MITIGATED NEGATIVE DECLARATION FOR 2016 SACRAMENTO VALLEY TO EAST BAY MUNICIPAL UTILITY DISTRICT WATER TRANSFERS

LEAD AGENCY/PROJECT PROPONENT: East Bay Municipal Utility District
PO Box 24055, MS 407
Oakland, CA 94623-1055

AVAILABILITY OF DOCUMENTS: The Initial Study for this Mitigated Negative Declaration is available for review at: East Bay Municipal Utility District, 375 11th St, Oakland, CA 94607 (contact: Lynelle Lewis, Secretary of the District 510-287-0440). The documents are also available for review online at ebmud.com/transfers.

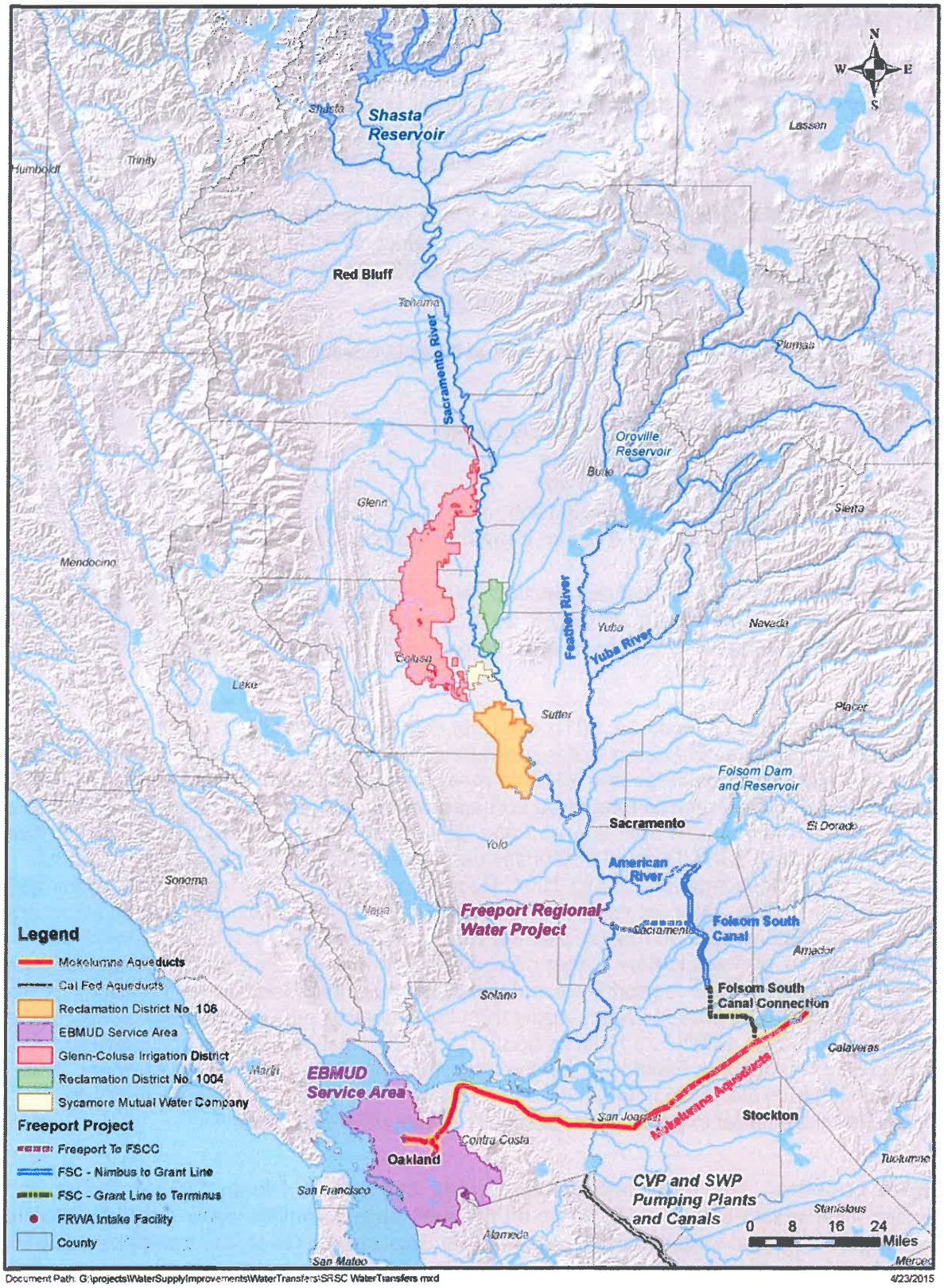
Questions or comments regarding this Mitigated Negative Declaration and Initial Study may be addressed to:

East Bay Municipal Utility District
Attention: Ms. Jan Lee
PO Box 24055 MS 407
Oakland, CA 94623-1055
Fax (510) 287-1295 or e-mail: WaterTransfers@ebmud.com

In accordance with CEQA Guidelines Section 15073, this Mitigated Negative Declaration is available for public review from January 6, 2016 through February 8, 2016. Written comments on this Mitigated Negative Declaration must be received no later than 4:30 pm on February 8, 2016.

Project Description: On April 14, 2015, the East Bay Municipal Utility District (EBMUD) Board of Directors declared a continuing water shortage emergency within EBMUD's service area. In the event the drought continues into 2016, to meet anticipated water supply shortages EBMUD is considering securing up to a total of 40,000 acre-feet of dry year water supplies in 2016 through water transfers with Sacramento River Settlement Contractors located in the northern Sacramento Valley. EBMUD could potentially purchase transfer water from Glenn-Colusa Irrigation District, Reclamation District 1004, Reclamation District 108, and/or Sycamore Mutual Water Company. The water would be made available for transfer through cropland idling and/or crop shifting. Water would be released by the Bureau of Reclamation (Reclamation) from Shasta Reservoir and would flow further downstream on the Sacramento River past the sellers' points of diversion to the Freeport Regional Water Project intake located on the Sacramento River at Freeport. The transfer water would then be conveyed through the lower reach of the Folsom South Canal, EBMUD's Folsom South Canal Connection Pipeline and EBMUD's Mokelumne Aqueducts to EBMUD's service area, for delivery to EBMUD's customers. This Mitigated Negative Declaration is based on the Initial Study (attached) that analyzes the potential environmental impacts associated with these water transfers.

Project Location: The proposed transfers could originate in Glenn, Colusa, Sutter or Yolo counties from sellers shown on the map on the next page. Transfer water would be diverted at the Freeport Regional Water Project intake on the Sacramento River and transferred to EBMUD for use within its service area in Alameda and Contra Costa counties. Please see the map on the following page.



Location Map for Proposed Sacramento Valley Settlement Contractors Water Transfers to EBMUD

Mitigation Measures: The initial study incorporates the following mitigation measures:

The following are Environmental Commitments included in the Proposed Project to reduce potential environmental impacts from cropland idling water transfers in 2016. These Environmental Commitments are also part of the Proposed Action in the Long-Term Water Transfers environmental impact statement/environmental impact report (EIS/EIR) and Biological Opinion for Long-Term Water Transfers EIS/EIR that was issued by U.S. Fish and Wildlife Service (USFWS) in 2015. EBMUD will work with Reclamation and sellers to make sure the Environmental Commitments are implemented.

- Sellers will allow access to idled land for Reclamation staff to verify how the transfer water is being made available and to verify that actions to protect the giant garter snake (GGS) are being implemented. Sellers shall cooperate with Reclamation in its development of a monitoring report—to be submitted annually to USFWS and California Department of Fish and Wildlife (CDFW) containing maps of all cropland idling actions that occur within the range of potential transfer activities, results of any newly available scientific research and monitoring results pertinent to water transfer actions, and a discussion of conservation measure effectiveness.

- Movement corridors for aquatic species (including pond turtle and GGS) include major irrigation and drainage canals. Sellers shall verify that they keep adequate water in major irrigation and drainage canals. Canal water depths should be similar to years when transfers do not occur or, where information on existing water depths is limited, at least two feet of water will be considered sufficient.

- Sellers proposing water transfers made available from idled rice fields shall ensure that adequate water is available for priority habitat with a high likelihood of GGS occurrence. The determination of priority habitat will be made through coordination with GGS experts, GIS analysis of proximity to historic tule marsh, and GIS analysis of suitable habitat. The priority habitat areas are indicated on the priority habitat maps for participating water agencies and will be maintained by Reclamation. As new information becomes available, these maps will be updated in coordination with USFWS and CDFW. In addition to mapped priority habitat, fields abutting or immediately adjacent to federal wildlife refuges will be considered priority habitat.

- Maintaining water in smaller drains and conveyance infrastructure supports key habitat attributes such as emergent vegetation for GGS for escape cover and foraging habitat. If crop idling/shifting occurs in priority habitat areas, Sellers shall document that adequate water remains in drains and canals in those priority areas. Documentation may include flow records, photo documentation, or other means of documentation agreed to by Reclamation and USFWS.

- Sellers shall ensure areas with known priority snake populations will not be permitted to participate in cropland idling/shifting transfers. Water sellers can request a case-by-case evaluation of whether a specific field would be precluded from participating in water transfers. These areas include lands adjacent to naturalized lands and refuges and corridors between these areas, such as:

    - Fields abutting or immediately adjacent to Little Butte Creek between Llano Seco and Upper Butte Basin Wildlife Area, Butte Creek between Upper Butte Basin and Gray Lodge Wildlife areas, Colusa Basin drainage canal between

Delevan and Colusa National Wildlife Refuges, Gilsizer Slough, Colusa Drainage Canal, the land side of the Toe Drain along the Sutter Bypass, Willow Slough and Willow Slough Bypass in Yolo County, Hunters and Logan Creeks between Sacramento and Delevan National Wildlife Refuges, and Lands in the Natomas Basin.

- Sellers shall perform GGS best management practices, including educating maintenance personnel to recognize and avoid contact with GGS, cleaning only one side of a conveyance channel per year, and implementing other measures to enhance habitat for GGS. Implementation of best management practices will be documented by the sellers and verified by EBMUD.

- In order to limit reduction in the amount of over-winter forage for migratory birds, including greater sandhill crane, cropland idling transfers will be minimized near known wintering areas in the Butte Sink.

Proposed Finding: The attached Initial Study was prepared to assess the proposed transfers' potential effects on the environment and the significance of those impacts. Based on the Initial Study, EBMUD has determined that the proposed project will not have a significant effect on the environment. This conclusion is supported by the following findings:

- The project will not result in impacts related to agriculture and forestry resources, cultural resources, hazards and hazardous materials, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation/traffic, and utilities and service systems.

- The project will result in less than significant impacts related to aesthetics, air quality, biological resources, geology and soils, greenhouse gas emissions, and hydrology and water quality.

Richard G. Sykes,
Director of Water and Natural Resources
East Bay Municipal Utility District

1-4-16
Date

Print Form

Appendix C

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH #

Project Title: 2016 Sacramento Valley to East Bay Municipal Utility District Water Transfers

Lead Agency: East Bay Municipal Utility District
Contact Person: Jan Lee
Mailing Address: 375 11th Street, MS 407
Phone: 510-287-2062
City: Oakland Zip: 94607 County: Alameda

Project Location: County: Multiple - see project description City/Nearest Community: Multiple - see project description
Cross Streets: N/A - inter-agency water transfer Zip Code:
Longitude/Latitude (degrees, minutes and seconds): 122 ° 17 ′ 6.8 ″ N / 37 ° 48 ′ 25.5 ″ W Total Acres: N/A
Assessor's Parcel No.: N/A - inter-agency water transfer Section: Twp.: Range: Base:
Within 2 Miles: State Hwy #: Waterways:
Airports: Railways: Schools:

Document Type:

CEQA: ☐ NOP ☐ Draft EIR NEPA: ☐ NOI Other: ☐ Joint Document
☐ Early Cons ☐ Supplement/Subsequent EIR ☐ EA ☐ Final Document
☐ Neg Dec (Prior SCH No.) ☐ Draft EIS ☐ Other:
☒ Mit Neg Dec Other: ☐ FONSI

Local Action Type:

☐ General Plan Update ☐ Specific Plan ☐ Rezone ☐ Annexation
☐ General Plan Amendment ☐ Master Plan ☐ Prezone ☐ Redevelopment
☐ General Plan Element ☐ Planned Unit Development ☐ Use Permit ☐ Coastal Permit
☐ Community Plan ☐ Site Plan ☐ Land Division (Subdivision, etc.) ☒ Other: Water Transfer

Development Type:

☐ Residential: Units Acres
☐ Office: Sq.ft. Acres Employees ☐ Transportation: Type
☐ Commercial: Sq.ft. Acres Employees ☐ Mining: Mineral
☐ Industrial: Sq.ft. Acres Employees ☐ Power: Type MW
☐ Educational: ☐ Waste Treatment: Type MGD
☐ Recreational: ☐ Hazardous Waste: Type
☐ Water Facilities: Type MGD ☐ Other:

Project Issues Discussed in Document:

☒ Aesthetic/Visual ☐ Fiscal ☒ Recreation/Parks ☒ Vegetation
☒ Agricultural Land ☐ Flood Plain/Flooding ☐ Schools/Universities ☒ Water Quality
☒ Air Quality ☐ Forest Land/Fire Hazard ☐ Septic Systems ☒ Water Supply/Groundwater
☒ Archeological/Historical ☒ Geologic/Seismic ☐ Sewer Capacity ☒ Wetland/Riparian
☒ Biological Resources ☒ Minerals ☐ Soil Erosion/Compaction/Grading ☒ Growth Inducement
☐ Coastal Zone ☒ Noise ☐ Solid Waste ☒ Land Use
☐ Drainage/Absorption ☒ Population/Housing Balance ☒ Toxic/Hazardous ☒ Cumulative Effects
☒ Economic/Jobs ☒ Public Services/Facilities ☒ Traffic/Circulation ☐ Other:

Present Land Use/Zoning/General Plan Designation:

There will be no change in land use/zoning/general plan designations associated with the project. Transfer water would be made available through crop idling and crop shifting actions on agricultural property, and transfer water would be used on properties with a variety of different designations within East Bay Municipal Utility District's service area.

Project Description: *(please use a separate page if necessary)*

The project includes potential water transfers between four Sacramento River Settlement Contractors and East Bay Municipal Utility District to help address water shortages in 2016. Water would be made available for transfer through crop idling and crop shifting actions in Colusa, Glenn, Sutter, and/or Yolo Counties, and would be diverted from the Sacramento River at the Freeport Regional Water Project Facility for delivery to East Bay Municipal Utility District's service area in Alameda and Contra Costa Counties.

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "**X**".
If you have already sent your document to the agency please denote that with an "**S**".

X	Air Resources Board	____	Office of Historic Preservation
____	Boating & Waterways, Department of	____	Office of Public School Construction
____	California Emergency Management Agency	____	Parks & Recreation, Department of
____	California Highway Patrol	____	Pesticide Regulation, Department of
____	Caltrans District # ____	____	Public Utilities Commission
____	Caltrans Division of Aeronautics	____	Regional WQCB # ____
____	Caltrans Planning	____	Resources Agency
____	Central Valley Flood Protection Board	____	Resources Recycling and Recovery, Department of
____	Coachella Valley Mtns. Conservancy	____	S.F. Bay Conservation & Development Comm.
____	Coastal Commission	____	San Gabriel & Lower L.A. Rivers & Mtns. Conservancy
____	Colorado River Board	____	San Joaquin River Conservancy
____	Conservation, Department of	____	Santa Monica Mtns. Conservancy
____	Corrections, Department of	____	State Lands Commission
____	Delta Protection Commission	____	SWRCB: Clean Water Grants
____	Education, Department of	X	SWRCB: Water Quality
____	Energy Commission	X	SWRCB: Water Rights
X	Fish & Game Region # 2,3	____	Tahoe Regional Planning Agency
____	Food & Agriculture, Department of	____	Toxic Substances Control, Department of
____	Forestry and Fire Protection, Department of	S	Water Resources, Department of
____	General Services, Department of		
____	Health Services, Department of	____	Other: ____
____	Housing & Community Development	____	Other: ____
____	Native American Heritage Commission		

Local Public Review Period (to be filled in by lead agency)

Starting Date January 6, 2016 Ending Date February 8, 2016

Lead Agency (Complete if applicable):

Consulting Firm: CDM Smith
Address: 1755 Creekside Oaks Drive, Suite 200
City/State/Zip: Sacramento, CA 95833
Contact: Carrie Buckman
Phone: 926-567-9900

Applicant: East Bay Municipal Utility District
Address: 375-11th Street
City/State/Zip: Oakland, CA 94607
Phone: 510-287-2062

Signature of Lead Agency Representative: [signature] **Date:** 1-4-16

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

INITIAL STUDY FOR 2016 SACRAMENTO VALLEY TO EAST BAY MUNICIPAL UTILITY DISTRICT WATER TRANSFERS

1. Project title: 2016 Sacramento Valley to East Bay Municipal Utility District Water Transfers
2. Lead agency name and address: East Bay Municipal Utility District (EBMUD)
   375 11th Street
   Oakland, CA 94607
3. Contact person and phone number: Ms. Jan Lee, (510) 287-2062
4. Project location: The proposed transfers could originate in Colusa, Glenn, Sutter, or Yolo counties. The transfer buyer's service area is located in Alameda and Contra Costa counties.
5. Project sponsor's name and address: Same as Lead Agency.
6. General plan designation: No changes in general plan designation are proposed. Seller actions to make water available for transfer would occur on agricultural land, and transfer water would be used within EBMUD's service area on properties with a wide variety of general plan designations.
7. Zoning: No changes in zoning are proposed. Seller actions to make water available for transfer would occur on agricultural land, and transfer water would be used within EBMUD's service area on properties with a wide variety of zoning designations.
8. Description of project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary.)

   The project includes potential water transfers between four Sacramento River Settlement Contractors and EBMUD. Water would be made available for transfer through crop idling and crop shifting actions in Colusa, Glenn, Sutter, and/or Yolo Counties, and would be diverted from the Sacramento River at the Freeport Regional Water Project Facility for delivery to EBMUD's service area. For a complete project description, refer to Chapter 2 of the Initial Study, attached.
9. Surrounding land uses and setting: Briefly describe the project's surroundings:

   Crop shifting and idling actions would occur in agricultural areas, and the transfer water would be used within EBMUD's service area. For a complete description of the project setting, refer to Chapter 2 of the Initial Study, attached.
10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.)

    Chapter 2 of the Initial Study describes the involvement of public agencies that could transfer water, including Glenn-Colusa Irrigation District, Reclamation District 108, and Reclamation District 1004.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture and Forestry Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Geology /Soils
☐ Greenhouse Gas Emissions	☐ Hazards & Hazardous Materials	☐ Hydrology / Water Quality
☐ Land Use / Planning	☐ Mineral Resources	☐ Noise
☐ Population / Housing	☐ Public Services	☐ Recreation
☐ Transportation/Traffic	☐ Utilities / Service Systems	☐ Mandatory Findings of Significance

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Richard B Taylor — Signature

1-4-16 — Date

Draft Initial Study

2016 Sacramento Valley to East Bay Municipal Utility District Water Transfers

California

East Bay Municipal Utility District
Oakland, CA

January 2016

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Abbreviations and Acronyms

AF	acre-feet
APCD	Air Pollution Control District
AQAP	Air Quality Attainment Plan
AQMD	Air Quality Management District
BMPs	Best Management Practices
CAAQS	California Ambient Air Quality Standards
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
cfs	cubic feet per second
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
DFW	California Department of Fish and Wildlife
DMC	Delta Mendota Canal
DWR	California Department of Water Resources
EBMUD	East Bay Municipal Utility District
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
ESA	Endangered Species Act
ETAW	evapotranspiration of applied water
FMMP	Farmland Mapping and Monitoring Program
Freeport Facility	Freeport Regional Water Facility
FRWA	Freeport Regional Water Authority
FSC	Folsom South Canal
GGS	giant garter snake
GHG	greenhouse gas
GIS	geographic information system

HCP	Habitat Conservation Plans
IS	Initial Study
M&I	municipal and industrial
MGD	million gallons per day
mg/L	milligrams per liter
MND	Mitigated Negative Declaration
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NCCP	Natural Community Conservation Plans
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOx	nitrogen oxides
NRCS	Natural Resources Conservation Service
O_3	ozone
PCWA	Placer County Water Agency
PM_{10}	inhalable particulate matter
$PM_{2.5}$	fine particulate matter
Reclamation	Bureau of Reclamation
ROD	Record of Decision
RWQCB	Regional Water Quality Control Board
SCWA	Sacramento County Water Agency
SLDMWA	San Luis & Delta-Mendota Water Authority
SMUD	Sacramento Municipal Utility District
SOx	sulfur oxides
SRSC	Sacramento River Settlement Contractors
SWP	State Water Project
TAF	Thousand Acre Feet
TCCA	Tehama-Colusa Canal Authority
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	volatile organic compound
WSP	Water Shortage Policy
YCWA	Yuba County Water Agency
YSRCP	Yuba Sutter Regional Conservation Plan

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Chapter 1
Introduction

This Initial Study (IS) for water transfers in 2016 was prepared by East Bay Municipal Utility District ("District" or "EBMUD"). This IS document satisfies the requirements of the California Environmental Quality Act (CEQA), and the Governor's Office of Planning and Research regulations to implement CEQA (Sections 15000-15387 of the California Code of Regulations). EBMUD is the lead agency responsible for CEQA review of the proposed water transfers.

On April 14, 2015, the EBMUD Board of Directors declared a continuing water shortage emergency within EBMUD's service area. In the event the drought continues into a fifth consecutive year, to meet anticipated water supply shortages EBMUD is considering securing up to 40,000 acre-feet (AF) of dry year water supplies in 2016 through potential water transfers with Sacramento River Settlement Contractors (SRSC) located in the northern Sacramento Valley. The transfer water would be diverted from the Sacramento River at the Freeport Regional Water Facility (Freeport Facility), an existing diversion facility.[1]

This IS describes the potential direct, indirect, and cumulative effects of transferring water from willing SRSC sellers, resulting from actions taken by those sellers to make water available for transfer to EBMUD via cropland idling or crop shifting. This IS also identifies measures that have been incorporated to minimize or avoid potential project-related impacts.

The process for implementing one-year transfers is time consuming and requires completion of environmental documents and regulatory approvals. Therefore, EBMUD and the potential SRSC sellers have initiated environmental review of potential 2016 transfers now, well before final decisions and commitments on whether transfer water can be made available and whether EBMUD determines to purchase transfer water. It is anticipated that each of the sellers who are public agencies will act as responsible agencies under CEQA and use this IS/Mitigated Negative Declaration (MND) in conjunction with their approval(s) of any transfers of water to EBMUD in 2016.

[1] Freeport Facility operations were previously subject to CEQA review in the Freeport Regional Water Project EIR/EIS, certified by the Freeport Regional Water Authority in 2004.

1.1 Background

EBMUD, a public utility, was formed under the Municipal Utility District Act, passed by the California Legislature in 1921. EBMUD supplies water to approximately 1.4 million people plus industrial, commercial, institutional, and irrigation water users in the East Bay region of the San Francisco Bay Area. EBMUD's 332-square-mile water service area encompasses incorporated and unincorporated areas within Alameda and Contra Costa Counties (see Figure 1-1). EBMUD's principal raw water source is the Mokelumne River in the Sierra Nevada, with a diversion point at Pardee Reservoir in Calaveras and Amador Counties. EBMUD's existing Mokelumne River and East Bay watershed sources of supply are sufficient in non-drought years. In dry years, EBMUD utilizes the Freeport Facility, with an intake located on the Sacramento River, to divert Central Valley Project (CVP) and transfer water, as needed, to meet customer demands.

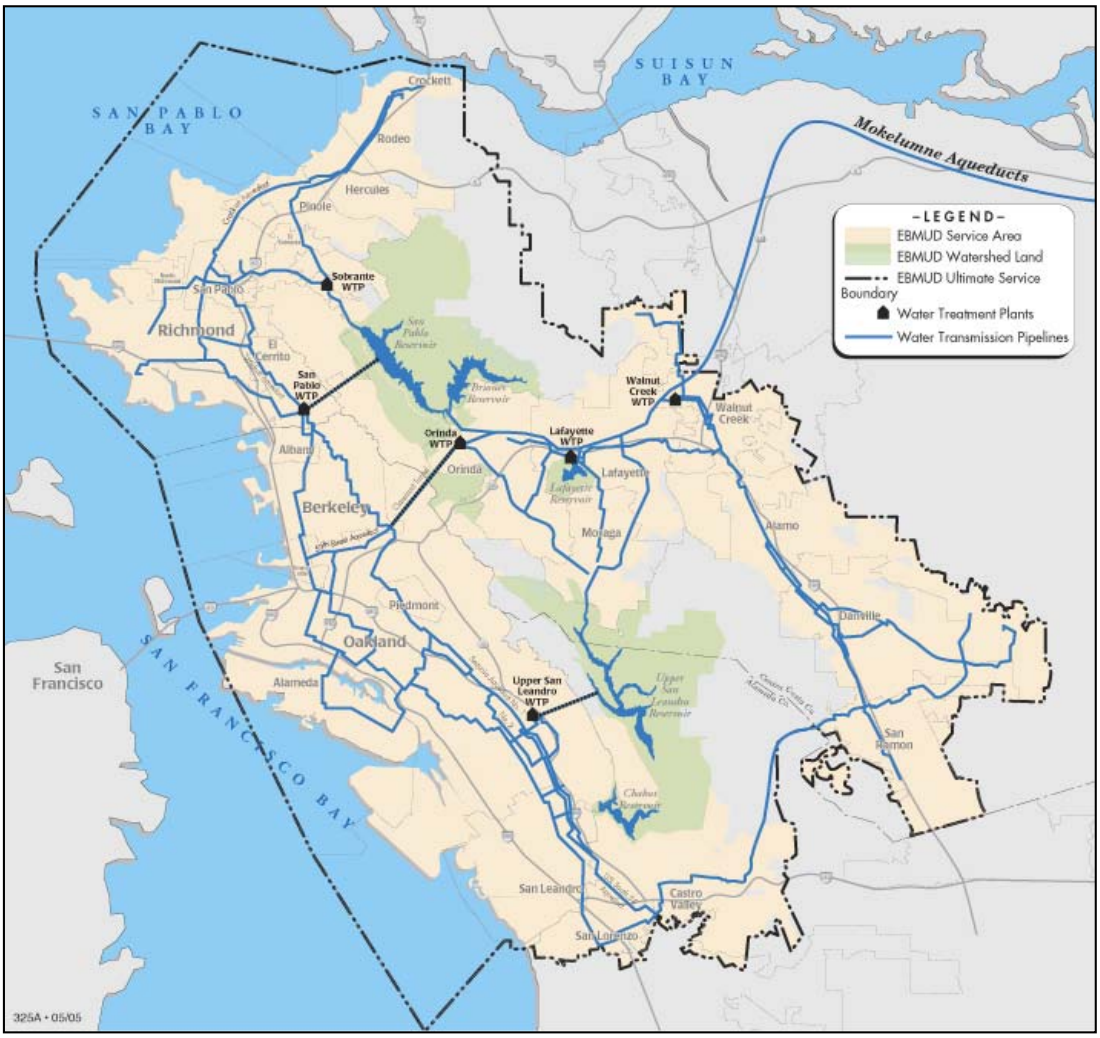

Figure 1-1. EBMUD Water System

EBMUD may experience severe water shortages in 2016 and has identified potential willing SRSC sellers that could take actions to make surface water available for transfer to EBMUD. Those potential sellers use surface water from the Sacramento River and have expressed interest in transferring water to EBMUD. EBMUD would negotiate with these potential sellers to identify potential transfers and the specifics of each transfer arrangement. EBMUD and these potential sellers will use this IS to inform decision-makers and the public of the potential environmental effects of the proposed water transfers and determine whether these potential transfers could result in significant environmental impacts that warrant the preparation of an Environmental Impact Report (EIR) under CEQA. As explained in more detail in Chapter 3, this IS concludes that all potentially significant impacts of these transfers can be mitigated to less than significant levels.

The SRSC hold contracts for water supply with the CVP, and must obtain approval from the Bureau of Reclamation (Reclamation) before transferring water. Reclamation must comply with the National Environmental Policy Act (NEPA) before approving these transfers. Reclamation has completed an analysis under NEPA as part of the Long-Term Water Transfers Environmental Impact Statement/Environmental Impact Report (EIS/EIR) that included review of transfers between a group of SRSC and Bay Area agencies, including EBMUD, via crop idling/shifting (Reclamation 2015a).

1.2 Project Objectives

Water year 2015 has ended as a fourth consecutive dry year and the dry conditions are so extreme that water years 2012-2015 now rank as the driest consecutive four-year period on record in terms of statewide precipitation. The continuing drought has severely affected EBMUD's water supply with January 2015 constituting the driest January on record and March 2015 constituting the second driest March on record in the Mokelumne River Basin. Given these conditions, on April 14, 2015, EBMUD's Board of Directors (Board) declared a continuing water shortage emergency within EBMUD's service area, declared a Stage 4 critical drought (EBMUD's highest level), adopted a mandatory District-wide water use reduction goal of 20 percent, declared the need to use the Freeport Facility to deliver dry year supplies to EBMUD's service area, and increased mandatory restrictions on potable water use. Due to the unexpectedly low and virtually unprecedented 2015 CVP allocation to EBMUD of just 25 percent, or 33,250 AF, of its CVP contracted amount, the Board authorized staff to secure water transfers to bring a total of 65,000 AF of dry year CVP and transfer water supply into EBMUD's service area via the Freeport Facility. In response, EBMUD secured 25,000 AF of transfer water for a total of 58,000 AF of water (CVP and transfer water) that was delivered to EBMUD in 2015.

