bike. That was settled in federal court in 1994: http://home.pacbell.net/mjvande/mtb10 . It's dishonest of mountain bikers to say that they don't have access to trails closed to bikes. They have EXACTLY the same access as everyone else -- ON FOOT! Why isn't that good enough for mountain bikers? They are all capable of walking....

A favorite myth of mountain bikers is that mountain biking is no more harmful to wildlife, people, and the environment than hiking, and that science supports that view. Of course, it's not true. To settle the matter once and for all, I read all of the research they cited, and wrote a review of the research on mountain biking impacts (see http://home.pacbell.net/mjvande/scb7). I found that of the seven studies they cited, (1) all were written by mountain bikers, and (2) in every case, the authors misinterpreted their own data, in order to come to the conclusion that they favored. They also studiously avoided mentioning another scientific study (Wisdom et al) which did not favor mountain biking, and came to the opposite conclusions.

Those were all experimental studies. Two other studies (by White et al and by Jeff Marion) used a survey design, which is inherently incapable of answering that question (comparing hiking with mountain biking). I only mention them because mountain bikers often cite them, but scientifically, they are worthless.

Mountain biking accelerates erosion, creates V-shaped ruts, kills small animals and plants on and next to the trail, drives wildlife and other trail users out of the area, and (worst of all) teaches kids that the rough treatment of nature is okay (it's NOT!). What's good about THAT? 2

For more information: http://home.pacbell.net/mjvande/mtbfaq .

--

I am working on creating wildlife habitat that is off-limits to humans ("pure habitat"). Want to help? (I spent the previous 8 years fighting auto dependence and road construction.)

Please don't put a cell phone next to any part of your body that you are fond of!

http://home.pacbell.net/mjvande

From: tammy@rdtechjobs.com
To: lvstudies@hotmail.com
Subject: Reservoir
Date: Fri, 10 Apr 2009 08:12:35 -0700

BUILD IT OUT ALL THE WAY! You are supposed to be PLANNERS of the future.

We need more water. California has more people. It should be a no-brainer!

I read about it in the Brentwood Newspaper. I live in Brentwood and I know that will all the growth in East County, we need a lot more water.

1

I can't emphasize how important you job is as water PLANNERS!

Don't listen to the environmental wackos, they don't want humans on the earth anyway so you will never please them Stop trying. It will never be good enough. I hope you act like adults and do the right thing, otherwise you are useless in your jobs!

GLOBAL WARMING IS A HOAX!! Save water!

BUILD IT - BUILD IT - BUILD IT - BUILD IT!!!!!!!

Thanks,

Tammy Vincent, Senior Recruiter
R&D Technical Services
111 Deerwood Road, Suite 115
San Ramon, CA 94583
925-831-1200
925-831-2030 FAX
tammy@rdtechjobs.com

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<http://windowslive.com/RediscoverHotmail?ocid=TXT_TAGLM_WL_HM_Rediscover_Mobile1_042009>

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