If the water shortage emergency within EBMUD's service area continues into 2016, EBMUD anticipates the need to bring in dry year supplies via the Freeport Facility to meet essential demands because of past dry years and low

Mokelumne system reservoir storage levels. The proposed transfers would provide dry year water that, combined with available 2016 Mokelumne and CVP water supplies, would ensure EBMUD's continued ability to meet customer demands and provide essential public services.

1.3 Consultation

Water transfers require substantial consultation and coordination among EBMUD, the sellers, and federal and state agencies. EBMUD coordinated with the potential sellers to identify potentially available transfer quantities and develop this IS. Reclamation is responsible for approving and facilitating the proposed water transfers. Reclamation consults frequently with California Department of Water Resources (DWR) to approve and facilitate transfers and also works with the United States Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (DFW) to monitor effects to special status species. If EBMUD ultimately determines to purchase transfer water in 2016, it will continue to coordinate with sellers, Reclamation, and these other agencies to implement those transfers.

1.4 Public Review Period

EBMUD released the Draft IS for a public review period, beginning on January 6, 2016 and ending at 4:30 pm on February 8, 2016.

1.5 Document Structure

Chapter 2 includes a description of the Proposed Project and the environmental setting. To consider environmental impacts of the Proposed Project pursuant to CEQA, Chapter 3 includes the analysis of possible effects to resources using an initial study checklist adapted from the CEQA Guidelines, Appendix G. Discussion of potential impacts for the Proposed Project are addressed in more detail following each checklist section. Chapter 4 lists the references used in development of this IS.

Chapter 2
Project Description and Environmental Setting

2.1 Proposed Project

The Proposed Project is the transfer of up to 40,000 AF of surface water in 2016 from SRSC to EBMUD. Based on initial discussions, EBMUD could potentially purchase transfer water from Glenn-Colusa Irrigation District, Reclamation District 1004, Reclamation District 108, and/or Sycamore Mutual Water Company. These potential sellers are senior water rights holders along the Sacramento River that hold settlement contracts with the Reclamation for water delivered from the CVP. These potential sellers would make water available for transfer to EBMUD by agreeing to forego a portion of their irrigation use of CVP supplies by idling crops such as rice and/or shifting to cultivation of less water intensive crops. Final purchase decisions, including quantities, will depend on a number of factors including, but not limited to, hydrology, final CVP allocations, water demands, availability of other supplies, and transfer costs.

As part of a CVP contractor-to-CVP contractor water transfer, water would be released by Reclamation from Shasta Reservoir and would flow further downstream past the sellers' points of diversion to the Freeport Facility intake located on the Sacramento River at Freeport. The transfer water would be diverted at a maximum rate of 155 cubic feet per second (cfs) and be conveyed through the lower reach of the Folsom South Canal (FSC), EBMUD's Folsom South Canal Connection Pipeline and EBMUD's Mokelumne Aqueducts to EBMUD's service area. Figure 2-1 shows the location of potential 2016 SRSC transfer partners and existing facilities that would be used to convey the transfer water to EBMUD. The proposed transfer would not involve construction of any new facilities and would not require any use of State Water Project (SWP)/CVP pumping facilities located in the south Sacramento-San Joaquin River Delta (Delta).

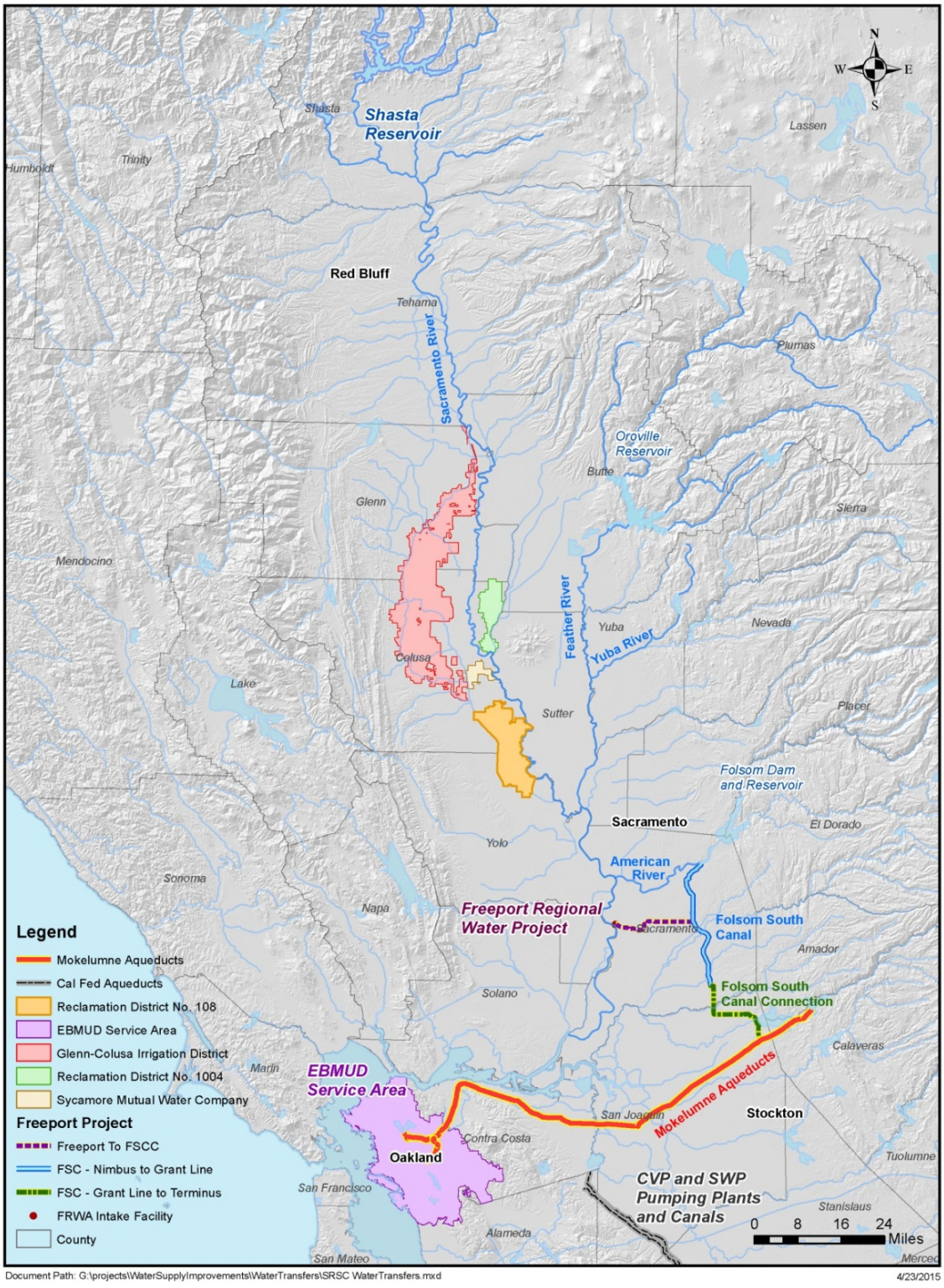

Figure 2-1. Location Map for Proposed SRSC Water Transfers to EBMUD

2.1.1 Sellers

The potential sellers are SRSC who receive CVP water pursuant to those contracts from releases made by Reclamation from Shasta Reservoir. The sellers would agree with Reclamation to forego diversion at their respective points of diversion along the Sacramento River of portions of water available under their respective settlement contracts that otherwise would have been used for irrigation. Under a forbearance agreement entered into among Reclamation, the potential seller, and EBMUD, Reclamation would deliver the water made available through sellers' cropland idling/crop shifting and forbearance actions to EBMUD at the Freeport Facility intake as part of a CVP contractor-to-CVP contractor water transfer.

Based on initial discussion with potential sellers, the maximum quantity of transfer water that could potentially be made available through cropland idling and/or crop shifting for transfer to EBMUD is shown in Table 2-1. Assuming transfer water is delivered to EBMUD on an irrigation schedule and assuming a maximum diversion rate of 155 cfs at the Freeport Facility, the maximum quantity of transfer water EBMUD plans to secure in 2016 from the SRSC is approximately 40,000 AF. Because 2016 water supply conditions and final quantities of transfer water available for transfer are still uncertain, environmental reviews will be completed for the maximum transfer quantity for each potential seller.

Table 2-1. Potential Sellers and Transfer Quantities

Potential Sellers	2016 Maximum Cropland Idling/Crop Shifting Transfer Quantity to EBMUD (AF)[1]	Maximum Cropland Idling/Crop Shifting Analyzed in Long-Term Water Transfers EIS/EIR (AF)[2]
Glenn-Colusa Irrigation District	20,000	66,000
Reclamation District No. 108	10,000	20,000
Reclamation District No. 1004	10,000	10,000
Sycamore Mutual Water Company	6,000	10,000

Notes:

[1] EBMUD is seeking up to 40,000 AF of transfer water from Sacramento River Settlement Contractors (SRSC). Table 2-1 lists a slightly higher total (46,000 AF) of such transfers because at this time final quantities of water available for transfer to EBMUD from each seller through cropland idling or crop shifting have not yet been determined. EBMUD is seeking a maximum transfer amount of 40,000 AF from SRSC.

[2] Federal environmental review and Reclamation approval is required for transfers between SRSC and EBMUD. On May 1, 2015, Reclamation signed a Record of Decision (ROD) for the Long-Term Water Transfers Environmental Impact Statement/Environmental Impact Report (EIS/EIR) that included review of transfers between a group of SRSC and Bay Area agencies, including EBMUD, via cropland idling/shifting (Reclamation 2015b). EBMUD would structure any 2016 transfers to stay within the scope of the federal action approved by Reclamation, as set forth in the ROD.

2.1.2 Transfer Type

For 2016, the sellers anticipate making water available for transfer to EBMUD solely through implementation of two methods: voluntary idling (fallowing) of agricultural land and crop shifting, such that water which would have otherwise been used for agricultural production would instead be transferred to EBMUD.

EBMUD will not purchase any transfer water from SRSC sellers made available via groundwater substitution in 2016.

The quantity of water made available for transfer through cropland idling/shifting is calculated based on the evapotranspiration of applied water (ETAW), which is the portion of applied surface water used by the crop and evaporated from the soil and plant surfaces. Table 2-2 includes ETAW of crops that could be involved in cropland idling or crop shifting transfers between sellers and EBMUD. The potential sellers anticipate making transfer water available primarily through the idling of rice, but could also idle other crops. For the purposes of evaluation, this IS evaluates the impacts if the full amount of water is made available from idling rice crops (up to 12,121 acres idled) plus the potential effects of idling up to 400 acres of tomatoes and vine crops; 400 acres of corn, beans, safflower and wheat; and 1,400 acres of alfalfa and sudan grass. Evaluating the impacts of idling multiple crop types provides flexibility to the sellers to identify the crops to idle in 2016; however, all of these crops would not be idled because they would result in the availability of more water than EBMUD's 40,000 acre-foot upper limit for transfers.

Based on information in the current DWR/Reclamation Technical Information for Preparing Water Transfers (Water Transfer White Paper) prepared in December 2015 that outlines the criteria for DWR and Reclamation approval of a water transfer, the transfer water is assumed to be made available for delivery to EBMUD on a May through September monthly distribution based on the ETAW for rice (15 percent, 22 percent, 24 percent, 24 percent, and 15 percent, respectively). However, in 2014 and 2015, Reclamation, in consultation with the Resource Agencies, delayed the start of releases and deliveries of SRSC transfer water to buyers until the late summer/early fall time frame in efforts to preserve the cold water pool in Shasta Reservoir and support winter-run Chinook salmon. For the Proposed Project, EBMUD plans to coordinate closely with Reclamation and the Resource Agencies to adjust the delivery schedule, if needed, to maximize both water supply and fishery benefits. Chapter 3 of this IS (Environmental Impacts) assesses the potential environmental effects of both operational scenarios: (1) delivery on May – September irrigation pattern and (2) delayed start of delivery to the late summer/early fall at the request of the Resource Agencies.

Table 2-2. Estimated ETAW Values for Crops Suitable for Idling or Shifting

Crop	ETAW (AF/acre)
Alfalfa[1]	1.7 (July – Sept)
Bean	1.5
Corn	1.8
Cotton	2.3
Melon	1.1
Milo	1.6

Crop	ETAW (AF/acre)
Onion	1.1
Pumpkin	1.1
Rice	3.3
Safflower (only eligible for idling)	0.7
Sudan Grass	3.0
Sugar Beets	2.5
Sunflower	1.4
Tomato	1.8
Vine Seed/ Cucurbits	1.1
Wild Rice	2.0

Source: Reclamation and DWR 2015

Notes:

[1] Only alfalfa grown in the Sacramento Valley floor north of the American River will be allowed for transfers. Fields must be disced on, or prior to, the start of the transfer period. Alfalfa acreage in the foothills or mountain areas is not eligible for transfer.

If the transferred water is released on the irrigation schedule, water would be diverted from May to September at the Freeport Facility at maximum diversion rates of up to 155 cfs. If the delivery pattern is changed at the request of the Resource Agencies, the delivery could begin in late August/early September (depending on the timing that would be most beneficial to fish, as determined by the Resource Agencies). EBMUD's maximum diversion at the Freeport Facility is 155 cfs; therefore, the transfer would need to be released over at least a four month period. The IS considers that the water could move starting in August 2016 and continue until February 2017.

Crop shifting would generally result in similar but reduced environmental effects relative to cropland idling. Potential environmental impacts associated with cropland idling are generally caused by leaving fields barren (for example, the associated reduction in food or habitat for biological resources or increase in potential for wind- and water-borne erosion). Shifting to a different crop would still have the potential to affect some resources, but could reduce potential effects because the fields would not be barren. The sellers interested in cropland idling are also interested in crop shifting, but are not sure of the distribution between the two methods. To be conservative, this IS analyzes the effects as if all transfers were from crop idling because crop idling has the greater potential for effects.

2.1.3 Conveyance through Freeport Facilities

In 2002, the Freeport Regional Water Authority (FRWA) was formed pursuant to a joint powers agreement by EBMUD and the Sacramento County Water Agency (SCWA) to develop a regional water project to convey dry year water supplies to EBMUD's service area during drought and to facilitate conjunctive use of water and groundwater supplies in central Sacramento County. The Freeport Facility consists of an intake and pump station on the Sacramento River near Freeport, a pipeline extending from the intake to SCWA's Vineyard

Surface Water Treatment Plant and to the Folsom South Canal, a pipeline extending from the near terminus of the Folsom South Canal to EBMUD's Mokelumne River Aqueducts and related pumping plants, terminal facilities and water treatment facilities.

A joint EIR/EIS for the Freeport Facility was prepared by FRWA as the lead agency under CEQA. The EIR/EIS analyzed the potential environmental effects of construction, operation, and related diversions through the Freeport Facility (Freeport Regional Water Authority 2003; Freeport Regional Water Authority 2004). The Final EIR was certified by the FRWA Board of Directors on April 15, 2004. The EBMUD Board of Directors considered the Freeport Facility EIR/EIS and approved the portions of the project within its jurisdiction on April 27, 2004. Subsequently, in 2006, EBMUD Board of Directors approved modifications and adjustments to the EBMUD facilities. The Freeport Facility EIR/EIS can be reviewed at EBMUD's Administration Building, 375 11th Street, Oakland, CA. The project evaluated in the Freeport Facility EIR/EIS had a design capacity of 286 cfs and included annual deliveries to EBMUD of as much as 112,000 AF of water in dry years.

Under the Proposed Project, transfer water would be released from Shasta Reservoir and flow past the respective points of deliveries for the sellers on the Sacramento River and further downstream to the existing Freeport Facility, where it would be diverted at a maximum rate of 155 cfs at the intake for conveyance to EBMUD's service area. As shown on Figure 2-1, the existing Freeport Facility intake is located on the Sacramento River near the town of Freeport. As shown on Figure 2-2, after diversion at the Freeport Facility intake, the transfer water would be pumped eastward through an existing pipeline into the Folsom South Canal where it crosses Grant Line Road (Canal Mile 12.4). The water would then flow approximately 14 miles southward along the Folsom South Canal. Near the terminus of the canal, the water would be diverted by EBMUD and pumped into the Folsom South Canal Connection pipeline, ultimately entering the Mokelumne Aqueducts for conveyance to EBMUD's service area.

The proposed 2016 SRSC transfers, combined with CVP water EBMUD may be allocated and divert under its CVP contract and other potential transfers, would be carried out within the maximum diversion amounts and rates analyzed in the Freeport EIR/EIS and in compliance with all permits covering the operation of the Freeport Facility.

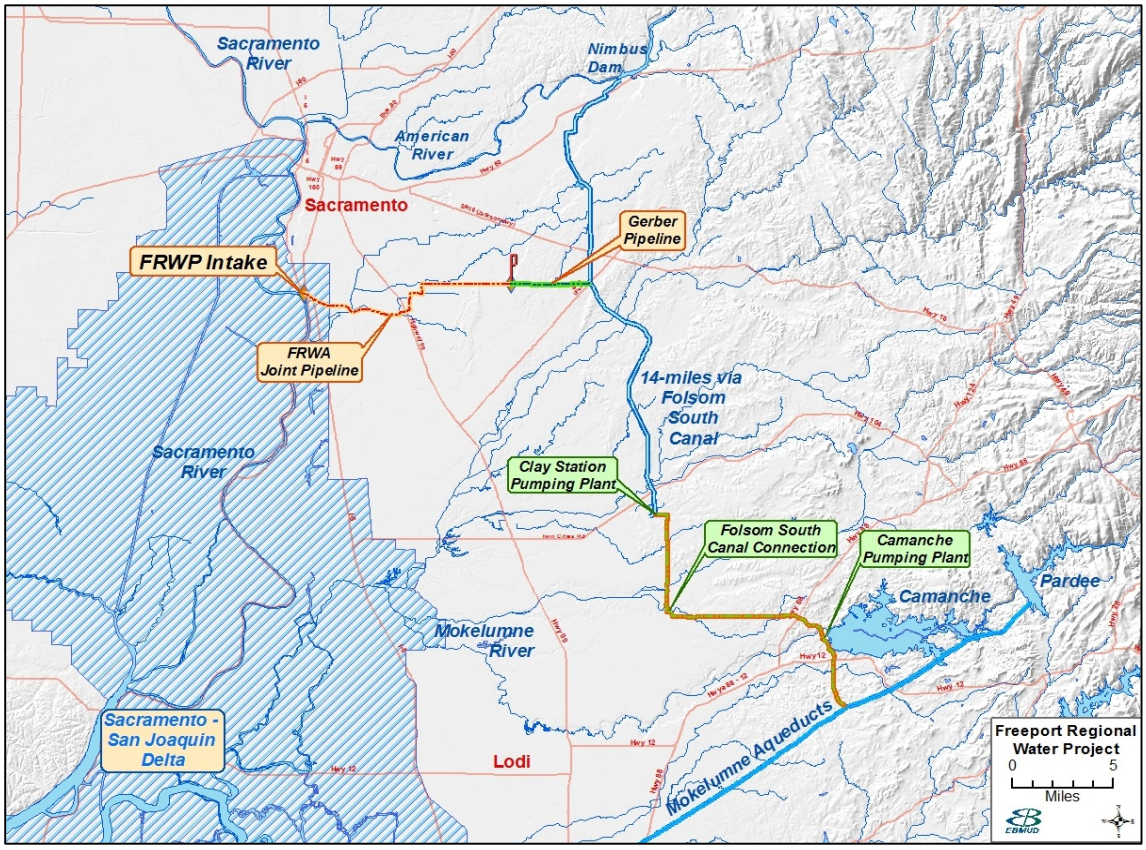

Figure 2-2. Freeport Project Facilities

2.2 Environmental Commitments

The following are Environmental Commitments included in the Proposed Project to reduce potential environmental impacts from cropland idling water transfers in 2016. These Environmental Commitments are consistent with the Environmental Commitments in the Record of Decision (ROD) for the Long-term Water Transfers EIS/EIR (Reclamation 2015b) and Biological Opinion for Long-Term Water Transfers (USFWS 2015a) that was issued by USFWS in 2015. EBMUD will work with Reclamation and sellers to make sure the Environmental Commitments are implemented.

- Sellers will allow access to idled land for Reclamation staff to verify how the transfer water is being made available and to verify that actions to protect the giant garter snake (GGS) are being implemented. Sellers shall cooperate with Reclamation in its development of a

monitoring report—to be submitted annually to USFWS and DFW containing:

- maps of all cropland idling actions that occur within the range of potential transfer activities;
- results of any newly available scientific research and monitoring results pertinent to water transfer actions, and
- a discussion of conservation measure effectiveness.

- Movement corridors for aquatic species (including pond turtle and GGS) include major irrigation and drainage canals. Sellers shall verify that they keep adequate water in major irrigation and drainage canals. Canal water depths should be similar to years when transfers do not occur or, where information on existing water depths is limited, at least two feet of water will be considered sufficient.

- Sellers proposing water transfers made available from idled rice fields shall ensure that adequate water is available for priority habitat with a high likelihood of GGS occurrence. The determination of priority habitat will be made through coordination with GGS experts, GIS analysis of proximity to historic tule marsh, and GIS analysis of suitable habitat. The priority habitat areas are indicated on the priority habitat maps for participating water agencies and will be maintained by Reclamation. As new information becomes available, these maps will be updated in coordination with USFWS and DFW. In addition to mapped priority habitat, fields abutting or immediately adjacent to federal wildlife refuges will be considered priority habitat.

- Maintaining water in smaller drains and conveyance infrastructure supports key habitat attributes such as emergent vegetation for GGS for escape cover and foraging habitat. If crop idling/shifting occurs in priority habitat areas, Sellers shall document that adequate water remains in drains and canals in those priority areas. Documentation may include flow records, photo documentation, or other means of documentation agreed to by Reclamation and USFWS.

- Sellers shall ensure areas with known priority snake populations will not be permitted to participate in cropland idling/shifting transfers. Water sellers can request a case-by-case evaluation of whether a specific field would be precluded from participating in water transfers. These areas include lands adjacent to naturalized lands and refuges and corridors between these areas, such as:

    - Fields abutting or immediately adjacent to Little Butte Creek between Llano Seco and Upper Butte Basin Wildlife Area, Butte

Creek between Upper Butte Basin and Gray Lodge Wildlife areas, Colusa Basin drainage canal between Delevan and Colusa National Wildlife Refuges, Gilsizer Slough, Colusa Drainage Canal, the land side of the Toe Drain along the Sutter Bypass, Willow Slough and Willow Slough Bypass in Yolo County, Hunters and Logan Creeks between Sacramento and Delevan National Wildlife Refuges, and Lands in the Natomas Basin.

- Sellers shall perform GGS best management practices, including educating maintenance personnel to recognize and avoid contact with GGS, cleaning only one side of a conveyance channel per year, and implementing other measures to enhance habitat for GGS. Implementation of best management practices will be documented by the sellers and verified by EBMUD.

- In order to limit reduction in the amount of over-winter forage for migratory birds, including greater sandhill crane, cropland idling transfers will be minimized near known wintering areas in the Butte Sink.

2.3 Environmental Setting

The environmental setting in which implementation of the Proposed Project would occur is summarized below for resources that could be affected by water transfers. Additional details regarding relevant existing environmental conditions are provided in Chapter 3, within the analysis of potential impacts.

2.3.1 Aesthetics

The sellers are located in the Sacramento Valley region. The Sacramento Valley region is primarily agricultural in nature, with Interstate 5 running from north to south through the valley floor. The Sacramento River flows from north to south near Interstate 5 in the center of the valley. Views in the region from most major roadways and scenic routes are of agricultural fields, the Sacramento River, or urban landscapes. The mix of orchard and row crop types, fallow fields, rice, and other irrigated crops and dry fields create the visual character for most of the project area. Urban centers, such as Sacramento break up the farmland that dominates the views in the Sacramento Valley, creating some major nighttime light sources near the city centers.

2.3.2 Agricultural Resources

Rice is the primary crop grown in the selling districts' service areas. Tables 2-3 through 2-6 show cropping patterns in the selling districts from 2011 to 2015.

Table 2-3. Glenn-Colusa Irrigation District Cropping Pattern from 2011-2015 (acres)

Crop	2011	2012	2013	2014	2015
Alfalfa	1,297	1,451	1,523	1,169	1,194
Clover/Pasture	3,839	3,802	3,512	3,108	3,035
Corn	2,197	2,360	2,544	918	1,121
Cotton	83	285	228	36	36
General	0	0	0	0	0
Habitat (Summer)	578	608	582	642	663
Orchard[1]	10,322	10,797	11,136	9,387	10,271
Rice	106,083	107,155	106,720	91,878	79,254
Sugar Beets	0	0	0	0	60
Tomatoes	2,254	1,459	1,844	3,113	1,660
Other[2]	4,940	5,148	4,987	4,197	3,590

[1] Orchard includes: Almonds, Olive, Prune, Walnut
[2] Others includes: Beans, Grape vine, Herb, Onion, Sudan Grass, Sunflowers, Vineseed, Wheat

Table 2-4. Reclamation District 1004 Cropping Pattern from 2011-2015 (acres)

Crop	2011	2012	2013	2014	2015
Alfalfa	0	34	0	0	0
Beans	71	71	71	179	257
Corn	164	305	299	356	360
Habitat	7,738	5,470	6,431	5,589	5,671
Pasture	35	0	0	0	0
Rice	12,218	14,177	14,176	13,302	10,331
Safflower	0	6	0	0	0
Sunflower	0	0	0	210	103
Tomato	111	65	67	220	464
Wheat	97	71	71	0	0

Table 2-5. Sycamore Mutual Water Company Cropping Pattern from 2011-2015 (acres)

Crop	2011	2012	2013	2014	2015
Alfalfa	0	0	0	61	61
Corn	162	111	155	0	84
Bean	0	178	0	0	325
Rice	5,524	5,685	5,685	5,392	4,138
Sunflower	0	0	237	0	85
Safflower	0	0	77	0	0
Tomato	642	501	698	789	176
Vineseed	190	70	0	84	111
Walnuts	58	158	208	208	208
Wheat	185	280	0	155	0
Habitat	43	43	43	564	423

Table 2-6. Reclamation District 108 Cropping Pattern from 2011-2015 (acres)

Crop	2011	2012	2013	2014	2015
Alfalfa	1,716	1,887	1,911	1,762	1,848
Barley	66	0	66	46	0
Bean	266	360	306	99	303
Corn	1,451	1,526	2,091	297	496
Melon	366	309	122	602	264
Milo	0	47	79	0	36
Oats	0	0	0	131	131
Orchard	1,018	1,353	1,307	1,855	2,366
Pasture	163	163	163	163	163
Squash	0	80	0	0	0
Rice	32,001	31,826	30,918	25,044	22,634
Safflower	791	604	467	797	840
Sudan grass	31	0	0	0	0
Sunflower	1,911	1,859	3,271	2,199	1,409
Tomato	3,996	3,519	3,433	3,737	3,929
Vineseed	1,250	1,215	1,005	974	872
Wheat	2,519	2,072	1,663	2,595	2,274
Habitat	0	615	615	615	310

The Farmland Mapping and Monitoring Program (FMMP) produces maps and statistical data used for analyzing impacts on California's agricultural resources. Agricultural land is rated according to soil quality and irrigation status; the best quality land is called Prime Farmland. The maps are updated every two years with the use of a computer mapping system, aerial imagery, public review, and field reconnaissance (California Department of Conservation 2015a). The following are definitions for land uses.

- Prime Farmland has the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

- Farmland of Statewide Importance is similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

- Unique Farmland consists of lesser quality soils used for the production of the state's leading agricultural crops. This land is usually irrigated, but may include nonirrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.

- Farmland of Local Importance is land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.

Sellers are located in Glenn, Colusa, Yolo, and Sutter Counties. The California Department of Conservation's land use acreages in Glenn, Colusa, Yolo and Sutter counties from 2006 through 2010 reflects the effects of the 2007 through 2009 droughts. These counties experienced a slight net decrease in important farmland defined as land qualifying under one of the four FMMP categories summarized above. The net decrease in important farmland ranged from less than 1 percent (838 acres) in Glenn County to about 4 percent (15,715 acres) in Yolo County. The net decrease in total agricultural land ranged from less than 1 percent (1517 acres) in Glenn County to about 1 percent (5606 acres) in Yolo County (California Department of Conservation 2015b).

2.3.3 Air Quality

Air quality in California is regulated by the U.S. Environmental Protection Agency (USEPA), the California Air Resources Board (CARB), and locally by Air Pollution Control Districts (APCDs) or Air Quality Management Districts

(AQMDs). The following air districts regulate air quality within the project study area:

- Bay Area AQMD (EBMUD)
- Colusa County APCD (Glenn-Colusa Irrigation District, Reclamation District 108, Reclamation District 1004, and Sycamore Mutual Water Company)
- Feather River AQMD (Reclamation District 1004)
- Glenn County APCD (Glenn-Colusa Irrigation District, Reclamation District 1004)
- Sacramento Metropolitan AQMD (Freeport Facility)
- Yolo/Solano AQMD (Reclamation District 108)

In the Sacramento Valley Air Basin, ozone (O_3), inhalable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$) are pollutants of concern because ambient concentrations of these pollutants exceed the California Ambient Air Quality Standards (CAAQS). Additionally, ambient O_3 and $PM_{2.5}$ concentrations exceed the National Ambient Air Quality Standards (NAAQS), while PM_{10} and carbon monoxide (CO) concentrations recently dropped below the NAAQS. These areas are designated as maintenance areas under NAAQS, indicating that the area once exceeded standards but has since met the standard. Table 2-7 summarizes the attainment status for the counties located in the project area.

Table 2-7. State and Federal Attainment Status

County	O_3 CAAQS	$PM_{2.5}$ CAAQS	PM_{10} CAAQS	O_3 NAAQS[1]	$PM_{2.5}$ NAAQS	PM_{10} NAAQS	CO NAAQS
Alameda	N	N	N	N [2]	N	A	M
Contra Costa	N	N	N	N [2]	N	A	M
Colusa	A	A	N	A	A	A	U
Glenn	A	A	N	A	A	A	U
Sacramento	N	A	N	N	N	M	M
Sutter	N-T [3]	A	N	N [4,5]	A	A	A
Yolo	N	U	N	N [5]	N	A	M

Source: 17 California Code of Regulations §60200-60210; 40 CFR 81; CARB 2013; USEPA 2015

Notes:

1 8-hour O3 NAAQS was modified in October 2015, but area designations are still pending; the area designations in the table are for the 2008 standard. States have one year after promulgation of a new NAAQS to submit to the USEPA a list of all areas in the state that should be designated as nonattainment. The USEPA subsequently has two years from the date of the standard revision to promulgate the new area designations (42 USC 7407(d)).

2 8-hour O_3 classification = marginal

3 Nonattainment/transitional areas are defined as those areas that during a single calendar year, the State standards were not exceeded more than three times at any monitoring location within the area

4 The Sacramento Metro nonattainment area for Sutter County is defined as the "portion south of a line connecting the northern border of Yolo County to the southwestern tip of Yuba County and continuing along the southern Yuba County border to Placer County" (40 CFR 81.305)

5 8-hour O_3 classification = severe

Key:

A = attainment (background air quality in the region is less than (has attained) the ambient air quality standards)

CO = carbon monoxide

M = maintenance (area formerly exceeded the ambient air quality standards (i.e., was designated nonattainment), but has since attained the standards)

N = nonattainment (background air quality exceeds the ambient air quality standards)

N-T = nonattainment/transitional (a subcategory of nonattainment where an area is close to attainment, has only two days exceeding standards, and is projected to meet standards within three years)

O_3 = ozone

PM_{10} = inhalable particulate matter

$PM_{2.5}$ = fine particulate matter

U = unclassified/attainment (area does not have enough monitors to determine the background concentrations; treated the same as attainment)

The Sacramento Valley Air Basin is bounded by the North Coast Ranges on the west and the Northern Sierra Nevada Mountains on the east, forming a bowl-shaped valley. The Sacramento Valley has a Mediterranean climate, which is characterized by hot dry summers and mild rainy winters. The San Francisco Bay Air Basin contains the second largest urban area in California. The air basin is bounded by the San Francisco bay to the west; and low mountains and hills of the coastal range occupy most of the basin.

Most of the sellers' area supports agricultural land uses. Crop cycles, including land preparation and harvest, contribute to pollutant emissions, primarily particulate matter. Cropland idling transfers could reduce vehicle exhaust emissions but increase fugitive dust (PM_{10} and $PM_{2.5}$) emissions. The primary pollutants emitted by vehicular traffic are nitrogen oxides (NOx), sulfur oxides (SOx), volatile organic compounds (VOC), CO, PM_{10}, and $PM_{2.5}$; NOx and VOCs are precursors to O_3 formation.

2.3.4 Biological Resources

The project area includes the Sacramento watershed. The Freeport Facility intake is located along the Sacramento River below the confluence of the American and Sacramento Rivers. Natural communities associated with the Sacramento River include valley/foothill riparian and natural seasonal wetland. Valley/foothill riparian natural community generally occurs along river and stream corridors on the east side of the Sacramento Valley. Trees typically associated with the valley/foothill riparian natural community include willows, Fremont cottonwood (*Populus fremontii*), valley oak (*Quercus lobata*), and western sycamore (*Platanus racemosa*). Many species of birds, mammals, reptiles, and amphibians depend on riparian habitats, such as woodpeckers, warblers, flycatchers, owls, and raptors. Other wildlife species that use riparian habitats include western fence lizard (*Sceloporus occidentalis*), Pacific tree frog (*Pseudacris regilla*), western toad (*Anaxyrus boreas*), bullfrog (*Rana catesbeiana*), western skink (*Eumeces skiltonianus*), western whiptail (*Cnemidophorus tigris*), southern alligator lizard (*Elgaria multicarinata*), racer (*Coluber constrictor*), gopher snake (*Pituophis catenifer*), king snake (*Lampropeltis* sp.), garter snake (*Thamnophis* sp.), northern Pacific rattlesnake (*Crotalus oreganus oreganus*), opossum (*Didelphis virginiana*), black-tailed jackrabbit (*Lepus californicus*), western gray squirrel (*Sciurus griseus*), ringtail (*Bassariscus astutus*), river otter (*Lontra canadensis*), striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), beaver (*Castor canadensis*), mule deer (*Odocoileus hemionus*), and a number of bat species. Wetland natural communities support many species of waterfowl, such as mallard (*Anas platyrhynchos*), northern pintail (*Anas acuta*), American widgeon (*Anas americana*), and Canada goose (*Branta canadensis*), and a variety of wading birds and shorebirds.

In the Sacramento Valley, seasonally flooded agriculture, in particular rice fields, provide important foraging habitat for a variety of wildlife species. There are approximately 500,000 acres of rice fields in the Sacramento Valley which, along with natural wetlands, support millions of waterfowl along the Pacific Flyway (California Rice Commission 2011). Flooded agriculture within the Sacramento Valley accounts for approximately 57 percent of food resources available to waterfowl (Petrie and Petrick 2010). Rice fields also provide foraging, resting, breeding, and wintering habitat for shorebirds and wading birds, and foraging habitat for raptors. These habitats are also important for foraging, refuge, and dispersal for reptiles, amphibians, and mammals.

Special-status wildlife species with potential to occur in the project area are listed in Appendix A. As described in the appendix, five species have potential to be affected by rice idling and are further evaluated in Chapter 3. This includes the following species: GGS (*Thamnophis gigas*), greater sandhill crane (*Grus canadensis tabida*), black tern (*Chlidonias niger*), tricolored blackbird (*Agelaius tricolor*), and pacific pond turtle (*Actinemys marmorata*). The

following listings apply to the above species under the Federal and California Endangered Species Acts (ESA).

- GGS – listed as threatened under the Federal and California ESAs (DFW 2015a)
- Greater Sandhill Crane – listed as threatened under the California ESA and is fully protected under the California Fish and Game Code (DFW 2015a; DFW 2015b)
- Black Tern – listed as a State Species of Concern (DFW 2015c)
- Pacific Pond Turtle – status is under review under the Federal ESA and considered a State Species of Concern by DFW (DFW 2015c)
- Tricolored Blackbird – considered a State Species of Concern by DFW. On December 3, 2014, the California Fish and Game Commission granted emergency protections to the Tricolored blackbird. The action granted a 180-day period for DFW to determine whether to make the protections permanent. In June 2015, the Commission determined not to advance a petition to list the species under the California ESA. In September 2015, USFWS announced that the Tricolored Blackbird is one of several species that it will formally consider for protection under the ESA.

In addition to these special-status species, migratory birds are protected under the Migratory Bird Treaty Act.

Special-status plant species with potential to occur are listed in Appendix B. Based on the analysis presented in the appendix, no special-status plants would be affected by the project.

Table 2-8 summarizes fish species of concern in the project area which extends from Shasta Reservoir to EBMUD's point of diversion at Freeport. There are no listed species in Shasta Reservoir. Shasta Reservoir supports recreational fisheries. The reservoir has warmwater fishes in the surface waters and around the edges of the reservoirs, and coldwater fishes in the deeper, cooler portions of the reservoir. Introduced bass, sunfish, catfish, carp, and other species that were introduced to create recreational fisheries generally dominate the reservoirs.

Table 2-8. Fish Species of Management Concern in the Project Area

Status	Species	Primary Management Consideration
Special-Status	Chinook Salmon (*Oncorhynchus tshawytscha*) – Winter run	FE, SE
	Chinook Salmon – Spring-run	FT, ST
	Central Valley Steelhead (*Oncorhynchus mykiss*)	FT, Recreation
	Green sturgeon (*Acipenser medirostris*)	FT
	Hardhead (*Mylopharodon conocephalus*)	SSC
	Sacramento splittail (*Pogonichthys macrolepidotus*)	SSC
	Chinook Salmon – Fall/late-fall run	SSC, Commercial, Recreation
	Longfin smelt (*Spirinchus thaleichthys*	ST
	Delta smelt *(Hypomesus transpacificus)*	FT, SE
Other	Striped bass (*Morone saxatilis*)	Recreation
	American shad (*Alosa sapidissima*)	Recreation
	White sturgeon (*Acipenser transmontanus*)	Commercial, Recreation

Source: USFWS 2015b; DFW 2015b; DFW 2015c
Key:
FE = Federal endangered
FT = Federal threatened
SE = State endangered
ST = State threatened
SSC = State Species of Special Concern
Recreation = non-listed commercially important species of management concern.
Commercial = non-listed recreationally important species of management concern.

The current drought has resulted in a reduction of the cold water pool in Shasta Reservoir. The drought has also resulted in elevated temperatures in the upper reaches of the Sacramento River, which contributed to low survival rates for wild juvenile winter-run Chinook salmon in 2014 and 2015 (State Water Resources Control Board 2015). The Sacramento River Temperature Management Plan, which is required annually, guides the release of water from Shasta Reservoir to maintain healthy fisheries during summer and fall when temperatures rise. In 2015, Reclamation, in coordination with National Marine Fisheries Service (NMFS), the USFWS, DWR, DFW, and the State Water Resources Control Board, modified the previous Shasta Temperature Management Plan in an attempt to better utilize the current cold-water resource and manage the seasonal temperature risks to winter-run Chinook salmon. Reclamation, DWR, the fishery resource agencies, and State Water Resources Control Board are currently preparing a management plan for the Sacramento River for 2016 to ensure the protection of winter-run Chinook

salmon and other salmonids. The plan is required to be submitted to the State Water Resources Control Board for review by March 15, 2016.

2.3.5 Geology and Soils

Soils in the sellers' area (Glenn, Colusa, Yolo, and Sutter counties) are mainly composed of clays, clay loam, silt loam and sandy loam (U.S. Department of Agriculture [USDA], Natural Resource Conservation Service [NRCS] 2009a; 2009b; 2011a and 2012a). These soil types have low to mid-range erodibility and a moderate to high shrink-swell potential (USDA, NRCS 2009c, 2009d, 2009e, and 2009f; 2011b and 2011c; 2012b and 2012c). Strong seismic shaking is not common in the Sacramento Valley, and liquefaction and other seismic-related ground failure are not major hazards in the region. Landslides and other hazards associated with unstable soil are uncommon due to the flat terrain. Dust from agricultural activities, such as plowing, grading, and discing, is a common occurrence in the Sacramento Valley agricultural area, including the project area, and is a normal part of the agriculture practice in the region.

2.3.6 Greenhouse Gas Emissions

The greenhouse gas (GHG) analysis focuses on the following three pollutants: carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). The other two pollutant groups commonly evaluated in various GHG reporting protocols, hydrofluorocarbons and perfluorocarbons, are not expected to be emitted in large quantities as a result of the alternatives and are not discussed further in this section.

California is the second highest emitter of GHG emissions in the United States, only behind Texas; however, from a per capita standpoint, California has the 45th lowest GHG emissions among the states. Worldwide, California is the 20th largest emitter of CO_2 if it were a country; on a per capita basis, California would be ranked 38th in the world (CARB 2014). Agricultural emissions represented approximately eight percent of California's GHG emissions in 2012. Agricultural emissions represent the sum of emissions from agricultural energy use (from pumping and farm equipment), agricultural residue burning, agricultural soil management (the practice of using fertilizers, soil amendments, and irrigation to optimize crop yield), enteric fermentation (fermentation that takes place in the digestive system of animals), histosols (soils that are composed mainly of organic matter) cultivation, manure management, and rice cultivation.

2.3.7 Hydrology and Water Quality

2.3.7.1 Surface Water

The Sacramento River flows south for 447 miles through the northern Sacramento Valley and enters the Delta from the north. The major tributaries to the Sacramento River are the Feather, Yuba, and American rivers. Reclamation owns and operates the CVP, which has major reservoirs on the Sacramento River (Shasta Reservoir) and American River (Folsom Reservoir). DWR owns and operates the SWP, which has a major reservoir on the Feather River (Oroville Reservoir). Figure 2-3 below shows flow and stage (water depth) at Sacramento River at Ord Ferry[1]; Figure 2-4 shows flow and stage at Sacramento River below Wilkins Slough[2]; and Figure 2-5 shows flow and stage at Sacramento River at the Freeport Facility[3]. Figure 2-6 shows the locations of these three stations.

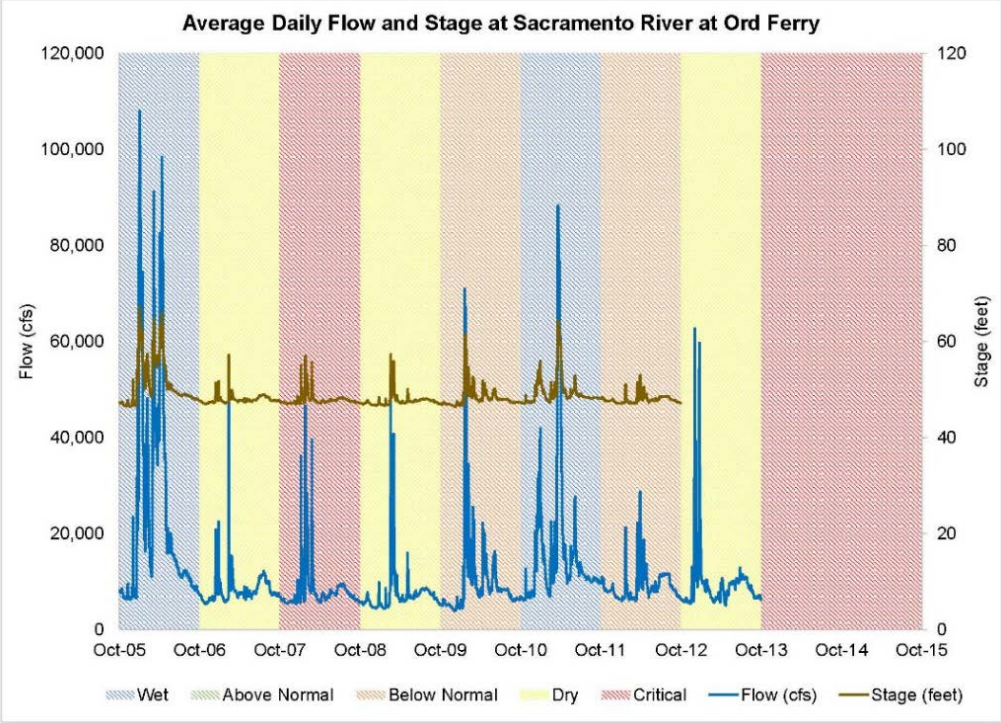

Figure 2.3. Average Daily Flow and Stage at Sacramento River at Ord Ferry

(Source: (U.S. Geological Survey [USGS] 2015a for flow and stage; DWR 2015a for water year type)

[1] Sacramento River at Ord Ferry located 400 miles downstream of the Old Ferry Road Bridge, 0.7 mile east of Ordbend, in Glenn County.

[2] Sacramento River below Wilkins Slough is located 1,200 feet downstream from Wilkins Slough, 5.8 mile southeast of Grimes, and at mile 62.9 upstream from Sacramento, in Colusa County.

[3] Freeport Facility is located south of Sacramento on the Sacramento River. The Freeport Facility is a cooperative effort between SCWA and EBMUD. This project was completed in 2011 and EBMUD started operating the facility for the first time in 2014. EBMUD will use the Freeport Facility to provide additional water to meet customer demands during dry years.

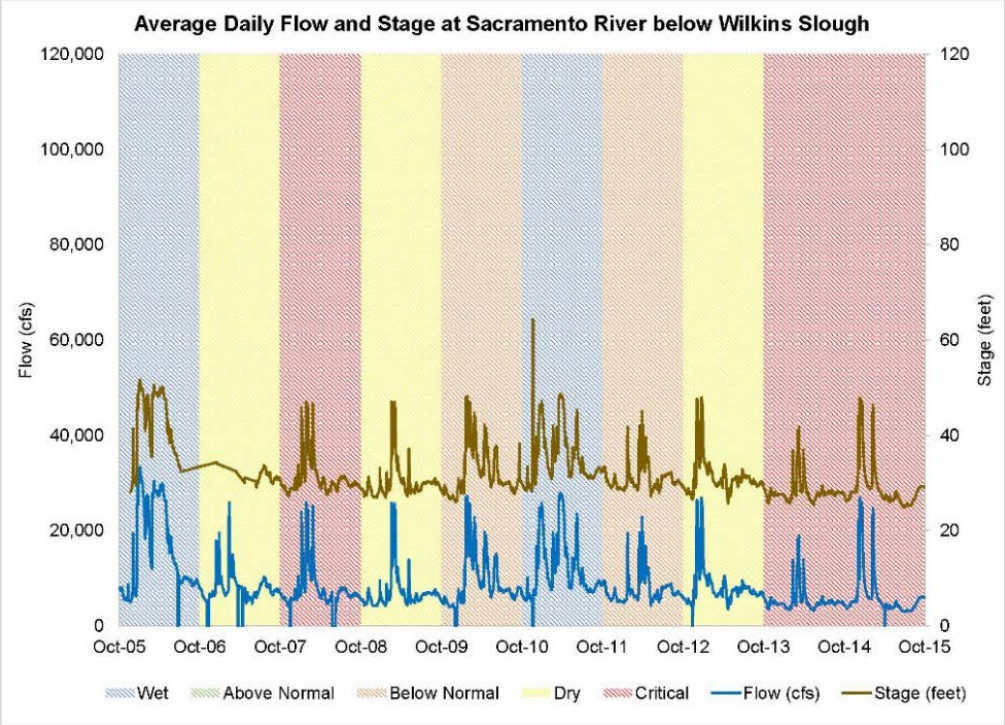

Figure 2.4. Average Daily Flow and Stage at Sacramento River below Wilkins Slough
(Source: USGS 2015a; for flow and stage; DWR 2015a for water year type)

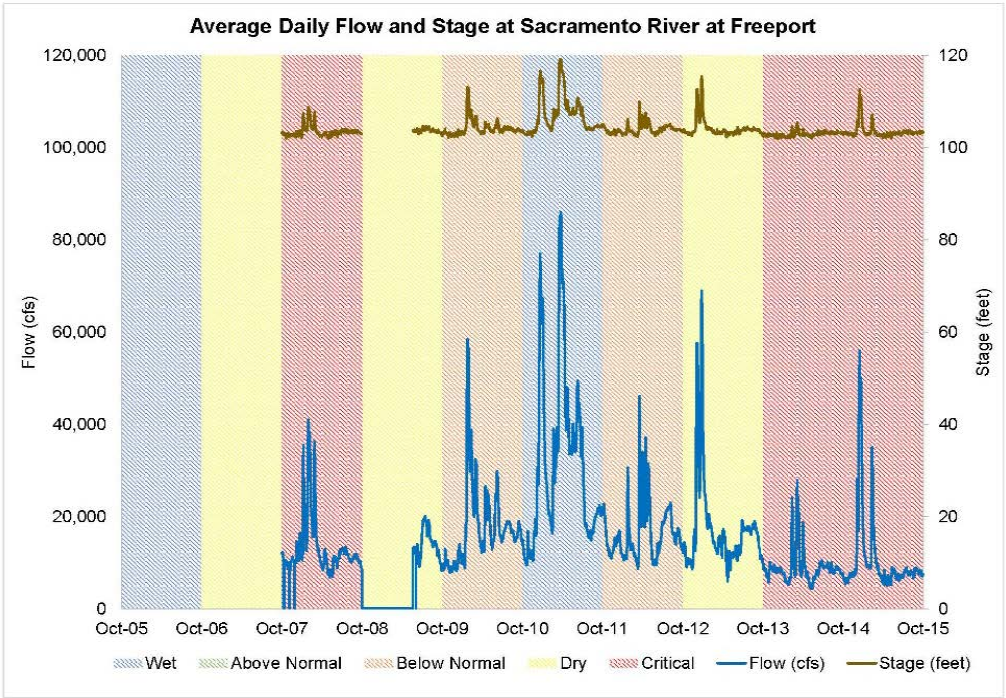

Figure 2.5. Average Daily Flow and Stage at Sacramento River at Freeport
(Source: USGS 2015a; for flow and stage; DWR 2015a for water year type)

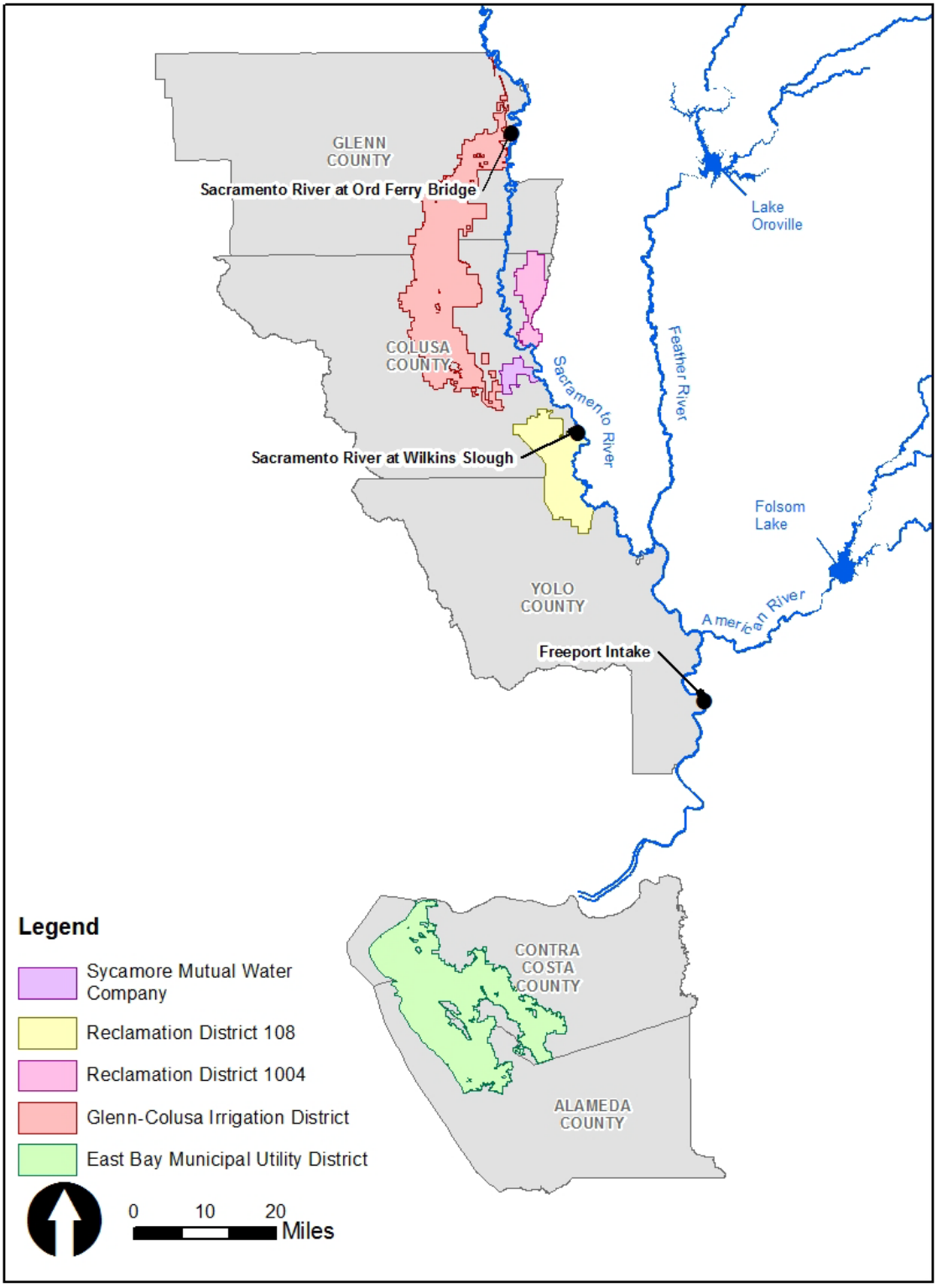

Figure 2.6. Location of USGS Stations

2.3.7.2 Surface Water Quality

Beneficial uses and water quality objectives for waters within the Sacramento River are established in the Water Quality Control Plan (Basin Plan) for the Central Valley Regional Water Quality Control Board (RWQCB). Water quality objectives are designed to protect beneficial uses such as agricultural, municipal, and industrial supply; fish and wildlife; and body contact and noncontact recreation. The Basin Plan contains numerical and narrative water quality objectives for physical and chemical parameters.

The upper regions of the Sacramento River basin generally produce high-quality water suitable for all beneficial uses. Upper water source waters generally have excellent quality. As water flows from the upper watersheds into the Sacramento Valley, water quality typically changes as a result of diversions and return water from agricultural operations. Sacramento River water at the Freeport Facility generally has relatively low concentrations of most constituents compared to the applicable regulatory criteria or guideline values. Sacramento River at the Freeport Facility is listed as impaired for a number of pollutants including mercury and other pesticides. The Freeport Facility EIR/EIS assessed the water quality impacts of raw water diversions from the Sacramento River to EBMUD. Waters diverted from the Freeport Facility for delivery to EBMUD are either stored in the East Bay Reservoirs or treated in the East Bay at EBMUD's water treatment plants to a level that meets or exceeds all federal and state drinking water standards.

2.3.7.3 CVP

Reclamation's Mid-Pacific Region is responsible for managing the CVP, which stores and delivers irrigation water to the Sacramento and San Joaquin valleys and water to cities and industries in Sacramento, the San Joaquin Valley, and the east and south Bay Areas. The CVP also delivers water to fish hatcheries and wildlife refuges throughout the Central Valley, and for protection, restoration and enhancement of fish, wildlife, and associated habitats in the Central Valley. The CVP and facilities include 20 dams and reservoirs, 11 power plants, and 500 miles of major canals and conduits and diversion pumps in the Delta to deliver water to users in the San Joaquin Valley and San Francisco Bay Area.

There are approximately 270 water contracts or agreements for the delivery of CVP or water rights water; including water service contracts, water rights or settlement contracts on the Sacramento, San Joaquin, and Stanislaus Rivers, Friant Division water repayment contracts, and contracts or agreements for wildlife refuges.

Settlement contracts on the Sacramento River include a base supply component for which they are not charged. This represents an agreed upon amount as part of a settlement reached pursuant to a 1956 study on the nature and extent of water rights in the Sacramento River Basin, and an additional CVP component for which they are charged.

The Exchange Contractors on the San Joaquin River receive CVP water from the Delta Mendota Canal (DMC) at no charge in exchange for their water rights water which is diverted and sold to the Friant Division contractors. South of Delta Settlement Contractors receive a quantity of CVP water through the DMC (or Millerton if DMC supplies are not sufficient) at no charge in replacement of their water rights water, which is diverted and sold to the Friant Division contractors.

The Central Valley Project Improvement Act (CVPIA) requires Reclamation to provide two types of refuge water supply: Level 2, which was to derive primarily from CVP yield, and Incremental Level 4 which was to be acquired, and was an additional amount above Level 2. Combined, these Level 2 (422,000 AF) and Incremental Level 4 (133,000 AF) amounts total some 555,515 AF of annual allocation. Almost all of the Level 2 requirement is secure and annually received by refuges, due to long-term contracts with the Reclamation; Incremental Level 4 allocations are acquired each year from willing sellers and are variable depending on availability and funding.

CVP water allocations for agricultural, environmental, municipal and industrial (M&I) users vary year to year based on factors such as hydrology, water rights, reservoir storage, environmental considerations, and operational limitations. Each year Reclamation determines the amount of water that can be allocated to each type of contractor or CVP use based on conditions for that year. Water shortages lead to severe water constraints especially in the southern portion of the CVP. Table 2-9 summarizes Reclamation's deliveries from 2008 to 2013.

Table 2-9. CVP Water Deliveries 2008 through 2013 (acre-feet)

Year	Year Type[1]	CVP Delivery
2008	C	5,316,167
2009	D	4,900,789
2010	BN	5,590,610
2011	W	6,328,195
2012	BN	4,648,840
2013	D	4,764,307

Source: Reclamation 2015c
Notes:
[1] Based on the Sacramento Valley Water Year Index (DWR 2015a)
Key:
C = Critical
D = Dry
BN = Below Normal
AN = Above Normal
W = Wet

In November 2015, Reclamation signed a Record of Decision for the CVP Municipal and Industrial Water Shortage Policy (M&I WSP) EIS (Reclamation 2015d). In some dry years, there may not be sufficient water supplies for all

CVP contractors to receive their full requested amount, and Reclamation may limit the allocations to CVP contractors. The M&I WSP specifies how CVP allocations will be reduced during droughts depending on the quantity of CVP water available. The M&I WSP includes a stepdown approach for allocating water between irrigation and M&I contractors, depending on the severity of the water shortage condition. The M&I WSP applies to CVP water service and irrigation contractors whose contracts currently reference the M&I WSP. These water users are located throughout the Sacramento River Valley, San Joaquin River Valley, Tulare Lake Region, and San Francisco Bay/Central Coast area, including EBMUD.

EBMUD has generally not taken CVP water due to lack of delivery facilities. However, with the completion of the Freeport Facility in 2011, EBMUD now has the ability to take delivery of CVP water from the Sacramento River in dry years. 2014 and 2015 were the first two years EBMUD took water under its CVP contract (Contract No. 1406-200-5183A-LTR1) at the Freeport Facility to meet the water supply needs of its customers. SCWA, EBMUD's partner agency in the Freeport Facility, is also a CVP contractor and has taken delivery of a combination of non-CVP and CVP water supplies via the Freeport Facility since 2011. The quantities of surface water SCWA has diverted has varied from 7 million gallons per day (MGD) to 15 MGD based on water supply needs and availability of sources.

2.3.7.4 SWP

DWR operates the SWP, which is a water storage and delivery system of reservoirs, aqueducts, power plants and pumping plants. It extends for more than 600 miles, two-thirds the length of California. DWR administers long-term water supply contracts to 29 local water agencies for water service from the SWP. The SWP provides water to urban and agricultural water suppliers in Northern California, the San Francisco Bay Area, the San Joaquin Valley, the Central Coast, and Southern California. Of the contracted water supply, 70 percent goes to urban users and 30 percent goes to agricultural users.

The SWP's water supply capability depends on rainfall, snowpack, runoff, reservoir storage, pumping capacity from the Delta, and legal environmental constraints on project operations. Project water supply comes from storage at Lake Oroville and high runoff flows in the Delta. Water deliveries have ranged from 1.4 million acre-feet in dry years to almost 4.0 million acre-feet in wet years. Table 2-10 shows deliveries provided to SWP long-term water service contractors from 2005 to 2015.

Table 2-10. SWP Deliveries from 2005 through 2015 (acre-feet)

Year	Year Type[1]	SWP Delivery[2]
2005	AN	4,726,363
2006	W	4,827,082
2007	D	4,061,696
2008	C	2,838,128
2009	D	2,918,058
2010	BN	3,505,140
2011	W	4,630,798
2012	BN	3,967,453
2013	D	1,460,342[3]
2014	C	208,628[3]
2015	C	839,566[3]

Source: DWR 2015b

Notes:

[1] Based on the Sacramento Valley Water Year Index (DWR 2015a)

[2] Includes Table A deliveries, Article 21/Unscheduled deliveries, and other SWP water deliveries for years 2005-2012, where information was available from Bulletin 132

[3] Post-delivery accounting not available; based on projected Table A deliveries (DWR 2013a, DWR 2014a, DWR 2015c)

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Chapter 3
Environmental Impacts

The following sections use the checklist from Appendix G of the CEQA Guidelines as a template to assess potential environmental effects under CEQA. The discussion for each resource focuses on potential impacts; resources that would not be affected are briefly discussed.

I. AESTHETICS
-- Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings, or other locally recognized desirable aesthetic natural feature within a city-designated scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

a, b, d) No Impact

The Proposed Project would not affect any scenic vista, damage scenic resources, or create a new light source. The Proposed Project would not affect scenic vistas relative to rivers or reservoirs because there would be no changes beyond historical or seasonal fluctuations in flows or water levels. The changes to water levels in the Sacramento River would be about 0.1 to 0.3 feet, depending on the location and baseline flows in the river (USGS 2015a). The Proposed Project does not result in any construction or new structures that could damage scenic resources (i.e., trees, rock outcroppings, historic buildings, etc.) or produce notable sources of light or glare.

c) Less than Significant

Cropland idling transfers in the Proposed Project would temporarily increase the amount of idled lands in the sellers' area. Idled lands are typical features of agricultural landscapes as part of normal cultivation practices. The crop pattern resulting from the Proposed Project would likely be indistinguishable from those under normal cropping patterns. This impact would be less than significant as there would be no substantial changes or degradation to the visual character and quality of the sites or their surroundings, relative to typical cultivation practices in the area.

II. AGRICULTURE AND FOREST RESOURCES:
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

	Potentially Significant Impact	**Less Than Significant with Mitigation Incorporation**	**Less Than Significant Impact**	**No Impact**
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

a, b, e) No Impact

Cropland idling could result in the conversion of land from Prime Farmland, Farmland of Statewide Importance, or Unique Farmland to Farmland of Local Importance or Grazing Land if the crop field was idled for four years in a row prior to the mapping date. Cropland idling would not convert land to Urban and Built-Up Land, which would be considered a non-agricultural use. Farmland of Local Importance is generally land of importance to the local agricultural economy and specifically defined by individual counties. The following are the definitions of Farmland of Local Importance, provided by Glenn, Colusa, Sutter and Yolo counties.

Glenn - Local Importance lands includes all lands not qualifying for Prime, Statewide, or Unique that are cropped on a continuing or cyclic basis (irrigation is not a consideration). All cropable land within Glenn County water district boundaries not qualifying for Prime, Statewide, or Unique. Local Potential lands includes all lands having Prime and Statewide soil mapping units which are not irrigated, regardless of cropping history or irrigation water availability (California Department of Conservation 2014).

Colusa - Farmland of Local Importance includes all farmable lands within Colusa County that do not meet the definitions of Prime, Statewide, or Unique, but are currently irrigated pasture or nonirrigated crops; or nonirrigated land with soils qualifying for Prime Farmland or Farmland of Statewide Importance; or lands that would have Prime or Statewide designation and have been improved for irrigation but are now idle; or lands with a General Plan Land Use designation for agricultural purposes; and lands that are legislated to be used only for agricultural (farmland) purposes (California Department of Conservation 2014).

Sutter - The Board of Supervisors determined that there will be no Farmland of Local Importance for Sutter County (California Department of Conservation 2014).

Yolo - Local Importance includes cultivated farmland having soils which meet the criteria for Prime or Statewide, except that the land is not presently irrigated, and other nonirrigated farmland. Local Potential includes Prime or Statewide soils which are presently not irrigated or cultivated (California Department of Conservation 2014).

One-year water transfers under the Proposed Project would temporarily idle crops, but would not affect the long-term agricultural uses of the land. There would be no permanent changes of land to a non-agricultural use. Consecutive cropland idling could change the FMMP classification of Prime Farmland, Farmland of Statewide Importance, or Unique Farmland to Farmland of Local Importance or Grazing Land, but these classifications represent agricultural uses. Idled land could then be reclassified as Prime Farmland, Farmland of Statewide Importance, or Unique Farmland in future FMMP classification cycles if it is irrigated. Cropland idling would not change the long-term designations of Prime Farmland, Farmland of Statewide Importance or Unique Farmland to a non-agricultural use.

Table 3-1 shows the amount of cropland idling acreage for transfers the sellers participated in for 2014 and 2015. There were no cropland idling transfers by the sellers in 2011 through 2013. Because the sellers did not idle crops in 2013, crops would have been irrigated in the previous four years and classification would not change in 2016. The Proposed Project would have no impact on classification of Prime Farmland, Farmland of Statewide Importance, or Unique Farmland.

Table 3-1. 2014 and 2015 Sellers' Cropland Idling Acreages

	Glenn-Colusa Irrigation District		Reclamation District 108		Reclamation District 1004		Sycamore Mutual Water Company	
Crop Idled	**2014 (acres)**	**2015 (acres)**	**2014 (acres)**	**2015 (acres)**	**2014 (acres)**	**2015 (acres)**	**2014 (acres)**	**2015 (acres)**
Alfalfa	7	36	0	154	0	0	0	0
Corn	61	58	387	0	0	0	0	0
Rice	5,771	17,118	6,278	8,824	0	2,671	0	1,412
Sudan Grass	132	367	0	0	0	0	0	0
Sunflower	14	0	0	0	0	0	0	0
Tomato	0	131	0	74	0	0	0	178
Vineseed	0	18	0	0	0	0	0	0
Wheat	0	0	0	149	0	0	0	0

Similarly, a cropland idling transfer would not affect agricultural zoning of any land or land enrolled in the Williamson Act because it would not change the land to a non-agricultural use. Idled land could be planted and irrigated in a subsequent year.

c, d) No Impact

The Proposed Project would have no impact to existing forest lands or timber, as the proposed water transfer methods do not pertain to such lands or resources.

III. AIR QUALITY

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non--attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

a-d) Less than Significant Impact

The Proposed Project would not result in changes in EBMUD's operations within its service area in a way that would increase air pollutant emissions. Accordingly, this analysis focuses on potential air quality impacts within the sellers' service areas. Under the Proposed Project, sellers would idle fields which could reduce farm vehicle exhaust emissions but could increase fugitive dust emissions from wind erosion of barren fields.

The Northern Sacramento Valley Planning Area has jointly committed to preparing and adopting an Air Quality Attainment Plan (AQAP) to achieve and maintain healthful air in Shasta, Tehama, Glenn, Butte, Colusa, Sutter, and Yuba counties. Yolo/Solano AQMD has also adopted various air quality plans to achieve State and Federal attainment status. As part of these plans, several control measures were adopted by the various counties to attain and maintain air quality standards. These control measures are then promulgated in the rules and

regulations at each air district; therefore, if a Proposed Project is consistent with the air districts' and State regulations, then the project is in compliance with the AQAP.

Cropland idling transfers could reduce vehicle exhaust emissions from reduced farm operations in the seller service area. Additionally, crop idling would decrease fugitive dust emissions associated with land preparation and harvesting, but could also increase fugitive dust emissions from wind erosion of idled fields in the seller service area. Table 3-2 summarizes daily fugitive dust emissions that would occur from water transfers. Appendix C provides detailed calculations for fugitive dust emissions for the Proposed Project. There would be an overall decrease in fugitive dust emissions in the sellers' area. Because the Proposed Project would result in net decreases in air pollutant emissions, it would be consistent with applicable air quality plans, regulations, and standards. As such, impacts would be less-than-significant.

Table 3-2. Changes in Daily Fugitive Dust Emissions from Cropland Idling (pounds/day)[1]

Water Agency	PM_{10} Emission Changes from Reduced Land Preparation/ Harvesting	PM_{10} Increased Emission from Windborne Erosion	Total Change in PM_{10} Emissions	$PM_{2.5}$ Emission Changes from Reduced Land Preparation/ Harvesting	$PM_{2.5}$ Increased Emission from Windborne Erosion	Total Change in $PM_{2.5}$ Emissions
Glenn-Colusa Irrigation District	(320)	71	(249)	(48)	14	(34)
Reclamation District 108	(160)	20	(140)	(24)	4	(20)
Reclamation District 1004	(144)	22	(122)	(22)	4	(16)
Sycamore Mutual Water Company	(96)	21	(75)	(14)	4	(10)
Total	**(720)**	**134**	**(586)**	**(108)**	**26**	**(80)**

Note: [1] Emission reductions (beneficial impacts) are shown in parentheses.
Key:
PM_{10} = inhalable particulate matter; $PM_{2.5}$ = fine particulate matter

e) No Impact

Water transfer activities under Proposed Project would not create objectionable odors affecting a substantial number of people.

IV. BIOLOGICAL RESOURCES
– Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in City or regional plans, policies, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	☐	☐	☒	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
d) 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?	☐	☒	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☒	☐

a) Less than Significant Impact

Potential Effects to Aquatic Species

Under baseline conditions, water proposed for transfer to EBMUD would instead be diverted by SRSC for irrigation purposes at their respective points of diversion approximately 100 miles north of the Freeport Facility on the Sacramento River. Thus, if the Proposed Project were not carried out, water that would otherwise have been transferred to EBMUD would not flow down the Sacramento River past those points of diversion, thereby not contributing to Sacramento River flows below the points of diversion or to Delta inflow. As a result, the Proposed Project's only potential impacts upon sensitive species and habitat along the Sacramento River and in the Delta, if any, would result either from (1) changes in flow that would occur between SRSC points of diversion and the Freeport Facility intake, and/or (2) changes in the timing of flow between Shasta Reservoir and SRSC points of diversion that could occur if releases and deliveries of transfer water from Shasta Reservoir were delayed by Reclamation in consultation with the fisheries Resource Agencies. Table 2-8 lists sensitive fish species that could be affected by changes in flow in the Sacramento River. These potential impacts are discussed below in more detail.

There are two potential operation scenarios that could occur with implementation of the proposed transfers, and impacts to sensitive species could vary depending on which flow regime is ultimately chosen. First, transfer water could be released from Shasta Reservoir based on the agricultural irrigation pattern for sellers. Second, at the request of the fishery Resource Agencies, Reclamation could hold the transfer water in Shasta Reservoir over the summer to be released later in the season, on a schedule determined by the Resource Agencies to benefit special status species. The second operational scenario is similar to what occurred in 2014 and 2015 when Reclamation, in coordination with the Resource Agencies, delayed beginning releases of some SRSC transfer water until late summer/early fall to help preserve the cold water pool in Shasta Reservoir and time the releases in an effort to support winter-run Chinook salmon. Under the second operational scenario, flows in the Sacramento River would increase from Shasta Reservoir to the Freeport Facility intake in late summer/early fall due to the change in timing of transfer releases.

Under either operational scenario, Sacramento River flows would slightly increase (maximum of 155 cfs) from the sellers' points of diversion to the Freeport Facility once the transfer water is released from Shasta Reservoir, but the timing of that increase would differ. Impacts under both potential flow regimes are considered below.

Irrigation Pattern Operation Scenario - Under the Proposed Project, transfer water could be released from Shasta Reservoir based on agricultural irrigation patterns. The largest quantity of transfer water would be made available in July and August. EBMUD anticipates diverting transfer water at the Freeport

Facility intake at a maximum rate of 155 cfs. Therefore, the transfer of water to EBMUD would result in temporary increases in flow in the Sacramento River between the sellers' diversion points and the Freeport Facility intake.

Table 3-3 shows average monthly flows in the Sacramento River at Wilkins Slough and Freeport from May through September in 2014 and 2015 (DWR California Data Exchange Center 2015a; 2015b). Water transfers would increase flows in the Sacramento River according to the agricultural pattern, up to a maximum increase of 155 cfs during July and August. The Proposed Project would increase Sacramento River flows in these locations from one to five percent.

Table 3-3. Average Estimated Monthly Increases in Sacramento River Flows (cfs) at Wilkins Slough and Freeport (May-September) with Transfers Delivered on Irrigation Schedule

	2014 Flow At Wilkins Slough (cfs)	Flow Increase from Transfers	2014 Flow At Freeport (cfs)	Flow Increase from Transfers	2015 Flow At Wilkins Slough (cfs)	Flow Increase from Transfers	2015 Flow At Freeport (cfs)	Flow Increase from Transfers
May	3,658	2.7%	5,644	1.7%	4,180	2.3%	7,070	1.4%
June	5,050	2.9%	8,853	1.7%	3,503	4.2%	6,715	2.2%
July	4,858	3.2%	8,852	1.8%	3,127	5.0%	7,550	2.1%
August	4,824	3.2%	8,461	1.8%	4,037	3.8%	7,556	2.1%
September	4,893	2.1%	8,249	1.2%	5,917	1.7%	7,864	1.3%

Source: DWR California Data Exchange Center 2015a; 2015b

Because this increase is minor relative to overall river flow (one to five percent of river flow) releasing the transfer water on the irrigation pattern flow regime would not be expected to affect the suitability of habitat conditions for special status fish. Adult migration by Chinook salmon, steelhead, and green sturgeon would not be affected by slightly higher flows. This magnitude of flow increase would also not appreciably reduce spawning habitat availability and incubation, increase redd dewatering or juvenile stranding, or reduce the suitability of habitat conditions during juvenile rearing of these species. Other special status fish species, including hardhead and Sacramento splittail would also not be affected by small changes in river flow. Because changes in flow are so minor, impacts to special status aquatic species would be less-than-significant. Changes in flow upstream of the Freeport Facility would not affect delta smelt or longfin smelt spawning or rearing because spawning has a low probability of occurring near the intake facility location and juvenile and adult smelt rear in the Delta downstream of the proposed intake location. The Proposed Project would cause less than significant impacts to sensitive aquatic species, including special-status fish species (as identified in Table 2-8).

Delayed Release Operation Scenario - If water is held in Shasta Reservoir to be released based upon a schedule determined by the fisheries Resource Agencies, Sacramento River flows from Shasta Reservoir to the diversion point (absent a transfer) would slightly decrease relative to baseline conditions until water releases begin. The decreases in flow would vary by month according to the agricultural pattern up to a maximum of 155 cfs in July and August. Tables 3-4 and 3-5 show average monthly flow increases, decreases, and net change in percent in the Sacramento River at Bend Bridge and Hamilton City, near the Glenn-Colusa Irrigation District diversion point, from May through November in 2014 and 2015 (DWR California Data Exchange Center 2015c; 2015d).

Table 3-4. Average Estimated Monthly Changes in Sacramento River Flows (cfs) at Bend Bridge (May-November) with Delayed Transfer Delivery Schedule

	2014 Flow At Bend Bridge (cfs)	Flow Decrease from Transfers	Flow Increase from Transfers[1]	Net Change in Flow from Transfers	2015 Flow At Bend Bridge (cfs)	Flow Decrease from Transfers	Flow Increase from Transfers[1]	Net Change in Flow from Transfers
May	7,949	1.2%	0%	-1.2%	8,010	1.2%	0%	-1.2%
June	9,903	1.5%	0%	-1.5%	7,540	2.0%	0%	-2.0%
July	9,903	1.6%	0%	-1.6%	7,365	2.1%	0%	-2.1%
August	8,552	1.8%	1.8%	0%	7,319	2.1%	2.1%	0%
September	6,349	1.6%	2.4%	0.9%	7,294	1.4%	2.1%	0.7%
October	5,702	0%	2.7%	2.7%	6,939	0%	2.2%	2.2%
November	5,693	0%	2.7%	2.7%	5,355	0%	2.9%	2.9%

*Source: DWR California Data Exchange Center 2015c*Notes:

[1] Flow increases would begin at the request of the Resources Agencies in August or at any time until November. This schedule reflects the earliest potential delivery schedule, which would have the greatest potential effect on flows.

Table 3-5. Average Estimated Monthly Changes in Sacramento River Flows (cfs) at Hamilton City (May-November) with Delayed Transfer Delivery Schedule

	2014 Flow At Hamilton City (cfs)	Flow Decrease from Transfers	Flow Increase from Transfers[1]	Net Change in Flow from Transfers	2015 Flow At Hamilton City (cfs)	Flow Decrease from Transfers	Flow Increase from Transfers[1]	Net Change in Flow from Transfers
May	5,408	1.8%	0%	-1.8%	5,814	1.7%	0%	-1.7%
June	6,957	2.1%	0%	-2.1%	5,190	2.9%	0%	-2.9%
July	6,931	2.2%	0%	-2.2%	4,948	3.1%	0%	-3.1%
August	6,246	2.5%	2.5%	0%	5,365	2.9%	2.9%	0%
September	5,249	1.9%	3.0%	1.0%	6,220	1.6%	2.5%	0.9%
October	4,817	0%	3.2%	3.2%	6,119	0%	2.5%	2.5%
November	5,443	0%	2.8%	2.8%	4,846	0%	3.2%	3.2%

Source: DWR California Data Exchange Center 2015d

Notes:

[1] Flow increases would begin at the request of the Resources Agencies in August or at any time until November. This schedule reflects the earliest potential delivery schedule, which would have the greatest potential effect on flows.

A reduction of up to 155 cfs would be a one to three percent decrease in average monthly Sacramento River flows relative to 2014 and 2015 flows. This magnitude of flow decrease would not be anticipated to affect the suitability of habitat conditions for special status fish. Small changes in flow would not appreciably reduce spawning habitat availability and incubation, increase redd dewatering or juvenile stranding, or reduce the suitability of habitat conditions for juvenile rearing or adult migration by Chinook salmon, steelhead, and green sturgeon. Nor would these small, temporary flow reductions be expected to adversely affect other aquatic species referenced in Table 2-8. Flows along this stretch of the Sacramento River would remain adequate to support these species.

Storing transfer water in Shasta could help preserve the cold water pool in the reservoir, and the transfer water would be released later in the season, in conjunction with other water transfers, at a schedule to be determined through consultation with the fisheries Resource Agencies in an effort to support winter-run Chinook salmon. The maximum release for the Proposed Project would be 155 cfs, and the diversion could start as early as August and depending on when releases began, and could continue through February 2017. The increase in flow due to the Proposed Project after releases begin would be 2 to 3 percent of Sacramento River flows in August and September compared to 2014 and 2015 flows. Increases in flow resulting from the delayed release of transfer water from Shasta Reservoir when winter-run Chinook salmon are expected to be present in the Sacramento River could benefit the species. This operational scenario would only occur if the Resources Agencies determine that it would help preserve the cold water pool and decrease temperatures in the Sacramento River. The Proposed Project (in conjunction with other transfers) would contribute to this effect, but the Proposed Project alone would have a minimal effect. The Proposed Project would not have any adverse effects on winter-run Chinook salmon.

The changes in Sacramento River flows under both operation scenarios would not negatively affect any special-status fish species that may occur because the flow changes would be quite small relative to existing flows in the river. There would be no effect on adult migration or suitability of spawning or juvenile rearing habitat for Chinook salmon, steelhead, or green sturgeon. Other special-status fish species, including hardhead, and Sacramento splittail, would also not be affected by small changes in river flow. Reclamation is consulting frequently with USFWS and NMFS on CVP and SWP operations relative to the biological opinions and special status fish species.

Under both baseline and Project conditions, Delta conditions would remain unchanged because the transfer water would be diverted upstream (under the baseline conditions) or at the Freeport Facility which is located on the northern edge of the Delta. As a result, special-status fish species, including Delta smelt and longfin smelt, in the Delta would not be affected by the Proposed Project.

All water diverted into the Freeport Facility intake passes through a state of the art fish screen designed to prevent impingement and entrainment of fish. The fish screen is in compliance with design criteria and guidelines issued by the DFW, USFWS, and NMFS. The Freeport Facility EIR/EIS considered the potential for impacts to local aquatic species that could result from entrainment or impingement during operations and concluded impacts would be less-than-significant. Because the maximum diversions at the Freeport Intake, including the Proposed Project, would be below the values considered in Freeport Facility EIR/EIS, the current fish screen will adequately protect fish from impingement and entrainment at the Freeport Facility Intake and effects would be less than significant.

Potential Effects to Riparian Habitat or Seasonal Wetlands from Changes in Flow

Under either operation scenario described above, Sacramento River flows and water levels in the Shasta Reservoir would not be altered enough to affect associated valley/foothill riparian or seasonal wetlands. The temporary increase in storage in Shasta Reservoir is within the range of storage/water surface elevations that occur under annual normal operations and would not change existing conditions; therefore, the Proposed Project would not affect riparian vegetation or seasonal wetlands near the reservoir.

Alteration of the magnitude, frequency, and dynamics of river flows has been shown to result in effects to riparian vegetation through changes in water availability, sediment transport and deposition, and distribution of vegetation. However, decreases in flows in the Sacramento River would be small (ranging from one to three percent of flows in 2014 and 2015). The small flow changes under the Proposed Project would not affect riparian vegetation because they are not of the magnitude to affect geomorphic processes or riparian recruitment. Therefore, the Proposed Project would have less than significant impact on riparian habitat associated with the Sacramento River.

Potential Effects to Terrestrial Habitat from Cropland Idling and Shifting

Cropland idling and shifting transfers under the Proposed Project could affect special-status species and other migratory birds. Many different crops provide forage, resting, and nesting habitat different types of wildlife. Agricultural canals and ditches can also contain wetland vegetation, such as cattails, which provide cover for animals. Canals and ditches also provide forage, resting, nesting habitat and movement corridors for a variety of species (e.g., Pacific pond turtle, giant garter snake, tricolored blackbird, waterfowl, and wading birds), and could serve as migration corridors for various species of wildlife.

Table 2-2 lists crops eligible for idling or shifting. The potential impacts of idling and shifting vary depending upon the crops involved. Impacts can generally be divided into two categories: those associated with rice

idling/shifting, and those associated with idling and shifting of various crops in upland areas. Each is addressed in turn below.

Idling and Shifting in Upland Areas

The maximum potential acreage of upland crop that could be idled under the Proposed Project would be 400 acres of tomatoes and vine crops, 400 acres of corn, beans, sunflower, safflower, and wheat and 1,400 acres of alfalfa and sudan grass, for a total of 2,200 acres. The acreage proposed for idling upland crops is well within the historic range of variation for the individual crops in seller's service areas. Cropland idling in Glenn, Colusa, Sutter and Yolo Counties could result in a small loss of residual feed based on the amount of acreage idled relative to the total acreage in the three counties; however, most forage and other habitat would still be available to wildlife species within the Sacramento Valley.

Where cropland forage areas are reduced, species would respond by looking for forage in other habitats. The bird species that would be potentially affected by idling of upland crops would be capable of dispersing to other areas or other non-idled parcels. Most species are well adapted to changes in environmental conditions such as drought and flooding, and therefore, use of specific areas can vary greatly from year to year depending on habitat conditions. Cropland idling decisions would be made early in the year before the general breeding season of most birds that have the potential to occur in the area of analysis, and therefore impacts to nesting birds would not be expected. An Environmental Commitment would also further protect bird species from effects of upland crop idling because it requires sellers to minimize idling near known wintering areas that support high concentrations of waterfowl and shorebirds, in order to continue to provide over winter forage.

Impacts to birds and nesting habitat from cropland idling would not be anticipated, as actively managed croplands are not generally suitable nesting habitat for most bird species. One exception is the tricolored blackbird, which can form large colonies in croplands such as dairy silage. Idling cropland would avoid impacts that can occur when the species nests within croplands that are then harvested, destroying the nests and young. Impacts to species that depend on croplands for food during the nesting season would be less than significant because a limited amount of crop acreage would be idled and foraging habitat would be available elsewhere, as described above.

Idling upland crops could also result in the loss of water within adjacent agricultural irrigation and return ditches. The potential reduction in flows resulting from idling of seasonally irrigated crops could reduce habitat for those species that rely on habitat dependent on agricultural return flows. An Environmental Commitment requires sellers to keep adequate water in major irrigation and drainage canals to maintain movement corridors and shelter for

special status species. This Environmental Commitment would reduce potential effects from reduction in flows in agricultural ditches due to idling.

For crop shifting transfers, growers would continue to plant a crop that could provide feed for upland species; therefore, impacts of crop shifting would also be less than significant.

Because of the limited amount of upland crop acreage that would be idled, because it would be within the historical variation of annual crop acreages, and in conjunction with implementation of the Environmental Commitments discussed, idling and shifting non-rice crops in the sellers' area would have a less than significant impact on wildlife species and special status species dependent on upland cropland habitat.

Rice Idling and Shifting

Rice is the most likely crop to be idled for 2016 transfers. Rice fields are seasonally flooded agricultural areas and provide important foraging habitat for many wildlife species, including special-status species, during all times of the year. Rice fields provide important foraging habitat for many wildlife species because of the availability of waste grain and small fish, amphibians, small mammals, and invertebrates that live in the flooded fields and canal banks and berms. Rice fields also provide resting, nesting, and breeding habitat similar to natural wetlands, and idling and crop shifting can lead to habitat fragmentation that results in impediments to wildlife movement and migration and negative changes to seasonally flooded agricultural habitat communities. Rice idling could reduce the habitat available for special-status reptiles including GGS and Pacific pond turtle and special-status birds that use flooded rice fields during the summer months.

Rice idling could affect special status species that use rice fields for forage, cover, nesting, breeding, or resting. Under the Proposed Project, a maximum of 12,121 acres of rice could be idled in Colusa, Glenn, Sutter and Yolo counties. Table 3-6 shows the annual rice acreages in Glenn, Colusa, Sutter, and Yolo counties from 2002 to 2013.

Table 3-6. Annual Harvested Rice Acreage by County in Sellers' Area

Year	Glenn	Colusa	Sutter	Yolo	Total
2002	92,382	134,300	96,224	32,446	355,352
2003	87,793	127,350	93,654	37,303	346,100
2004	86,017	150,130	121,131	45,655	402,933
2005	88,876	136,400	97,801	34,670	357,747
2006	82,436	142,600	92,984	29,997	348,017
2007	82,668	148,550	108,241	32,660	372,119
2008	77,770	150,200	92,344	30,057	350,371
2009	89,483	152,400	109,766	36,593	388,242
2010	88,209	154,000	115,000	41,400	398,609
2011	84,900	149,000	112,000	42,500	388,400
2012	84,800	150,000	116,000	40,500	391,300
2013	85,300	149,000	116,000	38,400	388,700
Average (2009-13)	86,538	150,880	113,753	39,879	391,050

Source: USDA 2003-2015

Giant Garter Snake

Rice idling/shifting could affect the GGS that use flooded rice fields for foraging and protective cover habitat during the summer months. GGS require water during their active phase, extending from spring until fall. During the winter months, GGS are dormant and occupy burrows in upland areas. While the preferred habitat of GGS is natural wetland areas with slow moving water, GGS use rice fields and their associated water supply and tail water canals as habitat, particularly where natural wetland habitats are not available. Because of the historic loss of natural wetlands, rice fields and their associated canals and drainage ditches have become important habitat for GGS.

Rice idling/shifting would affect available habitat for GGS. The GGS displaced from idled rice fields would need to find other areas to live and may face increased predation risk, competition, and reduced food supplies. This may lead to increased mortality, reduced reproductive success, and reduced condition prior to the start of the overwintering period. Rice idling/shifting transfers would be subject to the Environmental Commitments described in Section 2.2, which include numerous measures to protect GGS.

As included in the Environmental Commitments, Reclamation will coordinate with USFWS and GGS experts to identify priority suitable habitat for GGS and discourage idling in those priority areas. The Environmental Commitment requires sellers to ensure that priority habitat areas with a high probability for GGS occurrence will not be idled. Recent work by the USGS suggests that giant garter snake are most likely to occur within areas of historic tule marsh, and the likelihood of encountering them drops substantially with distance from these areas of historic habitat (Halstead et al. 2014). Therefore, the Environmental Commitment to minimize idling in priority habitats, such as lands adjacent to naturalized lands and refuges and corridors between these areas, and areas of historic tule marsh would protect areas with high likelihood

of GGS occurrence. Implementation of Environmental Commitments will also protect movement corridors for GGS by maintaining water in irrigation ditches and canals. This Environmental Commitment also keeps emergent aquatic vegetation intact for giant garter snake escape cover and foraging. By maintaining water in agricultural ditches, some GGS would successfully relocate to find alternate forage, cover, and breeding areas. The Environmental Commitments also help minimize impacts to GGS by requiring sellers to ensure that adequate water is available for priority habitat areas by preventing Sellers from idling lands in priority habitat areas with a high likelihood for GGS occurrence, requiring implementation of GGS Best Management Practices (BMPs), and requiring sellers to allow Reclamation to access idled land to verify implantation of the Environmental Commitments.

Rice idling/shifting under the Proposed Project would have a less than significant impact on GGS because the Environmental Commitments would avoid or reduce many of the potential impacts associated with displacement of GGS. Some individual snakes would be exposed to displacement and the associated increased risk of predation, reduced food availability, increased competition, and potentially reduced fecundity. The number of individual snakes affected is expected to be small because Environmental Commitments avoid areas known to be priority habitat for GGS or where GGS populations are known to occur. In addition, a relatively small proportion of the rice acreage (no more than 3 percent of average annual rice acreage from 2009 to 2013) would be affected.

Pacific Pond Turtle

Ditches and drains associated with rice fields provide suitable habitat for the pacific pond turtle. Actions that result in the desiccation of aquatic habitat could result in the turtle migrating to new areas, which in turn puts them at an increased risk of predation. An Environmental Commitment requires that sellers maintain adequate water in major irrigation and drainage canals to provide movement corridors for aquatic species, including the pond turtle. This would be implemented in areas where cropland idling or crop shifting occurs. Canal water depths should be similar to years when transfers do not occur or, where information on existing water depths is limited, at least two feet of water would be sufficient. This Environmental Commitment minimizes impacts to pacific pond turtle because it would maintain aquatic habitat for the turtle and the opportunity to migrate to new areas. Therefore, effects to the pacific pond turtle of cropland idling transfers to would be less than significant.

Special Status Bird Species and Migratory Birds

Many migratory bird species use seasonally flooded agricultural land for nesting and forage habitat during the summer rearing season. Among these are special-status species such as the black tern, which uses flooded rice land and emergent vegetation for foraging (for insects and small vertebrates) and for nesting. Reduction of seasonally flooded agricultural habitat could adversely affect local populations of special status species such as the black tern. However, the

decisions regarding crop shifting/idling would have already been made prior to the onset of the species breeding season (May through August), such that terns returning to the area would be able to select appropriate nesting sites for that year. The maximum amount of rice idling would be 12,121 acres, which is a small percentage of the average acreage (391,050 acres) of rice harvested in the project vicinity. Therefore, nesting habitat would be available in active rice fields nearby. This species would also benefit from Environmental Commitments aimed at the protection of GGS because commitments would minimize idling near wildlife refuges and areas of historic tule marsh that provide important habitat for terns. The Environmental Commitment to maintain water in canals near idled fields would also protect the tern by supporting emergent vegetation in canals for forage on small aquatic insects, emergent plants, and seeds.

Special-status bird species including bank swallows and tricolored blackbirds forage in rice fields near their nesting colonies. Tricolored blackbirds may use rice fields year-round and would also use emergent vegetation in return ditches and irrigation canals associated with the seasonally flooded fields. The rice agriculture cycle provides insect forage in the flooded fields during the summer and waste grain forage over winter. Rice idling could affect the populations foraging distribution behavior and patterns and could reduce foraging and breeding habitat for these species. Implementing the Environmental Commitments that minimize idling near wildlife refuges and in priority habitat for GGS would help avoid or minimize these potential impacts because they would maintain forage and breeding habitat. The Environmental Commitment to maintain water in canals near idled fields would also protect bank swallows and tricolored blackbirds by supporting emergent vegetation in canals for forage on small aquatic insects, emergent plants, and seeds.

In addition, many raptors forage in summer and/or winter over rice fields, preying on various wildlife, including waterfowl. A reduction in the number of waterfowl or other prey could affect local populations. Environmental Commitments, including avoiding crop idling near wildlife refuges and established wildlife areas would reduce this impact because it would support local populations of waterfowl that could be preyed upon by raptors.

For the millions of birds that use rice fields during winter migration, this small reduction in crops planted is not expected to affect the amount of post-harvest flooded agriculture that provides important winter forage for migratory birds, particularly waterfowl and shorebirds. Farmers in the Sacramento Valley only flood-up a fraction of the cropland planted; typically around 60 percent in normal water years (Miller et al 2010, Central Valley Joint Venture 2006) and as little as 15 percent in critically dry years (Buttner 2014). The decision on whether to flood is not based on what was produced for the year but instead is determined by the availability of fall and winter water. Growers receive a separate water supply in fall and winter for rice decomposition. Particularly during drier years (when transfers occur), the amount of land flooded is limited

by availability of fall water supply rather than the amount of land that was planted during the irrigation season. Because the Proposed Project does not include transfers of rice decomposition water or otherwise affect the availability of fall and winter water, it would not change the availability of water for post-harvest flooding and therefore would not result in a reduction of winter foraging and resting habitat for migrating birds.

The location of cropland idling does have the potential to affect the use of historic roost sites, particularly for sandhill cranes, which exhibit site fidelity (Zeiner et al. 1990), typically returning to the same location each year to winter. Idling fields or crop shifting within areas that sandhill cranes historically return to may affect their wintering distribution patterns due to reduced forage availability on idled or crop shifted fields. Although the birds would disperse as their main food source diminishes, crop idling and/or crop shifting could affect the timing of dispersal and could negatively affect those individuals that have not had sufficient time to prepare for winter migration. Environmental Commitments include avoiding crop idling near wildlife refuges and established wildlife areas that provide core wintering areas for sandhill crane to reduce impacts to the local crane population by preserving these roosting and foraging habitat areas to which the cranes return each year.

The Proposed Project would have a less than significant impact on migratory birds, including special status species, associated with seasonally flooded agriculture habitat because the maximum reduction in rice production would be within the historic range of variation, cropland idling/shifting would be minimized in known wintering areas that support high concentrations of wintering waterfowl and shorebirds, and water transfers would not include rice decomposition water and so would not reduce the availability of post-harvest forage.

Additional special status animal and plant species have the potential to occur in the project area, but would not be affected by the Proposed Project. Appendices A and B list special status animal and plant species that could be present in the project area and the reasons why each would not be affected.

Environmental Commitments

Environmental Commitments have been incorporated into the Proposed Project to reduce potential impacts to special status wildlife species and migratory birds that could be affected by the Proposed Project. Although these Environmental Commitments are part of the Proposed Project, to ensure their implementation and enforceability, EBMUD has conservatively chosen to treat these commitments as mitigation measures, subject to monitoring and reporting requirements under CEQA. The following are the Environmental Commitments included in the Proposed Project (also set forth in Section 2.2) to reduce potential environmental impacts from cropland idling water transfers in 2016.

These Environmental Commitments are also consistent with the Record of Decision (ROD) for the Long-Term Water Transfers EIS/EIR (Reclamation 2015b) and Programmatic Biological Opinion for Long-Term Water Transfers (USFWS 2015a) that was issued by USFWS in 2015. EBMUD will work with Reclamation and sellers to make sure the Environmental Commitments are implemented.

- Sellers will allow access to idled land for Reclamation staff to verify how the transfer water is being made available and to verify that actions to protect the giant garter snake (GGS) are being implemented. Sellers shall cooperate with Reclamation in its development of a monitoring report—to be submitted annually to USFWS and DFW containing:

    - maps of all cropland idling actions that occur within the range of potential transfer activities;

    - results of any newly available scientific research and monitoring results pertinent to water transfer actions, and

    - a discussion of conservation measure effectiveness.

- Movement corridors for aquatic species (including pond turtle and GGS) include major irrigation and drainage canals. Sellers shall verify that they keep adequate water in major irrigation and drainage canals. Canal water depths should be similar to years when transfers do not occur or, where information on existing water depths is limited, at least two feet of water will be considered sufficient.

- Sellers proposing water transfers made available from idled rice fields shall ensure that adequate water is available for priority habitat with a high likelihood of GGS occurrence. The determination of priority habitat will be made through coordination with GGS experts, GIS analysis of proximity to historic tule marsh, and GIS analysis of suitable habitat. The priority habitat areas are indicated on the priority habitat maps for participating water agencies and will be maintained by Reclamation. As new information becomes available, these maps will be updated in coordination with USFWS and DFW. In addition to mapped priority habitat, fields abutting or immediately adjacent to federal wildlife refuges will be considered priority habitat.

- Maintaining water in smaller drains and conveyance infrastructure supports key habitat attributes such as emergent vegetation for GGS for escape cover and foraging habitat. If crop idling/shifting occurs in priority habitat areas, Sellers shall document that adequate water remains in drains and canals in those priority areas. Documentation

may include flow records, photo documentation, or other means of documentation agreed to by Reclamation and USFWS.

- Sellers shall ensure areas with known priority snake populations will not be permitted to participate in cropland idling/shifting transfers. Water sellers can request a case-by-case evaluation of whether a specific field would be precluded from participating in water transfers. These areas include lands adjacent to naturalized lands and refuges and corridors between these areas, such as:

    - Fields abutting or immediately adjacent to Little Butte Creek between Llano Seco and Upper Butte Basin Wildlife Area, Butte Creek between Upper Butte Basin and Gray Lodge Wildlife areas, Colusa Basin drainage canal between Delevan and Colusa National Wildlife Refuges, Gilsizer Slough, Colusa Drainage Canal, the land side of the Toe Drain along the Sutter Bypass, Willow Slough and Willow Slough Bypass in Yolo County, Hunters and Logan Creeks between Sacramento and Delevan National Wildlife Refuges, and Lands in the Natomas Basin.

- Sellers shall perform GGS best management practices, including educating maintenance personnel to recognize and avoid contact with GGS, cleaning only one side of a conveyance channel per year, and implementing other measures to enhance habitat for GGS. Implementation of best management practices will be documented by the sellers and verified by EBMUD.

- In order to limit reduction in the amount of over-winter forage for migratory birds, including greater sandhill crane, cropland idling transfers will be minimized near known wintering areas in the Butte Sink.

b, c) Less than Significant Impact

Under the Proposed Project, flow changes in the Sacramento River under either scenario described above would be small; therefore, the changes in river flows would likely be a fairly small percent of the overall river flows. Water levels in the Sacramento River would change by 0.1 to 0.3 feet, depending on location in the river and baseline flows (USGS 2015a). The Proposed Project would result in only minor effects to any riparian habitat near the River and the Shasta Reservoir, as discussed above. Impacts would be less than significant.

Cropland idling transfers would reduce irrigation tail water flows to wetlands. Environmental Commitments limiting the amount of acres idled in historic tule marsh habitat, limiting cropland idling transfers near refuges, and maintaining water in ditches would support flows to existing wetlands by keeping cropland near wetlands irrigated. As a result, wetlands would continue to receive

irrigation tail water flows from irrigated fields. The incremental effect to wetlands under the Proposed Project would be less than significant.

d) Less than Significant Impact

For species that use irrigated rice fields and drainage ditches for habitat, such as GGS and pacific pond turtle, these species would need to relocate to other suitable habitat and could be exposed to a number of potential impacts associated with the need to relocate, as described above. Idling rice may affect the species' ability to move from one place to another if the movement corridor is dry and does not support vegetation for cover and refuge. The Environmental Commitments to maintain water in irrigation canals and to reduce idling in priority habitat maintain some habitat and movement corridors for species to relocate if necessary.

Maintenance water in smaller drains and conveyance infrastructure support key habitat attributes such as emergent vegetation which GGS and pacific pond turtle utilize for escape cover and foraging habitat. Ensuring water remains in these key habitats reduces the potential impact to suitable habitat and the need for GGS individuals and pacific pond turtle to relocate. Environmental Commitments would reduce potential impacts to movement corridors of GGS and pacific pond turtle; therefore, impacts would be less than significant.

e, f) Less Than Significant Impact

The Yuba-Sutter Regional Conservation Plan (YSRCP) is applicable to a portion of the project area. The YSRCP is both a state Natural Community Conservation Plan and a federal Habitat Conservation Plan (NCCP/HCP). Sutter County serves as the lead in coordination and preparation of the YSRCP working with the other permit applicants, Yuba County, City of Yuba City, City of Wheatland, and City of Live Oak. The YSRCP is a regional strategy for conserving species and habitats while still allowing for economic development. The YSRCP covers some of the potentially affected species associated with the Proposed Project, including GGS, greater sandhill crane, and tricolored blackbird (Sutter County 2015).

Specifically, the YSRCP considers the habitat function and value of agricultural lands for covered species and establishes a process for protection of agricultural areas and important habitat. Cropland idling under the Proposed Project would not conflict with the conservation objectives of the YSRCP because of the limited amount of crop acreage that would be idled compared to the amount of active cropland available. Implementation of the Environmental Commitments would minimize effects to important habitat by maintaining water and aquatic vegetation within irrigation canals that provide habitat and movement corridors for GGS and minimizing cropland alteration near wildlife refuges that support the covered special status species.

Water transfers under the Proposed Project would have a less than significant impact on the natural communities that are covered in the YSRCP because of the temporary nature of the transfers and the minimal changes in flows and reservoir levels associated with water transfers, as described above for Impacts b and c. The small change in flows would not adversely affect riparian habitat or wetlands associated with the Sacramento River and Shasta Reservoir or have adverse effects to special status species covered by the YSRCP that use these habitats. The Proposed Project would not conflict with HCP and NCCP provisions. Impacts would be less than significant.

V. CULTURAL RESOURCES
– Would the project:

	Potentially Significant Impact	**Less Than Significant with Mitigation Incorporation**	**Less Than Significant Impact**	**No Impact**
a) Cause a substantial adverse change in the significance of a historical resource as defined in State CEQA §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to State CEQA §15064.5?	☐	☐	☐	☒
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒

a-d) Under the Proposed Project, water surface elevations in Shasta Reservoir may change if water is stored for a fall release, but water levels would only increase compared to conditions without transfers. An increase in water levels in Shasta Reservoir during the summer months would not result in water levels to go above historic water levels in the reservoir that occur during winter and spring months. Generally, the decline of water surface elevations would be the result of reservoir operation to fulfill existing downstream regulatory requirements, such as the Biological Opinions on the Continued Long-term Operations of the CVP/SWP and D1641, and CVP deliveries. Diversions for water transfer purposes would not result in release of any additional water beyond the quantity available for transfer from Shasta Reservoir. There would be no ground disturbing activities, land alteration, or construction proposed that could disturb historical, archeological, or paleontologic resources associated with the Proposed Project. Thus, there would be no disturbance impacts to

existing or potential burial sites, cemeteries, or human remains interred outside of formal cemeteries.

VI. GEOLOGY AND SOILS
-- Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒

VI. GEOLOGY AND SOILS
-- Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

a) No Impact

There are no new facilities or construction proposed for the Proposed Project, and no existing facilities fall within an Alquist-Priolo Earthquake Fault Zone, as shown in the Interim Revision of Special Publication 42 of the Division of Mines and Geology, Fault Rupture Zones in California (California Department of Conservation 2007). Therefore, the Proposed Project would not expose people or structures to impacts related to fault rupture, ground shaking, ground failure, liquefaction, or landslides.

b) Less than Significant

The soils in the sellers' areas consist of fine particles of clay, loam, some sand, and silty clays (USDA NRCS 2009a, 2009b, 2011a, 2012a). These soils are susceptible to wind erosion but have a relatively low wind erodibility index. The Natural Resource Conservation Service estimated in the 2010 Natural Resources Inventory that approximately 0.68 tons per acre of topsoil are eroded annually by wind from cultivated land, and 0.36 tons per acre of topsoil are eroded annually from non-cultivated land (USDA NRCS 2013).

Agricultural practices determine the amount of wind erosion to a greater extent than climate in the Sacramento Valley. Farming operations such as plowing, leveling, planting, weeding, mowing, cutting, and baling all increase wind erosion by stirring up or exposing top soil. Fallow fields experience a net reduction in wind erosion by avoiding these practices. Fine soils such as sand and silts erode at a higher rate than the clays and silty clays found in the project area. Therefore, the soils in the project area have a relatively low risk of wind erosion when left in a dry and unplanted condition.

Increased cropland idling in the Sacramento Valley to make water available for transfer is not likely to substantially increase wind erosion of sediments.

c) Less than Significant

The sellers' area is underlain by clay and is located in flat terrain. No new construction or ground disturbing actions are proposed for the Proposed Project that could result in on- or off-site landslide, lateral spreading, liquefaction, or collapse. Cropland idling transfers could decrease applied water recharge in local groundwater systems beneath idled fields within sellers' service areas. However, because only a small portion of applied water actually percolates into the groundwater table, the reduction of groundwater recharge expected to result from cropland idling transfers such as the Proposed Project is quite small, and would be less than significant. Consequently, land subsidence because of a reduction in groundwater recharge as a result of cropland idling is unlikely to occur and any impacts would be less than significant.

d, e) No Impact. There are no expansive soils known to exist in the project area. There are no septic tanks or alternative waste water disposal systems proposed or required for the Proposed Project. The Proposed Project does not include new construction, and thus no new waste water generation. Therefore, there would be no impact resulting from the implementation of the Proposed Project.

VII. GREENHOUSE GAS EMISSIONS

- Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

a, b) Less than Significant

Water transfers via cropland idling could reduce GHG emissions in the sellers' area due to reductions in vehicle exhaust emissions from reduced farm operations. Crop shifting would not be expected to result in climate change-related impacts because the land involved would remain in cultivation, thus resulting in only minimal changes in emissions levels, relative to existing conditions. The Proposed Project conveys water through the Freeport Facility intake and other associated existing facilities for eventual distribution within EBMUD's service area. These facilities utilize electric power to pump water to EBMUD. The volume of water (up to 40,000 AF) to be conveyed under the Proposed Project falls within the range of diversions considered in the Freeport Facility EIR/EIS, which did not identify significant impacts associated with operating the Freeport facilities. For these reasons, the Proposed Project would not generate GHG emissions that have a substantial effect on the environment or conflict with plans, policies, or regulations adopted to reduce GHG emissions.

VIII. HAZARDS AND HAZARDOUS MATERIALS -- Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporation**	**Less Than Significant Impact**	**No Impact**
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☒
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒

VIII. HAZARDS AND HAZARDOUS MATERIALS -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
e) Located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) Within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

a-h) No Impact

The Proposed Project consists of the release, diversion, and delivery of water to EBMUD at a rate of up to 155 cfs, relying entirely on the use of existing facilities. As such, the Proposed Project would not involve the transport or use of hazardous materials, nor change in any way public exposure to hazards or hazardous materials. Nor would it occur on a hazardous materials site that would create a risk to the public or environment. The Proposed Project would not affect a public airport or private air strip. There are no new structures or buildings included in the Proposed Project; therefore, no people or structures would be exposed to wildland fires as a result of implementation. There would be no impacts related to hazards and hazardous materials.

IX. HYDROLOGY AND WATER QUALITY
– Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☐	☒
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
f) Otherwise substantially degrade water quality?	☐	☐	☒	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

a) Less than Significant

The Proposed Project would change flows in the Sacramento River, which could have the potential to change water quality concentrations.

The Proposed Project involves the transfer water that would otherwise be diverted at the sellers' points of diversions on the Sacramento River, absent a transfer to EBMUD via the Freeport Facility. Therefore, the potential changes in flows in the Sacramento River do not extend downstream of the Freeport Facility intake on the Sacramento River and flows into the Delta and Delta water quality would not be affected.

Irrigation Pattern Operation Scenario. Under the Proposed Project, water would be transferred to EBMUD on the same agricultural delivery schedule as if no transfer occurred. This operation would result in increases in flow along the Sacramento River between the point where water would have been diverted by the sellers absent transfers and the Freeport Facility intake (EBMUD diversion point) near the town of Freeport.

The largest increase in flow in the Sacramento River would be an increase of approximately 155 cfs in the months of July and August. Table 3-3 shows the Proposed Project's potential increases in flow compared to average flow in 2014 and 2015 at several locations. The increases in flow are very small compared to the flows in the Sacramento River (about one to five percent) even during a dry year and would not likely affect water quality.

Delayed Release Operation Scenario. As discussed in Chapter 2, EBMUD may alter the delivery schedule for transfers if requested by Reclamation and the Resources Agencies. This type of action may be requested to help maintain the cold water pool in Shasta Reservoir and increase flows in the late summer/early fall to help winter-run Chinook salmon (Reclamation 2015e). Under this different flow regime, the transfer water would be stored in Shasta Reservoir until late August/ September, and transfers would be released over a minimum of four months.

Under the delayed release operational scenario, water that would have been released into the Sacramento River for delivery to the agricultural users in late spring and summer would instead by stored in Shasta Reservoir. This change would reduce flows in the Sacramento River between Shasta Reservoir and the point of diversion (absent a transfer). A reduction of up to 155 cfs would be a one to three percent decrease in average monthly Sacramento River flows relative to 2014 and 2015 flows, with the greatest potential changes in July and August. This change in flow between Shasta Reservoir and the sellers point of diversions would be very small during the summer period (as shown in Tables 3-4 and 3-5) and would not affect water quality in the Sacramento River. Flows in the Sacramento River downstream of the sellers' point of diversions would not change relative to the baseline condition since the sellers' would divert the transfer water for irrigation absent the transfer.

Transfer water would be released from Shasta Reservoir starting in late August/September 2016 and could continue through February 2017. During this time frame, these flows would increase flows in the Sacramento River between Shasta Reservoir and the Freeport Facility. The goal of this modified flow pattern is to reduce temperatures in the river, but the contribution of the EBMUD transfers is likely to be very small because of the amount of flow compared to the river flows.

Under either scenario, as analyzed in the Freeport Facility EIR/EIS, EBMUD would divert water at the Freeport Facility intake, for conveyance through a series of pipelines to the FSC, where then it mixes with American River water and is pumped through a pipeline and pump stations (Clay Station Pumping Plant and Camanche Pumping Plant) into EBMUD's Mokelumne Aqueducts for either storage in EBMUD's East Bay Reservoirs or treatment in the EBMUD's water treatment plants.

As discussed in Chapter 2, the upper regions of the Sacramento River basin generally produce high-quality water suitable for all beneficial uses. Upper water source waters generally have excellent water quality. As water flows from the upper watersheds into the Sacramento Valley, water quality typically changes as a result of diversions and return water from agricultural operations. Sacramento River water at the Freeport Facility generally has relatively low concentrations of most constituents compared to the applicable regulatory criteria or guideline values.

The Freeport Facility EIR/EIS considered the potential impacts to water quality from raw water diversions from the Sacramento River to EBMUD and did not identify any significant impacts associated with the diversion and delivery of Sacramento River water to EBMUD's service area. Waters diverted from the Freeport Facility for delivery to EBMUD are either stored in the East Bay Reservoirs or routed directly to EBMUD's treatment plants in the East Bay. Although some taste and smell changes have occurred since EBMUD began diverting Sacramento River water at the Freeport Facility, all drinking water

delivered to EBMUD's 1.4 million customers meets all federal and state drinking water standards and therefore, impacts to water quality would be less than significant.

As noted above, waters diverted from the Sacramento River for EBMUD use would be discharged into the FSC where it would mix with American River water diverted at the head of the canal. The concentrations of some physical and chemical constituents in Sacramento River are generally higher than in American River water that is presently in the FSC. While the overall blend of Sacramento River water and American River water in the FSC would be very low in all constituents, there could be a change in the quality of water in the FSC delivered to the Sacramento Municipal Utility District (SMUD), the only other diverter on the lower FSC other than EBMUD. Treatment facilities designed specifically to treat FSC water when Sacramento River water is introduced into the FSC have been installed at SMUD's power plant. In accordance with an agreement with SMUD, the Freeport Regional Water Authority is to pay SMUD for incremental costs associated with operation of these treatment facilities. Therefore, SMUD's use of water from the FSC will not be impacted.

The changes in flows in the Sacramento River and FSC associated with transfers from the SRSC to EBMUD would not violate any existing water quality standards or waste discharge requirements or worsen any water quality and flow standard violation.

b) Less than Significant

Cropland idling transfers under the Proposed Project could decrease applied water recharge to the local groundwater system underlying the barren (idled) fields that could result in decline in groundwater levels. However, because only a small portion of applied water actually percolates into the groundwater table, the reduction in groundwater recharge expected to result from cropland idling transfers would be less than significant. Further, because the proposed transfers primarily involve rice idling, the overall reduction is groundwater recharge would be expected to be very low since land used for rice production is typically underlain by soils with low permeability (such as clay) that do not allow a substantial portion of the water applied to rice fields to percolate to the underlying aquifer, but rather discharges to the farmer's surface drainage system. Therefore, the reduction in recharge under the Proposed Project would be relatively small when compared to the total of amount of water that recharges the Sacramento Valley Groundwater Basin. Cropland idling under the Proposed Project would not result in substantial groundwater level reductions. Impacts to groundwater levels would be less than significant.

c) Less than Significant

The Proposed Project has the potential to increase sediment erosion into nearby waterways. Given the soil textures in the Sacramento Valley and their low to mid-range erodibility, soil erosion as a result of idling non-rice crops would be minimal, and would be even further reduced by standard soil erosion measures that growers use to protect soil quality. As a standard operating procedure, growers manage potential soil erosion impacts to avoid substantial loss of soils and to protect soil quality. While growers would not be able to engage in management practices that result in a consumptive use of water on an idled field, they could continue such erosion control techniques as surface roughening tillage to produce clods, ridges, and depressions to reduce wind velocity and trap drifting soil; establishment of barriers at intervals perpendicular to wind direction; or, application of mulch (USDA NRCS 2009g).

Additionally, the rice crop cycle and the soil textures in the sellers' areas reduce the potential for erosion in the sellers' region. The process of rice cultivation includes incorporating the leftover rice straw into the soils after harvest through discing. Once dried, the combination of decomposed straw and clay texture soils typically produces a hard, crust-like surface. If left undisturbed, this surface texture would remain intact throughout the summer, when wind erosion would be expected to occur, until winter rains begin. This surface type would not be conducive to soil loss from wind erosion. During the winter rains, the hard, crust-like surface typically remains intact and the amount of sediment transported through winter runoff would not be expected to increase. Therefore, there would be little-to-no increase in sediment transport resulting from wind erosion or winter runoff from idled rice fields under the Proposed Project and the resultant impact would be less than significant.

d, e, g, h, i, j) No Impact

The Proposed Project would utilize only existing facilities to convey water to EBMUD's service area at rates of up to 155 cfs or less. The Proposed Project would not involve any actions that would result in flooding or create runoff water that would exceed the capacity of existing drainage systems, provide a substantial source of polluted runoff. The Proposed Project also does not include housing or other structure development in a 100-year flood hazard area, expose people or structures to risk associated with flooding, seiche, tsunami, or mudflow.

f) Less Than Significant

Water transfers via cropland idling would not substantially lower groundwater levels in the Sacramento Valley Groundwater Basin. Consequently, groundwater quality changes because of a reduction in groundwater recharge as a result of cropland idling would be less than significant.

The Proposed Project would have the potential to affect water quality through changes to surface water flows (which could change concentrations of constituents of concern) or changes to erosion from idled fields. These potential impacts are analyzed under items (a) and (c) and found to be minimal.

X. LAND USE AND PLANNING -
Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	☒
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

a-c) No Impact. The Proposed Project would not involve any construction or new structures that could divide a community or conflict with land use plans, policies, or zoning. The Proposed Project would not conflict with local policies protecting biological resources or habitat conservation plans. Section IV, Biological Resource, discusses effects of the Proposed Project relative to the YSRCP and concludes that the Proposed Project would not conflict with the conservation goals of the Plan because of the limited amount of crop acreage that would be idled compared to the amount of active cropland available. Implementation of the Environmental Commitments would further minimize effects to important habitat by maintaining water and aquatic vegetation within irrigation canals that provide habitat and movement corridors for GGS and pacific pond turtle and minimizing cropland alteration near wildlife refuges that support special status species. There would be no impacts.

XI. MINERAL RESOURCES – Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

a, b) No Impact

The Proposed Project do not require construction or other activities that would result in the loss of availability of known mineral resources.

XII. NOISE - Would the project result in:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☒
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
e) Located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) Within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Discussion:

a-f) No Impact

The Proposed Project would not result in the development of any new noise-emitting devices. No new construction activities would be associated with the Proposed Project and no ground-disturbing actions with the potential to generate groundborne vibrations would occur. The Proposed Project involves the diversion and delivery of water to EBMUD's service area using existing facilities operated within historic levels, such that there would be no substantial permanent or temporary increase in ambient noise levels associated with the project. There could be temporary decrease in ambient noise level due to reduced farm vehicle usage in seller service area under the Proposed Project. There would be no new permanent residents or workers under the Proposed Project that would be exposed to excessive noise levels from public airports, public use airports or private airstrips.

XIII. POPULATION AND HOUSING
– Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

a) No Impact

The Proposed Project would not induce population growth. Water transfers would help reduce water shortages and would not increase demand for water or support long-term increases in development. No housing would be constructed, demolished, or replaced as a result of water transfers.

b, c) No Impact

The Proposed Project would include no construction, demolition, or other activities that could displace existing housing or people and necessitate the construction of replacement housing.

XIV. PUBLIC SERVICES
– Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Fire protection?	☐	☐	☐	☒
b) Police protection?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
c) Schools?	☐	☐	☐	☒
d) Parks?	☐	☐	☐	☒
e) Other governmental facilities (including roads)?	☐	☐	☐	☒

a-e) No Impact

The Proposed Project would not create any new demand for public services or require any existing public facilities to be altered. Transferred water would be transported using existing conveyance facilities and pumping stations, and would not require the use of area roads, so there would be no impact to roads or other government facilities. Water transfers would not affect the supplies available to municipalities or other jurisdictions for fire protection, parks, or school use. Therefore, there would be no impact to public services or public facilities as a result of the Proposed Project.

XV. RECREATION –

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

a, b) No Impact

The Proposed Project would not affect any recreation facilities or require construction or expansion of recreation facilities.

XVI. TRANSPORTATION/TRAFFIC –
Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Cause a conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☒
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☐	☐	☒
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

a-f) No Impact

The Proposed Project relies entirely on the use of existing facilities and would not create any new demand on transportation services. The Proposed Project has no construction activities that would increase the traffic on roads in the project area. There would be no impact to the vehicle miles traveled or air traffic patterns in the project area, nor would there be an increase to the hazard

to design features, inadequate emergency access or parking capacity, or conflict with adopted policies supporting alternative transportation.

XVII. UTILITIES AND SERVICE SYSTEMS

- Would the project:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

a-g) No Impact

The Proposed Project would not create any new demand on utilities or service systems. There would be no impact to utility or service systems resulting from

implementing the Proposed Project. Transfers would not require the construction of new water or wastewater treatment facilities as all water transfers would be completed using existing facilities. There would be no increase in demand for wastewater treatment facilities that could exceed existing capacities, and no new storm water drainage facilities would be required under the Proposed Project.

Water transfers would be completed within the existing entitlements and resources, and no new water supplies for the sellers would be required.

There would be no solid waste generated as a result of the Proposed Project, and therefore no landfill would be required. Therefore, there would be no impact to utilities or other service systems as a result of the Proposed Project.

XVIII. MANDATORY FINDINGS OF SIGNIFICANCE –

	Potentially Significant Impact	**Less Than Significant with Mitigation Incorporation**	**Less Than Significant Impact**	**No Impact**
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒

a) Less than Significant

Water transfers would not cause substantial incremental effects to habitat or species relative to the conditions that would otherwise occur in response to the dry hydrologic conditions. Environmental Commitments included in the 2016 transfers would reduce potential special status species impacts to less than significant. Section IV, Biological Resources, explains why water transfers would have less than significant impacts to habitat and species and how the Environmental Commitments reduce potential effects. Water transfers would not degrade the quality of the environment or eliminate examples of California history or prehistory.

b) Less than Significant

This cumulative impacts analysis identifies past, present and reasonably foreseeable future projects with the potential to contribute to cumulative effects, when combined with the Proposed Project. Information used in this cumulative impacts analysis is based on the best information available at this time.

Water transfers occur in many dry years to move water to agencies that may be experiencing shortages. The cumulative analysis considers other potential water transfers that could occur in the 2016 transfer season, including other CVP water transfers, non-CVP water transfers, and additional water transfers EBMUD may need to secure to meet anticipated water supply shortages, such as receiving water from the Yuba County Water Agency (YCWA) or Placer County Water Agency (PCWA). Table 3-7 lists potential sellers that have indicated interest or have provided water for transfer in the past, including:

- Potential sellers in the Sacramento River, American River, Yuba River, and north-westerly Delta areas. The majority of these potential sellers, which include the four sellers in the Proposed Project, and their associated transfer methods and quantities, as listed in Table 3-7, were evaluated in the Long-Term Water Transfers EIR/EIS prepared by San Luis & Delta-Mendota Water Authority (SLDMWA) and Reclamation that analyzed potential CVP-related transfers from 2015 to 2024. Additional sellers in the Sacramento River area not evaluated in the EIS/EIR have indicated interest in selling water in 2016 and are also included in Table 3-7.

- Potential sellers in the Feather River Region from entities holding settlement agreements with DWR that could make surface water available for CVP or SWP contractors. These transfers would be approved and facilitated by DWR.

- YCWA transfers under the Lower Yuba River Accord (Yuba Accord). The Yuba Accord is a comprehensive long-term settlement agreement that has been in effect since 2008. The Yuba Accord provides increased flows for protection of lower Yuba River fisheries and transfer water for the environment and state and federal contractors. The Yuba Accord provides for both stored water and groundwater substitution transfers ranging from 60,000 AF per year and up to an additional 140,000 AF for state and federal contractors in drier years. From 2007 through 2014, Yuba Accord transfers averaged approximately 129,000 AF.

Transfer water shown in Table 3-7 could be sold to multiple agencies, including EBMUD, Tehama-Colusa Canal Authority (TCCA), SWP contractors receiving water from the North Bay Aqueduct, and south of Delta buyers, including SLDMWA and Metropolitan Water District of Southern California. Unlike transfers to EBMUD and TCCA that would be diverted off the Sacramento River, transfers to south of Delta buyers would be exported through the Delta via Banks or Jones Pumping Plants.

Table 3-7. Potential Cumulative Sellers (Upper Limits)

Water Agency	Groundwater Substitution[1] (acre-feet)	Cropland Idling/ Crop Shifting[1] (acre-feet)	Stored Reservoir Release[1] (acre-feet)	Conservation[1] (acre-feet)	Maximum Potential Transfer (acre-feet per year)
Sacramento River Area					
Anderson-Cottonwood Irrigation District	5,225				5,225
Burroughs Farms	2,000				2,000
Canal Farms	1,000	635			1,635
Conaway Preservation Group	35,000	21,349			35,000
Cranmore Farms (Pelger Road 1700 LLC)	8,000	2,500			8,000
Eastside Mutual Water Company	2,230				2,230
Guisti Farms	1,000				1,000
Glenn-Colusa Irrigation District	25,000	66,000			91,000
Henle Family Limited Partnership	700				700
Lewis Ranch		2,310			2,310
Maxwell Irrigation District	3,000	5,000			8,000
Natomas Central Mutual Water Company	30,000				30,000
Pelger Mutual Water Company	3,750	2,538			3,750
Pleasant Grove-Verona Mutual Water Company	18,000	9,000			18,000
Princeton-Cordora-Glenn Irrigation District	5,500	6,600			12,100
Provident Irrigation District	7,000	9,900			16,900
Reclamation District 108	15,000	20,000			35,000
Reclamation District 1004	7,175	12,500			19,675
River Garden Farms	10,000	10,000			16,000

Water Agency	Groundwater Substitution[1] (acre-feet)	Cropland Idling/ Crop Shifting[1] (acre-feet)	Stored Reservoir Release[1] (acre-feet)	Conservation[1] (acre-feet)	Maximum Potential Transfer (acre-feet per year)
Sutter Mutual Water Company		18,000			18,000
Sycamore Mutual Water Company	15,000	10,000			20,000
T&P Farms	1,200	890			1,200
Te Velde Revocable Family Trust	7,094	6,975			7,094
American River Area					
City of Sacramento	5,000				5,000
Placer County Water Agency			47,000		47,000
Sacramento County Water Agency	15,000				15,000
Sacramento Suburban Water District	30,000				30,000
Yuba River Area					
Browns Valley Irrigation District			5,000	3,100	8,100
Cordua Irrigation District	12,000				12,000
Yuba County Water Agency[3]	89,000		91,000		180,000
Feather River Area					
Butte Water District	5,500	11,500			17,000
Garden Highway Mutual Water Company	14,000				14,000
Gilsizer Slough Ranch	3,900				3,900
Goose Club Farms and Teichert Aggregates	10,000	10,000			10,000
South Sutter Water District			15,000		15,000
Tule Basin Farms	7,320				7,320
Biggs-West Gridley Water District[2]		32,190			32,190
Richvale Irrigation District[2]		21,032			21,032
Plumas Mutual Water Company[2]	5,000	1,750			4,550
South Feather Water and Power[2]			10,000		10,000
Sutter Extension Water District[2]	4,000	11,000			15,000
Western Canal Water District[2]		35,441			30,000
Delta Region					
Reclamation District 2068	4,500	7,500			7,500
Pope Ranch	2,800	0			2,800
Total	**410,894**	**334,610**	**168,000**	**3,100**	**842,211**

[1] These totals cannot be added together. Agencies could make water available through groundwater substitution, cropland idling, or a combination of the two; however, they will not make the full quantity available through both methods. The last column reflects the total upper limit for each agency and will not equal the sum of all the individual transfer quantities for each agency.

[2] Entity holds Settlement Agreement with DWR.

[3] Based on 2009 maximum deliveries under the Yuba Accord. Actual transfer quantities vary year to year based on hydrologic conditions and Delta pumping conditions.

Table 3-7 lists the transfer method and associated maximum annual transfer quantity potentially available from each seller. The actual quantity of water transferred in a given year, as evidenced by past dry years, is less than the totals shown in Table 3-7 and depends on a number of factors, including hydrologic conditions and available conveyance capacity. Cross Delta transfers to south-of-Delta buyers require pumping at the CVP and SWP south Delta export facilities and historically account for the majority of the transfers from sellers listed in Table 3-7.

As shown in Table 3-8, cross Delta transfers ranged from zero to 414,629 AF from 2009 through 2015, or approximately zero to 55 percent of the maximum total shown in Table 3-7. Transfers under the Yuba Accord historically account for a large portion of the DWR approved water transfers and represented 73 percent of the DWR approved transfers in 2015 (DWR 2015d).

Table 3-8. Historic Cross Delta Water Transfers (2009 – 2015)

Year	Total Acre-Feet
2009	274,551
2010	264,165
2011	0
2012	84,781
2013[1]	351,515
2014[1]	414,629
2015[1]	262,466

Source: DWR/SWRCB 2015
[1] Data for 2013, 2014 and 2015 are for quantities made available North of the Delta and include Streamflow Depletion losses (where applicable) but do not include carriage water losses across the Delta. Data for 2015 is preliminary as of May 2015 and may change as the year develops. Cross Delta water transfers using facilities operated by DWR in 2014 and 2015 were 305,699 AF and 104,348 AF respectively and Reclamation 73,930 AF and 157,018 AF respectively.

Cross Delta transfers originating from the Sacramento Valley represent a small portion of the Sacramento Valley's overall water supply. Applied water in the Sacramento Valley from 2001 to 2010 has ranged from a low of about 9,168,000 AF in 2005 up to 10,931,000 AF in 2004. The driest year during this period was 2007, when applied water was about 11,017,000 AF (DWR 2014b). These figures include applied water from surface water, groundwater, and reuse. In 2014, when transfers were highest, transfers were approximately 4 to 5 percent of total applied water in the Sacramento Valley.

Water transfer methods in 2016 could include cropland idling/crop shifting (the same as described for the Proposed Project). Transfer methods could also include additional methods such as groundwater substitution, where a seller pumps groundwater instead of diverting surface water and transfers the surface water supply; conservation, where a seller takes a conservation action to reduce

irrecoverable water losses; and stored reservoir water, which includes releases of water that would have remained in storage in non-CVP or SWP reservoirs.

As shown in Table 3-7, several entities have identified potential cropland idling transfers that could occur under the cumulative conditions. Rice is the most likely crop to be idled because it has historically been the largest source of water for crop idling transfers and it has the highest ETAW per acre of all the crops eligible for idling. The sellers included in the Proposed Project are located in Glenn, Colusa, Yolo, and a small part of Sutter counties. The maximum amount of water available for transfer from idling rice fields under the Proposed Project would be 40,000 AF, which would result from idling a maximum of 12,121 acres of rice. Additional rice idling would occur under the cumulative condition. Table 3-9 summarizes potential maximum cumulative rice idling acreages based on Table 3-7.

All cropland idling transfers that involve Reclamation or DWR must meet the requirements of the Water Transfer White Papers to reduce effects to special - status species (DWR and Reclamation 2015). As stated above, the actual quantity of water transferred in a given year, as evidenced by past dry years, is less than the totals shown in Table 3-7; therefore, actual rice idling acreages would be less than shown in Table 3-9.

The Proposed Project also includes potential idling of other crop types, as listed in Table 2-2. The Proposed Project evaluates a maximum of 400 acres of tomatoes and other vine crops, a maximum 400 acres of corn, beans, sunflower, safflower, and wheat, and a maximum 1,400 acres of alfalfa and sudan grass in Glenn, Colusa, and Yolo counties. This is the upper limit of other crop types that can be idled by CVP contractors under the Long-Term Water Transfers EIS/EIR which guides Reclamation's decision making regarding approving transfers. Additional acreage of these non-rice crops could be idled under other transfers; however, because rice is the most common crop idled, particularly in the Feather River Region, it is unlikely that substantially more acreage of non-rice crops would be idled under cumulative conditions. Table 3-9 also shows the maximum idling acreages for non-rice crops assumed under cumulative conditions.

Table 3-9. Maximum Assumed Cumulative Acreages for Cropland Idling Transfers (includes the Proposed Project transfers)

Region	Rice	Tomatoes, Processing[1]	Corn[2]	Alfalfa[3]	Total
Colusa, Glenn, Yolo	52,161	400	400	1,400	54,361
Sutter, Butte	46,955	400	800	600	48,755
Solano	-	-	1,500	3,000[4]	4,500
Total	99,124	800	2,700	5,000	107,624

[1] Includes tomatoes for processing and vine crops
[2] Includes corn for grain, beans, sunflower, safflower, and wheat
[3] Included alfalfa and sudan grass
[4] Alfalfa cannot be idled within the legal boundaries of the Delta

In addition to the Proposed Project, EBMUD is considering purchasing a total of approximately 20,000 AF of transfer water from YCWA and PCWA via stored water releases that would be diverted at the Freeport Facility to meet anticipated water supply shortages in 2016. These potential sellers and quantities are included in Table 3-7. EBMUD is not considering securing any transfer water via groundwater substitution in 2016.

The cumulative analysis also considers the total combined diversions at the Freeport Facility intake by both EBMUD and SCWA that may occur in 2016. EBMUD is anticipating the need to divert up to 100,000 AF of dry year water supplies via the Freeport Facility if drought conditions continue into 2016. EBMUD is eligible to receive CVP water via the Freeport Facility in dry years under a long-term renewal contract with Reclamation[1]. However, the availability of CVP water under EBMUD's CVP contract is subject to the CVP M&I WSP that limits allocations of CVP water during water shortage conditions. Under the M&I WSP (finalized in November 2015), EBMUD was only allocated 50 percent and 25 percent of its maximum contract quantity of 133,000 AF in contract years 2014 and 2015, respectively. The 2015 unexpectedly low and virtually unprecedented CVP allocation of 25 percent was a key factor in EBMUD's decision to secure transfer water in 2015 and to plan for transfers in 2016.

Actual quantities of dry year water that EBMUD will need in 2016 will depend on water supply hydrology and CVP allocations. However, the total quantity of CVP and transfer water EBMUD plans to divert at Freeport would not exceed

[1] In 2006, EBMUD executed a long-term renewal contract (Contract No. 1406-200-5183A-LTR1, dated April 10, 2006) with Reclamation. Under terms of the contract, EBMUD is eligible to receive CVP water in years when EBMUD's projection of its September 30 total stored water supply is below 500,000 AF in a single qualifying year, not to exceed a total of 165,000 AF over three consecutive qualifying years.

100,000 AF. In addition, SCWA plans to continue to divert up to 20,000 AF of water from sources on the American River.

The Freeport Facility EIR/EIS evaluated the potentially significant environmental impacts of diverting water at the Freeport Facility intake. The Proposed Project combined with all other potential SCWA and EBMUD diversions would be below the maximum diversion amounts and rates analyzed in the Freeport Facility EIR/EIS, which did not identify any significant operational impacts associated with diversion and conveyance of water to EBMUD's service area.

The Proposed Project would have no impacts to the following resources; therefore, there would be no impact to the cumulative condition as a result of the Proposed Project:

- Agricultural Resources
- Cultural Resources
- Hazards and Hazardous Materials
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation/Traffic
- Utilities and Service Systems

The Proposed Project would result in less than significant impacts to aesthetics, air quality, geology and soils, and greenhouse gases; therefore, the cumulative condition is evaluated. The Proposed Project could have potential cumulatively considerable impacts to biological resources and hydrology. The cumulative analysis for these resources follows.

Aesthetics

Cropland idling would temporarily increase the amount of idled lands in the sellers' area. Idled lands are typical features of agricultural landscapes as part of normal cultivation practices and reduced water supplies during drought conditions. The crop pattern under the cumulative condition would likely be

indistinguishable from those under normal cropping patterns. Further, the amount of potential acreage proposed for cropland idling relative to the total crop acreage in Glenn, Colusa, Yolo, and Sutter counties is small. The total agricultural land in the four counties is over 2 million acres (California Department of Conservation 2015b). Therefore, there would be less than significant cumulative impacts to aesthetics related to agricultural fields.

Air Quality

Cropland idling would reduce fugitive dust emissions relative to if the fields were cropped. Further, cropland idling would also reduce vehicle exhaust emissions from farm equipment. Under the cumulative condition, increased cropland idling transfers would reduce emissions. Therefore, cumulative impacts would be less than significant.

Biological Resources

Transfers under the cumulative condition would result in the idling of more rice fields than those included in the Proposed Project. As shown in Table 3-9, a maximum of 99,124 acres of rice in Glenn, Colusa, Yolo, Sutter, and Butte counties could be idled under the cumulative condition.

As described in Section IV, Biological Resources, rice fields provide habitat for GGS, pacific pond turtle, and migratory birds. For the GGS and pacific pond turtle, rice idling could result in reduced forage and cover habitat, hindered movement, and increased predation risk. For migratory birds, rice idling could reduce nesting, forage, and rearing habitat. Additional rice idled under the cumulative condition could increase these effects relative to the Proposed Project.

The Proposed Project includes Environmental Commitments to reduce potential effects to special status species, including GGS and pacific pond turtle, and migratory birds. Other water transfers facilitated by Reclamation and DWR using Federal and State facilities would be required to have similar conservation measures in place to protect special status species, as shown in the ROD for Long-Term Water Transfers, Finding of No Significant Impact for the 2015 TCCA Water Transfers, Programmatic Biological Opinion for Long-Term Water Transfers, and the Draft Technical Information for Preparing Water Transfers paper published by DWR and Reclamation. As a result, cumulative impacts to these species would not be expected to be significant. Further, the Environmental Commitments would reduce potential effects of the Proposed Project on special status species under cumulative conditions, such that the Proposed Project's contribution to any such impacts would be minimal.

Idling of non-rice upland crops under cumulative conditions would not affect special status species. Idling could result in a small loss of residual feed; however, based on the amount of acreage idled relative to the total acreage in Glenn, Colusa, Yolo, Sutter, and Butte counties most forage and other habitat

would still be available to wildlife species within the Sacramento Valley. Impacts to birds and nesting habitat from upland cropland idling would not be anticipated, as actively managed croplands are not generally suitable nesting habitat for most bird species. Environmental Commitments would also further protect bird species from effects of upland crop idling by minimizing idling near known wintering areas that support high concentrations of waterfowl and shorebirds and keeping adequate water in major irrigation and drainage canals to maintain movement corridors and shelter for special status species.

Cumulative conditions include transfers from sellers on the Yuba, Feather, and American River, including the potential for EBMUD to purchase water from PCWA and YCWA. Transfers from sellers on these river systems would result in higher flows in these river systems downstream of the original point of release or diversion (e.g. YCWA's New Bullards Bar Reservoir or PCWA's Middle Fork Project reservoirs on the American River). Historically, approval of these transfers has been coordinated with the SWP/CVP projects and Resource Agencies to ensure the protection of downstream fisheries. The Proposed Project would not be expected to affect flows on the Yuba, Feather, and American River and therefore would have no potential to contribute to cumulative effects to fishery resources on these river systems.

Transfers under cumulative conditions could also result in additional flow in the Sacramento River upstream of Freeport. If the water transferred under the Proposed Project is released on the agricultural delivery schedule for transfer, it would result in small increases in flows downstream from the point where it would typically be diverted down to Freeport. The cumulative increase in flow due to transfers would not reduce the suitability of habitat conditions during adult immigration by Chinook salmon, steelhead, and green sturgeon. This magnitude of cumulative flow increase would also not appreciably reduce spawning habitat availability and incubation, increase redd dewatering or juvenile stranding, or reduce the suitability of habitat conditions during juvenile rearing for these sensitive fish species because the increase in flow is so small compared to baseline flows. Other special-status fish species, including hardhead and Sacramento splittail would also not be affected by small changes in river flow.

However, if the water transfers are stored in Shasta Reservoir for delivery later in the season, they would stay in Shasta Reservoir to help preserve cold water pool. The Proposed Project would not substantially increase storage in Shasta Reservoir (with a maximum volume of 40,000 AF), but the cumulative effect with the Sacramento River Area transfers listed in Table 3-7 could have a beneficial effect on the cold water pool in Shasta Reservoir. Increases in flow resulting from the delayed release of transfer water from Shasta Reservoir when winter-run Chinook salmon are expected to be present in the Sacramento River could benefit the species. This operational scenario would only occur if the Resources Agencies determine that it would help preserve the cold water pool and decrease temperatures in the Sacramento River. The cumulative effect of

releasing transfer water would not adversely affect winter-run Chinook salmon. The cumulative decrease in flow in the Sacramento River as a result of storing water in Shasta Reservoir during late spring and summer months would not be of sufficient magnitude to affect habitat suitability for sensitive fish species, including Chinook salmon, steelhead, and green sturgeon.

The fish screen installed at the Freeport Facility intake is in compliance with design criteria and guidelines issued by DFW, USFWS, and NMFS for protection of Delta smelt and salmonids from impingement and entrainment. The Proposed Project, when combined with all water supplies EBMUD and SCWA anticipate diverting through the Freeport Facility intake in 2016, will be below the rates and maximum quantities analyzed in the Freeport Facility EIR/EIS, which concluded that impacts resulting from impingement and entrainment would be less-than-significant. Accordingly, the current fish screen will adequately protect fish from impingement and entrainment at the Freeport Facility intake, and cumulative effects to biological resources from diverting water, including the Proposed Project, at the Freeport Facility would be less than significant.

The Proposed Project involves the transfer water that would otherwise be diverted at the sellers' points of diversions on the Sacramento River, absent a transfer to EBMUD via the Freeport Facility intake. Therefore, the potential environmental effects of the Proposed Project do not extend downstream of the Freeport Facility intake on the Sacramento River and would not contribute to any cumulative effects to biological resources downstream of the Freeport Facility intake in the Delta.

Geology and Soils

Increased cropland idling in the Sacramento Valley to make water available for transfer is not likely to substantially increase wind erosion of sediments. The rice crop cycle and soil texture in which rice is planted reduces the potential for erosion, and a hard crust usually develops over the surface of the field. Idled rice fields would not be conducive to soil loss from wind erosion. Given the soil textures in the Sacramento Valley and their low to mid-range erodibility, soil erosion as a result of idling non-rice crops would be low, and would be minimized further by implementing normal soil erosion measures to protect soil quality. Cumulative impacts of soil erosion would be less than significant.

Greenhouse Gases

By its very nature, climate change is a cumulative impact from various global activities that incrementally contribute to global GHG concentrations. Individual projects provide a small addition to total concentrations, but contribute cumulatively to a global phenomenon. Cropland idling would reduce farm equipment exhaust emissions, reducing GHG emissions. The Freeport Facility utilizes electric power to pump water to EBMUD. The volume of water to be conveyed for transfers to EMBUD falls within the range of diversions considered in the Freeport Facility EIR/EIS, which did not identify significant

impacts associated with operating the Freeport Facility. The Proposed Project would not have a cumulatively considerable impact related to GHG emissions.

Hydrology

Table 3-7 includes maximum quantities that each agency could make available through different transfer mechanisms. Adding these maximum quantities produces a total of approximately 842,000 AF, but multiple other factors may limit the transfers to a number that is likely less than this total. Transfers to south-of-Delta water districts, which account for the majority of proposed transfers, are typically pumped through the CVP and SWP south Delta export facilities. The capacity to pump the water at Banks and Jones Pumping Plants would limit the overall volume of transfers to south-of-Delta water districts.

Under the Proposed Project, the largest change in flow could be approximately 155 cfs in the months of July and August. The highest monthly cumulative changes in flow in the Sacramento River at Freeport, including the Proposed Project, from cumulative CVP and SWP transfers would be 1,243 cfs in July and 1,176 cfs in August.

Average flow in the Sacramento River at Freeport was approximately 8,852 cfs in July 2014 and 8,461 cfs in August 2014; and approximately 7,550 cfs in July and August 2015. If transfer water were released on the agricultural pattern, there would be a small increase in Sacramento River flows (16 percent flow increase in July and 15 percent flow increase in August relative to 2015 Sacramento River flow). Cumulative effects of transfers on hydrology could have a beneficial effect by increasing flow on the Sacramento River.

If CVP transfers were held in Shasta Reservoir and released later in the season, flows in the Sacramento River would decrease from Shasta Reservoir to the point of diversion absent the transfer. Flows would then increase during the release period. In this scenario, flows between Shasta Reservoir and sellers' point of diversion could decrease from May through August, when water could begin to be released from Shasta Reservoir. Cumulative effects under this release scenario would be less than significant because CVP transfers are a small percentage of overall Sacramento River flows and would result in a minor decrease in flow during these months.

The Proposed Project involves the transfer water that would otherwise be diverted at the sellers' points of diversions on the Sacramento River, absent a transfer to EBMUD via the Freeport Facility intake. Therefore, the potential environmental effects of the Proposed Project do not extend downstream of the Freeport Facility intake on the Sacramento River and would not affect Delta hydrology or contribute to any cumulative effects downstream of the Freeport Facility intake.

Groundwater substitution transfers result in increased groundwater pumping and lowering of groundwater levels. Groundwater substitution transfers could result in a cumulative impact to groundwater resources. The Proposed Project does not include groundwater substitution transfers; however, cropland idling transfers could decrease applied water recharge to the local groundwater basin underlying

idled fields. The maximum water transfer from cropland idling in the Sacramento Valley Groundwater Basin would be 40,000 AF. Since land used for rice production is typically underlain by soils with low permeability (such as clay), a substantial portion of the water applied to rice fields would not percolate to the underlying aquifer, but rather discharges to the farmer's surface drainage system. Therefore, the reduction in recharge under the Proposed Project would be relatively small when compared to the total of amount of water that recharges the Sacramento Valley Groundwater Basin. Therefore, the Proposed Project would not make a cumulatively considerable contribution to cumulative effects to groundwater resources.

Growth-Inducement
The Proposed Project, in combination with CVP water and other transfers EBMUD may secure in 2016, would be used to meet anticipated water supply shortages with EBMUD's water service area during drought conditions and would not increase EBMUD's average annual supply. Therefore, there would be no contribution to growth-inducing impacts.

c) No Impact

The Proposed Project would not result in environmental effects that cause substantial adverse impacts to human beings. Effects in the sellers' area would be temporary, occurring in only 2016, and do not present a substantial risk to water supplies to human beings. Cropland idling also would not affect rice or other food supply for human beings because there is extensive crop acreage throughout the U.S to provide food supply. Crops are also often traded on the world market, and there is substantial rice and crops grown in other countries. The minimal amount of cropland idling acreage proposed would not affect food supply. Cropland idling would reduce fugitive dust emissions; which could be a benefit to human health in the cropland idling regions. The Proposed Project would provide additional water to EBMUD, which would benefit residents and businesses. Cropland idling transfers could have temporary economic effects by decreasing jobs, income, and wages for agriculture and agricultural-dependent industries. However, the adverse economic effects would be small relative to the counties' baseline economies, would only occur during the transfer year, and would not substantially affect long-term regional economic activities. A portion of the transfer revenue received by farmers would be spent in the local economy, which would offset some adverse economic effects of cropland idling. In addition, farmworker job losses as a result of idling would fall within historic annual fluctuations in farmworker employment. For these reasons, economic effects of transfers would be minor and would not be

expected to result in significant secondary physical environmental impacts. There would be no long-term effects of the Proposed Project.

Chapter 4
References

Bureau of Reclamation. 2015a. Long-Term Water Transfers Environmental Impact Statement/Environmental Impact Report. Accessed on December 30, 2015. Available at: http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=18361

_____. 2015b. Record of Decision Long-Term Water Transfers. Accessed on December 30, 2015. Available at: http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=18361

_____. 2015c. Central Valley Operations, Report of Operations Monthly Delivery Tables. Accessed on December 30, 2015. Available at: http://www.usbr.gov/mp/cvo/deliv.html

_____. 2015d. Record of Decision Central Valley Municipal and Industrial Water Shortage Policy. November 2015. Accessed on December 30, 2015. Available at: http://www.usbr.gov/mp/nepa/documentShow.cfm?Doc_ID=2361

_____. 2015e. Shasta Temperature Plan – Key Components. Accessed on November 13, 2015. Available at: http://www.usbr.gov/mp/drought/docs/shasta-temp-mgmt-plan-key-components-06-18-15.pdf

Buttner, Paul. 2014. Blog on California Rice Commission, Wintering Waterfowl Habitat Concerns Loom Large. September 16. Accessed on November 13, 2015. Available at: http://calrice.org/blog/?id=1410890340&author=California+Rice+Commission

California Air Resources Board (CARB). 2014. California Greenhouse Gas Emission Inventory: 2000-2012. May. Accessed on November 12, 2015. Available at: http://www.arb.ca.gov/cc/inventory/pubs/reports/ghg_inventory_00-12_report.pdf

_____. 2013. State Area Designations. Accessed on November 12, 2015. Available at: http://www.arb.ca.gov/desig/adm/adm.htm

California Department of Conservation. 2015a. Farmland Mapping and Monitoring Program. Accessed on December 1, 2015. Available at: http://www.conservation.ca.gov/dlrp/fmmp

_____. 2015b. Important Farmland Data Availability. Accessed on December 2, 2015. Available at: http://www.conservation.ca.gov/dlrp/fmmp/Pages/county_info.aspx

_____. 2014. California Farmland Conversion Report 2008-2010. Accessed on December 1, 2015. Available at: http://www.conservation.ca.gov/dlrp/fmmp/Documents/fmmp/pubs/2008-2010/fcr/FCR%200810%20complete.pdf

_____. 2007. California Geologic Survey Fault Rupture Zones in California; Alquist-Priolo Earthquake Fault Zoning Act with Index to Earthquake Fault Zone Maps. Special Publication 42, Interim Revision 2007. Accessed on November 17, 2015. Available at: ftp://ftp.consrv.ca.gov/pub/dmg/pubs/sp/Sp42.pdf

California Department of Fish and Wildlife. 2015a. State and Federally Listed Endangered and Threatened Animals in California. Accessed on November 12, 2015. Available at: https://www.dfg.ca.gov/wildlife/nongame/t_e_spp/

_____. 2015b. Fully Protected Animals. Accessed on November 12, 2015. Available at: https://www.dfg.ca.gov/wildlife/nongame/t_e_spp/fully_pro.html

_____. 2015c. California Natural Diversity Database. Special Animals List. September 2015. Accessed on November 12, 2015. Available at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406&inline=

California Department of Water Resources. 2015a. Chronological Reconstructed Sacramento and San Joaquin Valley Water Year Hydrologic Classification Indices. Accessed on December 28, 2015. Available at: http://cdec.water.ca.gov/cgi-progs/iodir/WSIHIST.

_____. 2015b. Bulletin 132-13. Management of the California State Water Project. Accessed on December 30, 2015. Available at: http://www.water.ca.gov/swpao/docs/bulletins/bulletin132/Bulletin132-13.pdf

_____. 2015c. SWPAO – Notices to State Water Project Contractors: 2015 State Water Project Allocation Increase – 20 Percent. Accessed on December 30, 2015. Available at: http://www.water.ca.gov/swpao/docs/notices/15-03.pdf

_____.2015d. 2015 Transfers Requiring Use of DWR Facilities. Updated October 5, 2015. Accessed on November 13, 2015. Available at: http://www.water.ca.gov/watertransfers/docs/Transfer_Proposals.pdf

_____. 2014a. SWPAO – Notices to State Water Project Contractors: 2014 State Water Project Allocation Increase back to 5 Percent. Accessed on December 30, 2015. Available at: http://www.water.ca.gov/swpao/docs/notices/14-07.pdf

_____. 2014b. Final California Water Plan Update 2013, Sacramento River Hydrologic Region Regional Report. Accessed on November 13, 2015. Available at: http://www.waterplan.water.ca.gov/docs/cwpu2013/Final/Vol2_SacramentoRiverRR.pdf.

_____. 2013a. SWPAO – Notices to State Water Project Contractors: 22013 Table A Allocation Decrease. Accessed on December 30, 2015. Available at: http://www.water.ca.gov/swpao/docs/notices/13-09.pdf

California Department of Water Resources California Data Exchange Center. 2015a. Sacramento River Below Wilkins Slough (WLK). Accessed on December 30, 2015. Available at: http://cdec.water.ca.gov/cgi-progs/selectQuery?station_id=WLK&dur_code=D&sensor_num=41&start_date=01/01/2014+00:00&end_date=12/30/2015+00:00

_____. 2015b. Sacramento River at Freeport (FPT). Accessed on December 30, 2015. Available at: http://cdec.water.ca.gov/cgi-progs/selectQuery?station_id=FPT&dur_code=D&sensor_num=20&start_date=01/01/2014+00:00&end_date=12/30/2015+00:00

_____. 2015c. Sacramento River at Bend Bridge (BND). Accessed on December 30, 2015. Available at: http://cdec.water.ca.gov/cgi-progs/selectQuery?station_id=BND&dur_code=D&sensor_num=41&start_date=01/01/2014+00:00&end_date=12/30/2015+00:00

_____. 2015d. Sacramento River at Hamilton City – Main Ch (HMC). Accessed on December 30, 2015. Available at: http://cdec.water.ca.gov/cgi-progs/selectQuery?station_id=HMC&dur_code=D&sensor_num=41&start_date=01/01/2014+00:00&end_date=12/30/2015+00:00

California Department of Water Resources and Bureau of Reclamation. 2015. Draft Technical Information for Preparing Water Transfer Proposals (Water Transfer White Paper). Accessed on December 30, 2015. Available at: http://www.water.ca.gov/watertransfers/docs/2015_Water_Transfer_White_Paper.pdf

California Department of Water Resources and State Water Resources Control Board. 2015. Background and Recent History of Water Transfers in California. Prepared for the Delta Stewardship Council. July. Accessed on December 30, 2015. Available at: http://www.water.ca.gov/watertransfers/docs/Background_and_Recent_History_of_Water_Transfers.pdf

California Rice Commission. 2011. Wildlife Known to Use California Ricelands. Prepared by ICF Jones & Stokes, Sacramento, California. Third Edition.

Central Valley Joint Venture. 2006. Implementation Plan. Accessed on November 12, 2015. Available at: http://www.centralvalleyjointventure.org/assets/pdf/CVJV_fnl.pdf

Freeport Regional Water Authority. 2004. Final Environmental Impact Report Freeport Regional Water Project State Clearinghouse No. 2002032132. March 2004. Accessed on December 30, 2015. Available at: http://www.freeportproject.org/nodes/explore/feir.php

_____. 2003. Draft Environmental Impact Statement/Environmental Impact Report Freeport Regional Water Project. State Clearinghouse No. 2002032132. July 2003. Accessed on December 30, 2015. Available at: http://www.freeportproject.org/nodes/project/draft_eir_eis_v1.php

Halstead. B.J., G.D. Wylie, and M.L. Casazza. 2014. Ghost of Habitat Past: Historic Habitat Affects the Contemporary Distribution of Giant Garter Snakes in a Modified Landscape. *Animal Conservation* 17(2): 144-153.

Miller. M.R., J. D. Garr, and P. S. Coates. 2010. Changes in the Status of Harvested Rice Fields in the Sacramento Valley, California: Implications for Wintering Waterfowl. Society of Wetland Scientist. July.

Petrie, M., & Petrik, K. 2010. Assessing Waterbird Benefits from Water Use in California Ricelands. Report prepared by Ducks Unlimited for the California Rice Commission. Sacramento, CA. Accessed on November 12, 2015. Available at: http://www.calrice.org/pdf/DucksUnlimited.pdf

State Water Resources Control Board. 2015. Drought Conditions Force Difficult Management Decisions for Sacramento River Temperature. Accessed on December 23, 2015. Available at: http://www.waterboards.ca.gov/press_room/press_releases/2015/pr061615_shasta.pdf

Sutter County. 2015. Species Proposed for Coverage Under the YSRCP (2015). Accessed on December 30, 2015. Available at:

http://www.yubasutterrcp.com/wp-content/uploads/2015/01/covered_species_table_20150121.pdf

United States Department of Agriculture. 2003-2015. USDA's National Agricultural Statistics Service County Ag Commissioners' Data Listing. Accessed on November 12, 2015. Available at: http://www.nass.usda.gov/Statistics_by_State/California/Publications/AgComm/Detail/

United States Department of Agriculture. Summary Report: 2010 National Resources Inventory, Natural Resource Conservation Service, Washington, DC, and Center for Survey Statistics and Methodology, Iowa State University, Ames, Iowa. Accessed on January 4, 2016. Available at: http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1167354.pdf

United States Department of Agriculture Natural Resource Conservation Service. 2012a. Web Soil Survey, *Custom Soil Resource Report for Yolo County,* Surface Texture, Yolo County, California. Version 7, December 12, 2007.

_____. 2012b. Web Soil Survey, *Custom Soil Resource Report for Yolo County*, Wind Erodibility Group, Yolo County, California. Version 7, December 12, 2007.

_____. 2012c. Web Soil Survey, *Custom Soil Resource Report for Yolo County*, Linear Extensibility, Yolo County, California. Version 7, December 12, 2007.

_____. 2011a. Web Soil Survey, *Custom Soil Resource Report for Glenn County*, Surface Texture, Glenn County, California. Version 7, December 19, 2011.

_____. 2011b. Web Soil Survey, *Custom Soil Resource Report for Glenn County*, Wind Erodibility Group, Glenn County, California. Version 7, December 19, 2011.

_____. 2011c. Web Soil Survey, *Custom Soil Resource Report for Glenn County*, Linear Extensibility, Glenn County, California. Version 7, December 19, 2011.

_____. 2009a. Web Soil Survey, *Custom Soil Resource Report for Colusa County*. Surface Texture, Colusa County, California. Version 7, August 27, 2009.

_____. 2009b. Web Soil Survey, *Custom Soil Resource Report for Sutter County*, Surface Texture, Sutter County, California. Version 7, August 31, 2009.

_____. 2009c. Web Soil Survey, *Custom Soil Resource Report for Colusa County*, Wind Erodibility, Colusa County, California. Version 7, August 27, 2009.

_____. 2009d. Web Soil Survey, *Custom Soil Resource Report for Sutter County*, Wind Erodibility, Sutter County, California. Version 7, August 31, 2009.

_____. 2009e. Web Soil Survey, *Custom Soil Resource Report for Colusa County*, Linear Extensibility, Colusa County, California. Version 7, August 27, 2009.

_____. 2009f. Web Soil Survey, *Custom Soil Resource Report for Sutter County*, Linear Extensibility, Sutter County, California. Version 7, August 31, 2009.

_____. 2009g. Technical Note Methods to Decrease Wind Erosion on Cropland during Water Shortages in California.

United States Environmental Protection Agency. 2015. The Green Book Nonattainment Areas for Criteria Pollutants. October 1. Accessed on November 12, 2015. Available at: http://www.epa.gov/oaqps001/greenbk/

United States Fish and Wildlife Service. 2015a. Reinitiation of Programmatic Formal Consultation for Bureau of Reclamation's Proposed Central Valley Project Long-Term Water Transfers (2015-2024) with Potential Effects on the Giant Garter Snake within Sacramento Valley, California. June 4, 2015.

_____. 2015b. Species Listed in California. Accessed on November 12, 2015. Available at: http://ecos.fws.gov/tess_public/reports/species-listed-by-state-report?state=CA&status=listed

United States Geological Survey. 2015a. Water Data Sacramento River at Freeport, Ord Ferry and Wilkins Slough. Accessed on November 2, 2015. Available at: http://waterdata.usgs.gov/nwis

United States Geological Survey. 2015b. Water Data. Sacramento River at Freeport USGS 11447650 and Sacramento River near Parrots Landing A0256010. Accessed on November 2, 2015. Available at: http://waterdata.usgs.gov/nwis

Zeiner, D. C., W., F. Laudenslayer, Jr., K. E. Mayer, M. White. Editors. 1990. *California's Wildlife*. Volume 2. Birds. State of California, Department of Fish and Game. Sacramento, California. 731 pp.

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Appendix A

Special Status Wildlife Species with Potential to Occur

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Special Status Species With Potential to Occur

Common Name Scientific Name	Special Status*		Distribution	Habitat Association	Seasonal Occurrence	Potential Impact
	Federal	State				
Invertebrates						
Conservancy fairy shrimp *Branchinecta conservation*	**E, X**	--	Northern two-thirds of the Central Valley. It ranges from Vina Plains of Tehama County; Sacramento NWR in Glenn County; Jepson Prairie Preserve and surrounding area east of Travis Air Force Base, Solano County; Mapes Ranch west of Modesto, Stanislaus County.	Inhabits the ephemeral water of swales and vernal pools. It is most commonly found in grass or mud bottomed swales, earth sump, or basalt flow depression pools in unplowed grasslands.	Has been collected from early December to early May.	None. Occurrences have been documented within the Seller Service Area. Suitable habitat occurs within the project area. No impacts to vernal pool or other habitats occupied by this species are anticipated. The species is not likely to occur to occur in crop fields and canals due to predators (i.e. fish).
Mid-valley fairy shrimp *Branchinecta mesovallensis*	**Under review**	--	Counties within the Great Central Valley, including Sacramento, Solano, Merced, Madera, San Joaquin, Fresno, and Contra Costa Counties.	Found in vernal pools, seasonal wetlands that fill with water during fall and winter rains	Has been collected from early December to early May.	Suitable habitat may occur within the project area. Low potential for occurrence due to predators (i.e. fish).
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	**T, X**	--	Central Valley and surrounding foothills below 3,000 feet elevation.	Dependent on elderberry shrubs (host plant) as a food source. Potential habitat is shrubs with stems 1 inch in diameter within Central Valley.	Year round for host plant and exit holes; March-June for adults	Elderberry shrubs will not be impacted, therefore no impact to beetles will occur.
Vernal pool fairy shrimp *Branchinecta lynchi*	**T, X**	--	Endemic to the Central Valley, Central Coast Mountains, and South Coast Mountains of California. It ranges from the Stillwater Plain in Shasta County through most of the length of the Central Valley to Paisley in Tulare County, and along the central Coast Range from northern Solano County to Pinnacles National Monument in San Benito County. Disjunct populations were also reported to occur in San Luis Obispo County, Santa Barbara County, and Riverside County	Inhabits the ephemeral water of swales and vernal pools. It is most commonly found in grassed or mud bottomed swales, earth sump, or basalt flow depression pools in unplowed grasslands.	Has been collected from early December to early May.	None. Occurrences have been documented in both the Buyer and the Seller Service areas. Crop fields and canals are not likely to support this species due to the presence of predators (i.e. fish), therefore no impacts are anticipated to the species. The project is not expected to impact vernal pools or natural wetlands.
Vernal pool tadpole shrimp *Lepidurus packardi*	**E, X**	--	Endemic to the Central Valley of California, with the majority of the populations occurring in the Sacramento Valley. This species has also been reported from the Sacramento River Delta to the east side of San Francisco Bay, and from a few scattered localities in the San Joaquin Valley from San Joaquin County to Madera County	Found in a variety of natural and artificial seasonally ponded habitat types including: vernal pools, swales, ephemeral drainages, stock ponds, reservoirs, ditches, backhoe pits, and ruts caused by vehicular activities.	Has been collected from early December to early May.	None. Occurrences have been documented in both the Buyer and the Seller Service area. Suitable habitat is present in the project area. Crop fields and canals are not likely to support this species due to the presence of predators (i.e. fish), therefore there is a low potential for impacts to the species. The project is not expected to impact vernal pools or natural wetlands. No impacts to the species are

Common Name Scientific Name	Special Status*		Distribution	Habitat Association	Seasonal Occurrence	Potential Impact
	Federal	State				
Amphibians						
California tiger salamander *Ambystoma californiense*	**T[1], E[2], X**	**CE, SSC**	Found in annual grassland habitat, grassy understories of valley-foothill hardwood habitats, and uncommonly along stream courses in valley-foothill riparian habitats. Occurs from near Petaluma, Sonoma Co., east through the Central Valley to Yolo and Sacramento Counties and south to Tulare Co.; and from the vicinity of San Francisco Bay south to Santa Barbara County.	Lives in vacant or mammal-occupied burrows, occasionally other underground retreats, throughout most of the year, in grassland, savanna, or open woodland habitats. Lays eggs on submerged stems and leaves, usually in shallow ephemeral or semi permanent pools and ponds that fill during heavy winter rains, sometimes in permanent ponds; breeding takes place in fish free pools and ponds.	Migrates up to about 2 km between terrestrial habitat and breeding pond. Migrations may occur from November through April.	None. Occurrences have been documented within both the Buyer and Seller Service Areas. Suitable habitat may occur within the project area, but will not be impacted by the project. Cropland idling has the potential to improve habitat for the species.
Foothill yellow-legged frog *Rana boylii*	**SC**	**SSC**	This species is known from the Pacific drainages from Oregon to the upper San Gabriel River, Los Angeles County, California, including the coast ranges and Sierra Nevada foothills in the United States.	This species inhabits partially shaded, rocky streams at low to moderate elevations, in areas of chaparral, open woodland, and forest.	Year round	None. Occurrences have been documented within the Seller Service Area. Suitable habitat is present within the project area. However the project is not expected to impact any suitable rocky stream and woodland habitats. No impact to the species is expected.
Western spadefoot toad *Spea hammondii*	**--**	**SSC**	This species occurs in the Central Valley and bordering foothills of California and along the Coast Ranges into northwestern Baja California, Mexico.	Lowlands to foothills, grasslands, open chaparral, pine-oak woodlands. Prefers shortgrass plains, sandy or gravelly soil. It is fossorial and breeds in temporary rain pools and slow-moving streams that do not contain bullfrogs, fish, or crayfish.	Year round. Usually in underground burrows most of year, but will travel several meters on rainy nights. Movement is rarely extensive.	None. Occurrences have been documented from Seller Service Areas. Suitable habitat is present in the project area. The project will not impact suitable upland habitat types. The species is not likely to occur in crop field canals due to the presence of predatory fish, bullfrogs etc. Cropland idling has the potential to improve habitat for the species.
Reptiles						
Giant garter snake *Thamnophis gigas*	**T**	**T**	Sacramento and San Joaquin Valleys from Butte County in the north to Kern County in the south.	Primarily associated with marshes, sloughs, and irrigation ditches. Generally absent in larger rivers.	Year round	High. Suitable habitat is present within the Seller Service Areas. Suitable habitat in the Seller Service Area is intermittent based on normal variation in cropping. Direct impacts may include reduction in suitable aquatic habitat within the Seller Service Area. The greatest impact would occur during the breeding season. Conservation measures are in place to maintain aquatic habitat corridors within irrigation

Common Name Scientific Name	Special Status*		Distribution	Habitat Association	Seasonal Occurrence	Potential Impact
	Federal	State				
Western pond turtle *Actinemys marmorata*	**Under review**	**SSC**	Ranged from extreme western Washington and British Columbia to northern Baja California, mostly to the west of the Cascade-Sierra crest.	The western pond turtle occupies a wide variety of wetland habitats including rivers and streams (both permanent and intermittent), lakes, ponds, reservoirs, permanent and ephemeral shallow wetlands, abandoned gravel pits, stock ponds, and sewage treatment.	Year round	High. Suitable habitat occurs within the project area. Pond turtles may occur in ditches, canals, rice fields, etc.
Birds						
Aleutian Canada goose *Branta canadensis leucopareia*	**D**	**--**	Alaska to California	Found grazing in golf courses, agricultural lands, and any open ground adjacent to water. Nests in grasses and marshes.	Year round	Suitable habitat is present in project area. Low impact will occur. Can relocate to other habitats within the area.
American White Pelican *Pelecanus erythrorhynchos*	**--**	**SSC**	Typically found along coasts in winter, but large numbers occur in California's Central Valley, the Salton Sea, and the Colorado River drainage of California and Arizona.	Breed on islands in shallow wetlands in the interior of the continent. They spend winters mainly on coastal waters, bays, and estuaries, or a little distance inland.	Uncommon visitor during spring/summer, more common in winter	Suitable habitat is present in project area. Low impact will occur. Can relocate to other habitats within the area.
American peregrine falcon *Falco peregrinus anatum*	**D, NMBMC**	**E, FP**	Throughout California.	Breeds in woodland, forest and coastal habitats on protected cliffs and ledges. Riparian areas and coastal and inland wetlands are important habitats yearlong especially during the non-breeding season.	Year round	None. Crop fields may provide suitable foraging habitat for the species, but birds could relocate to other habitat areas in the vicinity. No nesting habitat will be affected by the project.
Bald eagle *Haliaeetus leucocephalus*	**D**	**E**	Throughout California.	Riparian areas near coasts, rivers, and lakes. Nesting generally occurs in large old-growth trees in areas with little disturbance.	Year round	None. Occurrences have been documented within both the Buyer and Seller Service Area and both areas provide suitable habitat. No impacts to suitable nesting habitat are anticipated. Crop fields represent marginal foraging habitat. Birds would be able to relocate to other suitable habitat areas in the vicinity if fields were fallowed. Environmental commitments limit the amount of land that can be fallowed in a given county.

Common Name Scientific Name	Special Status*		Distribution	Habitat Association	Seasonal Occurrence	Potential Impact
	Federal	State				
Bank swallow *Riparia riparia*	--	**T, SSC**	A neotropical migrant found primarily in riparian and other lowland habitats in California west of the deserts during the spring-fall period. Breeding population in California occurs along banks of the Sacramento and Feather rivers in the northern Central Valley.	Requires vertical banks and cliffs with fine-textured or sandy soils near streams, rivers, ponds, lakes, and the ocean for nesting. Feeds primarily over grassland, shrub land, savannah, and open riparian areas during breeding season and over grassland, brushland, wetlands, and cropland during migration.	March-mid-September	None. Known from both the Buyer and Seller Service Areas. No suitable nesting habitat (i.e. cliffs along rivers) will be affected from small changes in river flow. There is potential that the project would reduce the area of cropland habitat used for foraging during migration (wetlands and croplands) due to changes in water application. However, fallow cropland would still providing suitable foraging habitat, and birds could forage at other croplands in the vicinity.
Black tern *Chlidonias niger*	--	**SSC**	Common spring and summer visitor to fresh emergent wetlands of California.	Uses fresh emergent wetlands, lakes, ponds, moist grasslands, and agricultural fields. In migration, some take coastal routes and forage offshore.	April-September	Suitable habitat is present within the project area (i.e. rice fields) and a high potential to occur. Conservation strategies are in place for this species. No occurrences have been documented within either the Buyer or Seller Service Areas. However, suitable habitat (i.e. rice fields) is present, and the project area is within the known range for the species. Therefore it has moderate potential to occur Water transfers could reduce suitable habitat for the species within the Seller Service Area. Conservation strategies are in place that would make potential impacts to this
Black-crowned night heron *Nycticorax nycticorax*	**SC**	--	Resident in lowlands and foothills throughout most of California, including the Salton Sea and Colorado River areas, and very common locally in large nesting colonies.	Feeds along the margins of lacustrine, large riverine, and fresh and saline emergent habitats. Nests and roosts in dense-foliaged trees and dense emergent wetlands.	Year round	None. No occurrences of black-crowned night heron have been documented within either the Buyer or Seller Service Areas. Suitable habitat is present in project area, however no nesting or roosting habitats will be affected.
California yellow warbler *Dendroica petechia brewsteri*	--	**SSC**	Throughout California	Frequents open to medium-density woodlands and forests with a heavy brush understory in breeding season. In migration, found in a variety of sparse to dense woodland and forest habitats.	April-October	None. No occurrences have been documented in the project area. The species is not likely to occur in crop fields, and no suitable habitat will be impacted (i.e. dense woodland and forest habitats).

Common Name Scientific Name	Special Status*		Distribution	Habitat Association	Seasonal Occurrence	Potential Impact
	Federal	State				
Cooper's hawk *Accipiter cooperii*	--	**WL**	Throughout California	Frequents landscapes where wooded areas occur in patches and groves. Often uses patchy woodlands and edges with snags for perching. Dense stands with moderate crown-depths used for nesting.	Year round	None. Occurrences have been documented within both the Buyer and Seller Service Area. Suitable habitat occurs within the project area. No potential impacts to preferred foraging or nesting habitat are anticipated.
Double-crested cormorant *Phalacrocorax pelagicus*	--	**WL**	Along the entire coast of California and on inland lakes, in fresh, salt and estuarine waters.	Open water with offshore rocks, islands, steep cliffs, dead branches of trees, wharfs, jetties, or even transmission lines. Requires undisturbed nest-sites beside water, on islands or mainland. Uses wide rock ledges on cliffs; rugged slopes; and live or dead trees, especially tall ones.	Year round	None. No occurrences have been documented within the project area, but the species could occur at reservoirs and inland ponds. No negative impacts to foraging or breeding habitat are expected.
Fulvous whistling duck *Dendrocyana bicolor*	--	**SSC**	One of the most widely distributed species of waterfowl in the world, expanded its distribution northward into the southern United States beginning in the mid- to late nineteenth century, becoming established in California and rice-growing regions of the U.S.	Flooding of ricefields in preparation for planting stimulates ground-nesting by birds on ricefield levees and in pastures, haylands, and small grain fields adjacent to ricefields. More commonly, however, Fulvous Whistling-Ducks nest in flooded ricefields when plants are of sufficient stature to support eggs.	Spring-summer	Low impact due to rarity of occurrence. Can relocate to other habitats within the area.
Golden eagle *Aquila chrysaetos*	**T**	**E**	Throughout California	Riparian areas near coasts, rivers, and lakes. Nesting generally occurs in large old-growth trees in areas with little disturbance.	Year round	None. Occurrences have been documented within both the Buyer and Seller Service Areas. Suitable habitat occurs within the project area. No impacts to nesting habitat are expected.
Great blue heron *Ardea herodias*	--	--	Throughout California	Found in shallow estuaries, fresh and saline emergent wetlands, along riverine and rocky marine shores, in croplands, pastures, salt ponds, and in mountains above foothills. Nests roosts in large trees.	Year round	None. Rookeries have been documented within the Buyer and Seller Service Areas. No impacts to rookeries are anticipated. Idling of cropland foraging habitat would be limited by the environmental commitments, and birds could use alternative suitable foraging areas in the vicinity.
Great egret *Ardea alba*	--	--	Throughout California	Feeds and rests in fresh, and saline emergent wetlands, along the margins of estuaries, lakes, and slow-moving streams, on mudflats and salt ponds, and in irrigated croplands and pastures. Nests roosts in large trees.	Year round	None. Occurrences have been documented in the Seller Service Area. No impacts to rookeries are anticipated. Idling of cropland foraging habitat would be limited by the environmental commitments, and birds could use alternative suitable foraging areas in the vicinity.

Common Name Scientific Name	Special Status*		Distribution	Habitat Association	Seasonal Occurrence	Potential Impact
	Federal	State				
Greater sandhill crane *Grus canadensis tabida*	--	T, FP	Breeds only in Siskiyou, Modoc and Lassen counties and in Sierra Valley, Plumas and Sierra counties. Winters primarily in the Sacramento and San Joaquin valleys from Tehama south to Kings Counties.	In summer, this race occurs in and near wet meadow, shallow lacustrine, and fresh emergent wetland habitats. Frequents annual and perennial grassland habitats, moist croplands with rice or corn stubble, and open, emergent wetlands. It prefers relatively treeless plains.	Migration southward is September-October and northward is March-April.	High. No occurrences have been documented within the project area, but occurrences have been recorded in Butte and Sutter Counties. Suitable foraging and winter roosting habitat is present within the project area (i.e. rice fields). Conservation strategies are in place for this species and birds will have other suitable nesting sites available.
Least bell's vireo *Vireo bellii pusillus*	E	E	California to northern Baja.	Inhabits low, dense riparian growth along water or along dry parts of intermittent streams. Typically associated with willow, cottonwood, baccharis, wild blackberry, or mesquite in desert localities.	March-August	None. No occurrences have been documented in the Buyer Service Area. Suitable habitat may occur within the project action area. The project is not expected to impact any suitable willow or dense riparian habitat due to small changes in river flow, therefore no impacts to the species are anticipated.
Least bittern *Ixobrychus exilis*	--	SSC	Formerly widely distributed in the Central Valley, but current range has been greatly reduced.	Fresh and brackish water marshes with tall, dense emergent vegetation and clumps of woody plants over deep	Rare nester during spring/summer, may overwinter	Low impact due to rarity of occurrence. Can relocate to other habitats within the area.
Little willow flycatcher *Empidonax traillii brewsteri*	--	E	Migrant at lower elevations, primarily in riparian habitats throughout California	Most numerous where extensive thickets of low, dense willows edge on wet meadows, ponds, or backwaters.	Spring (mid-May to early June) and fall (mid-August to early September)	None. This species has not been documented within the project area according to CNDDB. Suitable habitat may be present within the project area (i.e. dense willows), but will not be impacted by small changes in river flow.
Long-billed curlew *Numenius americanus*	SC	WL	Along the California coast, and in the Central and Imperial valleys.	Upland shortgrass prairies and wet meadows are used for nesting; coastal estuaries, open grasslands, and croplands are used in winter.	Winter migrant from July-April	Low. No CNDDB occurrences have been documented within the project area, but the species is known to occur within the action area during winter migration. There is potential for impacts to suitable foraging habitat (i.e. cropland), although this may be reduced by environmental commitments, which protect winter foraging habitat in Butte Sink, and other wildlife management areas downstream. Birds can relocate to other suitable habitats within the area.
Long-eared owl *Asio otus*	--	SSC	Throughout California	Frequents dense, riparian and live oak thickets near meadow edges, and nearby woodland and forest habitats. Also found in dense conifer stands at higher elevations.	Year round	None. Occurrences have been documented in the Buyer Service Area. Suitable habitat occurs within the project area. The project is not expected to impact any suitable habitat (i.e. forest and woodland habitats)

Common Name Scientific Name	Special Status*		Distribution	Habitat Association	Seasonal Occurrence	Potential Impact
	Federal	State				
Northern harrier *Circus cyaneus*	--	**SSC**	Throughout lowland California, concentrated in the Central Valley and coastal valleys.	Breeds in annual grasslands and wetlands. Prefers marshes and grasslands for foraging and nesting. Also uses agricultural fields for nesting and foraging, although nests may be destroyed by agricultural activities.	Year round	None. CNDDB occurrences have been documented in the Buyer Service Area. Suitable habitat is present in project area. Foraging and breeding habitat may be affected, but fallow fields would still represent suitable habitat. Birds can relocate to other habitats within the area.
Osprey *Pandion haliaetus*	--	**WL**	Northern California from Cascade Ranges south to Lake Tahoe, and along the coast south to Marin County.	Associated strictly with large, fish-bearing waters, primarily in ponderosa pine through mixed conifer habitats.	Year round	None. Occurrences have been documented within both the Buyer and Seller Service Area. Suitable habitat occurs within the project area. Water transfers would be subject to flow requirements. Therefore no impacts to foraging area expected. No impacts to nesting sites are anticipated.
Redhead *Aythya americana*	--	**SSC**	Breeds widely throughout the Prairie Pothole Region of the United States and Canada. It also nests in dense concentrations in marshes of the western United States.	Depends heavily on rhizomes of shoalgrass, a seagrass species, for winter nutrition. Nests are constructed in dense emergent vegetation (usually cattail or bulrush) of deep marshes.	Spring-summer	Low impact due to rarity of occurrence. Can relocate to other habitats within the area.
Short-eared owl *Asio flammeus*	--	**SSC**	Endemic to marshes bordering the San Francisco, San Pablo Bays and Suisun Bay .	Open country, including grasslands, wet meadows and cleared forests. Occasionally in estuaries during breeding season.	Year round	None. Occurrences have been documented in the Buyer Service Area. Suitable habitat occurs within the project area. No impacts to breeding habitat will occur. Fallow rice fields would still represent suitable foraging habitat for the species.
Snowy egret *Egretta thula*	--	--	Throughout California	Found along shores of coastal estuaries, fresh and saline emergent wetlands, ponds, slow-moving rivers, irrigation ditches, and wet fields.	Year round	None. Occurrences have been documented in the Buyer Service Area, however suitable habitat is present in both the Buyer and Seller Service area. No impacts to rookeries are anticipated. Idling of cropland foraging habitat would be limited by the environmental commitments, and birds could use alternative suitable foraging areas in the vicinity.

Common Name Scientific Name	Special Status*		Distribution	Habitat Association	Seasonal Occurrence	Potential Impact
	Federal	State				
Swainson's hawk *Buteo swainsoni*	**SC, MNBMC**	**T**	Lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte Valley.	Nests in mature trees, including valley oaks or cottonwoods in or near riparian habitats; forages in grasslands, irrigated pastures, and grain and row crop fields.	Spring and Summer; small wintering population in the Delta	None. CNDDB occurrences have been documented within both the Seller Service Area. Suitable habitat is present within the project area. The project may alter the composition of foraging habitat in the Seller Service Areas, but these areas would still be suitable for the species, and additional habitats in the vicinity would be available. No impacts to riparian breeding habitat are expected from small changes
Tricolored blackbird *Agelaius tricolor*	--	**SSC**	A resident in California found throughout the Central Valley and in coastal districts from Sonoma County south.	Breeds near fresh water, preferably in emergent wetlands with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, tall herbs. Feeds in grassland and cropland habitats.	Year round	Low. CNDDB occurrences have been documented within both the Seller and Buyer Service Area. Suitable habitat is present within the project area. Foraging habitat may be affected by the project. Environmental commitments limit cropland idling and birds can relocate to other adjacent foraging habitats within the area.
Tule greater white-fronted goose *Anser albifrons elgasi*	--	**SSC**	In North America, this species breeds in open tundra areas of the low Arctic and it formerly wintered south to Chiapas, Mexico.	Breeds along tundra wetlands. Winters in agricultural fields, marshes, bays, and lakes.	Winter	Low. Species is known to occur within the action area during winter migration. There is potential for impacts to suitable foraging habitat (i.e. cropland), although this may be reduced by environmental commitments, which protect winter foraging habitat in Butte Sink, and other wildlife management areas downstream. Birds can relocate to other suitable habitats within the area.
Western burrowing owl *Athene cunicularia hypugaea*	--	**SSC**	Central and southern coastal habitats, Central Valley, Great Basin, and deserts.	Open annual grasslands or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Dependent upon burrowing mammals (especially California ground squirrel) for burrows.	Year round	None. Occurrences have been documented within both the Buyer and Seller Service Area. Suitable habitat occurs within the project area. Agricultural ditches may be suitable habitat for burrowing owl burrow and nesting activity. Water transfers would not affect the suitability of habitat for burrowing owl in the project area.

Common Name Scientific Name	Special Status*		Distribution	Habitat Association	Seasonal Occurrence	Potential Impact
	Federal	State				
Western yellow-billed cuckoo *Coccyzus americanus*	**T**	**E**	Uncommon to rare summer resident in scattered locations throughout California.	Deciduous riparian thickets or forests with dense, low-level or understory foliage, and which abut on slow-moving watercourses, backwaters, or seeps. Willow almost always a dominant component of the vegetation. In Sacramento Valley, also utilizes adjacent orchards, especially of walnut. Nests in sites with some willows, dense low-level or understory foliage, high humidity, and wooded foraging spaces.	Summer migration is from June-September.	None. Occurrences have been documented in the Seller Service Area. Suitable habitat is present within the project area. However this species is not likely to occur in crop fields due to lack of suitable foraging and roosting habitat (i.e. dense riparian thickets). No impacts are anticipated to riparian breeding habitat due to small changes in river flow.
White-faced ibis *Plegadis chihi*	**--**	**WL**	Uncommon summer resident in sections of southern California, a rare visitor in the Central Valley, and is more widespread in migration.	Feeds in fresh emergent wetlands, shallow lacustrine waters, muddy grounds of wet meadows, and irrigated or flooded pastures and croplands. Nests in dense, fresh emergent wetlands.	Present in California from April-October.	Low. Occurrences have been documented in the Seller Service Area. Suitable habitat is present in project area. Low potential impact to foraging habitat in the Seller Service Area. No potential impacts are expected to roosting habitat. Can relocate to other habitats within the area. Environmental committments would limit acreage of allowable cropland idling.
White-tailed kite *Elanus leucurus*	**SC, MNBMC**	**FP**	Central Valley, coastal valleys, San Francisco Bay area, and low foothills of Sierra Nevada.	Savanna, open woodlands, marshes, partially cleared lands and cultivated fields, mostly in lowland situations (Tropical to Temperate zones).	Year round	None. CNDDB occurrences have been documented within both the Seller and Buyer Service Area. Suitable habitat is present within the project area. Foraging habitat may be altered, but will still be suitable for the species. No potential impacts to breeding habitat are anticipated.
Yellow-headed blackbird *Xanthocephalus xanthocephalus*	**--**	**SSC**	Breeds in deep-water, emergent wetlands throughout nonforested regions of western North America.	Breed and roost in freshwater wetlands with dense, emergent vegetation such as cattails. They often forage in fields, typically wintering in large, open agricultural areas.	Year round	Low. Suitable habitat is present within the project area. Foraging habitat may be affected by the project. Environmental commitments limit cropland idling and birds can relocate to other adjacent foraging habitats within the area.
Mammals						
California wolverine *Gulo gulo*	**SC**	**T, FP**	A scarce resident of North Coast mountains and Sierra Nevada. Sightings range from Del Norte and Trinity cos. east through Siskiyou and Shasta cos., and south through Tulare Co. A few possible sightings occur in the north coastal region as far south as Lake Co. Habitat distribution in California is poorly known for the North Coast and northern Sierra Nevada.	In north coastal areas, has been observed in Douglas-fir and mixed conifer habitats. In the northern Sierra Nevada, have been found in mixed conifer, red fir, and lodgepole habitats, and probably use subalpine conifer, alpine dwarf-shrub, wet meadow, and montane riparian habitats. In the southern Sierra Nevada occur in red fir, mixed conifer, lodgepole, subalpine conifer, alpine dwarf-shrub, barren, and probably wet meadows, montane chaparral, and Jeffrey pine.	Year round (largely nocturnal)	None. Suitable habitat may occur within the project area, however no CNDDB occurrences have been documented in the Seller Service area. The species is not likely to occur in agriculture fields. No impacts are anticipated.

Common Name Scientific Name	Special Status*		Distribution	Habitat Association	Seasonal Occurrence	Potential Impact
	Federal	State				
Greater western mastiff bat *Eumops perotis californicus*	**SC**	**SSC**	Uncommon resident in southeastern San Joaquin Valley and Coastal Ranges from Monterey Co. southward through southern California, from the coast eastward to the Colorado Desert.	Occurs in many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub, and urban areas. Crevices in cliff faces, high buildings, trees, and tunnels are required for roosting.	Year round (nocturnal activity)	None. Occurrences have been documented in the Seller Service Area. Suitable habitat is present in project area, bur no project impacts are anticipated.
Ring-tailed cat *Brassariscus astutus*	**SC**	**FP**	Ringtails are found in a variety of habitats centered around the semi-arid to arid climates of the west and southwest. Little information available on distribution and relative abundance among habitats.	Occurs in various riparian habitats, and in brush stands of most forest and shrub habitats, at low to middle elevations. Uses hollow trees, logs, snags, cavities in talus and other rocky areas, and other recesses are for cover.	Year round (nocturnal)	None. No CNDDB records of this species have been documented in the project area. Suitable habitat is present in project area, but the species is not likely to occur in crop fields. No potential impact to suitable riparian habitat are expected from
Riparian brush rabbit *Sylvilagus bachmani riparius*	**E**	**E**	Isolated populations on Caswell Memorial State Park on the Stanislaus River and along an overflow channel of the San Joaquin River.	Riparian thickets	Year round	None. No CNDDB records of this species have been documented in the project area. Suitable habitat is present in the project area, however, no potential impacts are expected to suitable habitat (i.e. riparian thickets) from small changes in river

[1]Central CA DPS

[2]Santa Barbara and Sonoma Counties

Green Shading: potential to be affected, further evaluated in Chapter 3

*** Status explanations:**

Federal

E = listed as endangered under the federal Endangered Species Act

T = listed as threatened under the federal Endangered Species Act

MNBMC = Fish and Wildlife Service: Migratory Nongame Birds of Management Concern

SC = species of concern; formerly Category 2 candidate for federal listing

C = Candidate for listing as threatened or endangered

-- = no designations

X = critical habitat

PX = potential critical habitat

D = delisted

State

E = listed as endangered under the California Endangered Species Act

T = listed as threatened under the California Endangered Species Act

CE = candidate endangered under the California Endangered Species Act

FP = fully protected under the California Fish and Game Code

SSC = species of special concern

WL = Watch List

-- = no designations

Appendix B

Special-Status Plants Species with Potential to Occur

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Common Name Scientific name	Special Status* (F/S/CNPS)	Distribution	Habitat Association	Blooming Period	Potential Impact
Ahart's dwarf rush *Juncus leiospermus* var. *ahartii*	-/-/ 1B	Butte, Calaveras, Placer, Sacramento, Tehama, and Yuba Counties.	Valley and foothill grassland (mesic).	March-May	Not likely to occur in crop fields, no suitable habitat present.
Alkali milk-vetch *Astragalus tener var. tener*	-/-/ 1B	Central western California including Yolo County.	Subalkaline flats and areas around vernal pools.	March-June	Not likely to occur in crop fields, no suitable habitat present (i.e. subalkali flats).
Antioch Dunes evening-primrose *Oenothera deltoides* ssp. *howellii*	E/E/ 1B	Found only in Contra Costa and Sacramento Counties.	Occurs in inland dunes.	March-September	Not likely to occur in crop fields, no suitable habitat present.
Brittlescale *Atriplex depressa*	-/-/1B	Western Central Valley and valleys of adjacent foothills.	Alkali grassland, alkali meadow, alkali scrub, and vernal pools.	April-October	There is a CNDDB occurrence within Glenn, Colusa, and Yolo counties, however this species is not likely to occur in crop fields due to lack of suitable habitat (i.e. alkali and vernal pools).
Boggs Lake hedge-hyssop *Gratiola hetersepela*	-/-/1B	Dispersed throughout the Sacramento and Central Valley. Also in Oregon.	Marsh's, swamps, and vernal pools (clay).	April-August	There is a CNDDB occurrence within Sacramento County. Suitable habitat is present but has low potential to occur. No effects anticipated from small changes in river flow.
Contra Costa goldfields *Lasthenia conjugens*	E/SSC/1B	San Francisco Bay Delta Regions, and scattered coastal areas.	Cismontane woodlands, playas, valley and foothill grasslands, and vernal pools.	March-June	No CNDDB occurrences; not likely to occur in crop fields due to lack of suitable habitat (i.e. vernal pools, playas).

Common Name Scientific name	Special Status* (F/S/CNPS)	Distribution	Habitat Association	Blooming Period	Potential Impact
Colusa grass *Neostapfia colusana*	T/E/1B	Southern Sacramento Valley, and northern San Joaquin Valley.	Vernal pools.	May-July	There is a CNDDB occurrence within Glenn and Colusa counties, however this species is not likely to occur in crop fields due to lack of suitable habitat (i.e. vernal pools).
Crampton's tuctoria (Solano grass) *Tuctoria mucronata*	E/E/1B	Located only in Yolo and Solano Counties.	Valley and foothill grassland (mesic), and vernal pools.	April-August	Not likely to occur in crop fields, no suitable habitat present.
Ferris' milk-vetch *Astragalus tener* var. *ferrisae*	-/-/1B	Sacramento Valley.	Subalkaline flats and areas around vernal pools.	March-June	Not likely to occur in crop fields, no suitable habitat present.
Fox sedge *Carex vulpinoidea*	-/-/2	Northern Sacramento Valley, including Butte County, isolated populations in San Joaquin County.	Riparian woodland, marshes and swamps.	May-June	Suitable habitat present in project area. Low potential to occur. Not likely to establish in crop fields and no effects anticipated from small changes in river flows.
Greene's tuctoria *Tuctoria greeni*	E/SSC/1B	Butte, Colusa, Fresno, Glenn, Madera, Merced, Modoc, Shasta, San Joaquin, Stanislaus, Tehama, and Tulare Counties.	Vernal pools.	May-July	There is a CNDDB occurrence, however this species is not likely to occur in crop fields due to lack of suitable habitat (i.e. vernal pools).
Hairy Orcutt grass *Orcuttia pilosa*	E/E/1B	Northern Sacramento Valley, Pit River Valley; isolated populations in Lake and Sacramento counties.	Vernal pools.	May-September	There is a CNDDB occurrence within Butte and Glenn counties, however this species is not likely to occur in crop fields due to lack of suitable habitat (i.e. vernal pools).

Common Name Scientific name	Special Status* (F/S/CNPS)	Distribution	Habitat Association	Blooming Period	Potential Impact
Heartscale *Atriplex cordulata*	-/-/1B	Western Central Valley and valleys of adjacent foothills.	Alkali grasslands, alkali meadows, and alkali scrub.	May-October	There is a CNDDB occurrence within Butte, Colusa, Yolo, and Glenn counties, however this species is not likely to occur in crop fields due to lack of suitable habitat (i.e. alkali areas).
Heckard's pepper-grass *Lepidium latipes* var**.** *heckardii*	-/-/1B	Glenn, Solano, and Yolo Counties.	Valley and foothill grassland alkaline flats.	March-May	There is a CNDDB occurrence, however this species is not likely to occur in crop fields due to lack of suitable habitat (i.e. alkali flats).
Hoover's spurge *Chamaesyce hooveri*	T/-/ 1B	Scattered in Glenn, Butte, Colusa, Merced, Stanislaus, Tehama, and Tulare Counties.	Vernal pools.	July-September	There is a CNDDB occurrence, however this species is not likely to occur in crop fields due to lack of suitable habitat (i.e. vernal pools).
Indian valley brodiaea *Broiaea coronaria* ssp. *rosea*	-/E/1B	Scattered in Glenn, Lake, Colusa, and Tehama Counties.	Closed cone coniferous forest, chaparral, valley and foothill grasslands (serpentinite).	May-June	There is a CNDDB occurrence, however this species is not likely to occur in crop fields due to lack of suitable habitat.
Jepson's milk-vetch *Astragalus rattanii var. jepsonianus*	-/-/1B	Colusa, Glenn, Lake, Napa, Tehama, and Yolo counties.	Chaparral, cismontane woodland, valley and foothill grassland, often serpentinite.	April-June	There is a CNDDB occurrence, however this species is not likely to occur in crop fields due to lack of suitable habitat.
Keck's checkerbloom *Sidalcea keckii*	E/-/1B	Colusa, Fresno, Merced, Napa, Solano, Tulare, and Yolo counties.	Cismontane woodlands, foothill and valley grasslands (serpentinite).	April-May	There is a CNDDB occurrence, however this species is not likely to occur in crop fields due to lack of suitable habitat.
Legenere *Legenere limosa*	SC/-/1B	Sacramento Valley and south of the North Coast Ranges.	Vernal pools.	May-June	Not likely to occur in crop fields, no suitable habitat present (i.e. vernal pools)

Common Name Scientific name	Special Status* (F/S/CNPS)	Distribution	Habitat Association	Blooming Period	Potential Impact
Lone buckwheat *Eriogonum apricum* var. *apricum*	E/E/1B	Found in Amador and Sacramento Counties.	Chaparral.	July-October	There is a CNDDB occurrence, however this species is not likely to occur in crop fields due to lack of suitable habitat (chaparral).
Marsh checkerbloom *Sidalcea oregana* ssp. *hydrophila*	-/-/1B	Glenn, Lake, Mendocino, and Napa Counties.	Meadows and seeps, and riparian forest.	June-August	Suitable habitat present in project area. Low potential to occur. Not likely to establish in crop fields and no effects anticipated from small changes in river flow.
Milo Baker's lupine *Lupinus milo-bakeri*	-/T/1B	Glenn and Mendocino Counties.	Cismontane woodlands, foothill and valley grasslands.	June-September	There is a CNDDB occurrence, however this species is not likely to occur in crop fields due to lack of suitable habitat.
Palmate-bracted bird's-beak *Cordylanthus palmatus*	E/E/1B	Found in Glenn and Colusa Counties and within the Central Valley.	Alkali meadow, alkali scrub, valley and grasslands.	May-October	Not likely to occur in crop fields, no suitable habitat present (i.e. alkali).
Pincushion navarretia *Navarretia myersii* ssp. *myersii*	-/-/1B	Alamdor, Calaveras, Merced, Placer, and Sacramento Counties.	Vernal pools (often acidic).	May	No CNDDB occurrences; not likely to occur due to lack of suitable habitat (i.e. vernal pools).
Recurved larkspur *Delphinium recurvatum*	-/-/1B	Disbursed throughout the Sacramento and Central Valley.	Chenopod scrub, cismontane, valley and foothill grasslands (alkali).	March-June	There is a CNDDB occurrence, however this species is not likely to occur in crop fields due to lack of suitable habitat (i.e. alkali).
Red mountain catchfly *Silene campanulata* ssp. *campanulata*	-/E/1B	Found in Colusa, Glenn, Mendocino, Shasta, Tehama, and Trinity Counties.	Chaparral and lower montane coniferous forest, usually sepentinite and rocky.	April-July	There is a CNDDB occurrence in Colusa County, however this species is not likely to occur in crop fields due to lack of suitable habitat.

Common Name Scientific name	Special Status* (F/S/CNPS)	Distribution	Habitat Association	Blooming Period	Potential Impact
Rose-mallow *Hibiscus laiocarpos*	-/-/2	Northern Sacramento County.	Marshes and swamps.	June-September	Suitable habitat present in project area. Low potential to occur. Not likely to establish in crop fields and no effects anticipated from small changes in river flow.
Sacramento orcutt grass *Orcuttia viscida*	E/E/1B	Valley grasslands and freshwater wetlands.	Vernal pools.	May-June	There is a CNDDB occurrence, however this species is not likely to occur in crop fields due to lack of suitable habitat (i.e. vernal pools).
San Joaquin spearscale *Atriplex joaquiniana*	-/-/1B	Western Central Valley and valleys of adjacent foothills.	Alkali grasslands, and alkali scrub.	April-September	Not likely to occur in crop fields, no suitable habitat present (i.e. alkali).
Sanford's arrowhead *Sagittaria sanfordii*	-/-/1B	Central Valley.	Freshwater marshes, shallow streams, and ditches.	May-August	Suitable habitat on present in ditches; not yet detected. Not likely to establish in crop fieldsand no effects anticipated from small changes in river flow.
Slender Orcutt grass *Orcuttia tenuis*	T/E/1B	Northern Sacramento Valley, Pit River Valley; isolated populations in Lake and Sacramento Counties	Vernal pools.	May-July	There is a CNDDB occurrence, however this species is not likely to occur in crop fields due to lack of suitable habitat (i.e. vernal pools).
Soft bird's beak *Cordylanthus mollis* ssp. *mollis*	E/SSC/1B	Located in Contra Costa, Marin, Napa, Sacramento, Solano, and Sonoma Counties.	Coastal salt marshes and swamps.	July-November	There is a CNDDB occurrence in Sacramento County, however this species is not likely to occur in crop fields due to lack of suitable habitat.

***Status explanations:**

F=Federal
E=Endangered
T=Threatened
SC= Special Concern

Common Name Scientific name	Special Status* (F/S/CNPS)	Distribution	Habitat Association	Blooming Period	Potential Impact

S=State
E=Endangered
T=Threatened
SSC=Species of Special Concern

CNPS=California Native Plant Society
1B=Rare, threatened, or endangered in California and elsewhere
2=Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere
3=Plants about which we need more information - A review list

Appendix C

Air Quality Emissions Calculations

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Table C-1. Summary of Cropland Idling Emissions by Water Agency

Water Agency	Daily Emissions (lbs per day)		Annual Emissions (tons per year)	
	PM10	PM2.5	PM10	PM2.5
Glenn-Colusa Irrigation District				
Exhaust Emissions	--	--	--	--
Land Preparation	(295)	(44)	(27)	(4)
Harvesting	(25)	(4)	(2)	(0)
Wind Erosion	71	14	6	1
Glenn-Colusa Irrigation District Subtotal	(249)	(34)	(22)	(3)
Reclamation District 108				
Exhaust Emissions	--	--	--	--
Land Preparation	(148)	(22)	(13)	(2)
Harvesting	(12)	(2)	(1)	(0)
Wind Erosion	20	4	2	0
Reclamation District 108 Subtotal	(140)	(20)	(13)	(2)
Reclamation District 1004				
Exhaust Emissions	--	--	--	--
Land Preparation	(133)	(20)	(12)	(2)
Harvesting	(11)	(2)	(1)	(0)
Wind Erosion	22	4	2	0
Reclamation District 1004 Subtotal	(122)	(17)	(11)	(2)
Sycamore Mutual Water Company				
Exhaust Emissions	--	--	--	--
Land Preparation	(89)	(13)	(8)	(1)
Harvesting	(7)	(1)	(1)	(0)
Wind Erosion	21	4	2	0
Sycamore Mutual Water Company Subtotal	(75)	(10)	(7)	(1)
Exhaust Emissions Total	0	0	0	0
Land Preparation Total	(664)	(100)	(60)	(9)
Harvesting Total	(56)	(8)	(5)	(1)
Wind Erosion Total	134	27	12	2
GRAND TOTAL	**(586)**	**(81)**	**(53)**	**(7)**

Table 85. Summary of Cropland Idling Emissions by County

	Daily Emissions (lbs/day)						Annual Emissions (tons/yr)					
County	**VOC**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**	**VOC**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Colusa												
Glenn-Colusa Irrigation District	0	0	0	0	(124)	(17)	0	0	0	0	(11)	(2)
Reclamation District 108	0	0	0	0	(70)	(10)	0	0	0	0	(6)	(1)
Reclamation District 1004	0	0	0	0	(41)	(6)	0	0	0	0	(4)	(1)
Sycamore Mutual Water Company	0	0	0	0	(75)	(10)	0	0	0	0	(7)	(1)
Colusa Subtotal	0	0	0	0	(310)	(43)	0	0	0	0	(28)	(4)
Glenn												
Glenn-Colusa Irrigation District	0	0	0	0	(124)	(17)	0	0	0	0	(11)	(2)
Reclamation District 1004	0	0	0	0	(41)	(6)	0	0	0	0	(4)	(1)
Glenn Subtotal	0	0	0	0	(165)	(23)	0	0	0	0	(15)	(2)
Sutter												
Reclamation District 1004	0	0	0	0	(41)	(6)	0	0	0	0	(4)	(1)
Sutter Subtotal	0	0	0	0	(41)	(6)	0	0	0	0	(4)	(1)
Yolo												
Reclamation District 108	0	0	0	0	(70)	(10)	0	0	0	0	(6)	(1)
Yolo Subtotal	0	0	0	0	(70)	(10)	0	0	0	0	(6)	(1)
GRAND TOTAL	0	0	0	0	(586)	(81)	0	0	0	0	(53)	(7)

Fugitive Dust Emissions from Cropland Idling

Table C-2. Land Preparation

District	County	Acres Rice	Daily PM10 Emissions (lbs/day) Rice	Annual PM10 Emissions (tons per year) Rice
Sacramento River Area of Analysis				
Glenn-Colusa Irrigation District	Glenn/Colusa	5,387	295	27
Reclamation District 108	Colusa/Yolo	2,694	148	13
Reclamation District 1004	Glenn/Colusa/Sutter	2,424	133	12
Sycamore Mutual Water Company	Colusa	1,616	89	8
Total		**12,121**	**664**	**60**

Table C-3. Harvesting

District	County	Acres Rice	Daily PM10 Emissions (lbs/day) Rice	Annual PM10 Emissions (tons per year) Rice
Sacramento River Area of Analysis				
Glenn-Colusa Irrigation District	Glenn/Colusa	5,387	25	2
Reclamation District 108	Colusa/Yolo	2,694	12	1
Reclamation District 1004	Glenn/Colusa/Sutter	2,424	11	1
Sycamore Mutual Water Company	Colusa	1,616	7	1
Total		**12,121**	**56**	**5**

Table C-4. Windblown Dust

District	County	Acres Rice	Daily PM10 Emissions (lbs/day) Rice	Annual PM10 Emissions (tons per year) Rice
Sacramento River Area of Analysis				
Glenn-Colusa Irrigation District	Glenn/Colusa	5,387	71	6
Reclamation District 108	Colusa/Yolo	2,694	20	2
Reclamation District 1004	Glenn/Colusa/Sutter	2,424	22	2
Sycamore Mutual Water Company	Colusa	1,616	21	2
Total		**12,121**	**134**	**12**

Note:
Fraction of PM10 (FRPM10) from wind erosion: 0.50
(PM10 Emissions = PM x FRPM10)

Conversions

1 ton =	2,000	pounds	
1 year =	365	days	
Project duration =	180	days	(assumes 6-month crop idling season)

Legend

	Windblown dust emission factor for pasture land used because emission factor for agricultural lands not available (for Yolo County only).
	Windblown dust emission factor for pasture land used because emission factor for agricultural lands not available (for Sutter County only).

Agricultural Land Preparation

Table C-5. Summary of Crop Profile, Acre-Pass, and Emission Factor

Crop profile	Land Preparation Operations	Category	Acre-Pass	Emission Factor	
				Operation (lbs/Acre-pass)	Crop (lbs/Acre/year)
Alfalfa	Unspecified	Discing	1.25	1.2	4
	Land Maintenance	Land Planing	0.2	12.5	
Almonds	Float	Land Planing	0.25	12.5	3.13
Citrus	Unspecified	Discing	0.06	1.2	0.07
Corn	List & Fertilize	Weeding	1	0.8	6.9
	Mulch Beds	Discing	1	1.2	
	Finish Disc	Discing	1	1.2	
	Land Maintenance	Land Planing	0.2	12.5	
	Stubble Disc	Discing	1	1.2	
Cotton	Land Preparation	Discing	4	1.2	8.9
	Land Maintenance	Land Planing	0.2	12.5	
	Seed Bed Preparation	Weeding	2	0.8	
DryBeans	Land Maintenance	Land Planing	0.2	12.5	7.7
	Chisel	Discing	1	1.2	
	Shaping	Weeding	1	0.8	
	Disc	Discing	2	1.2	
	Listing	Weeding	1	0.8	
Garbanzo	Chisel	Discing	1	1.2	7.7
	Listing	Weeding	1	0.8	
	Shaping	Weeding	1	0.8	
	Disc	Discing	2	1.2	
	Land Maintenance	Land Planing	0.2	12.5	
Garlic	Land Maintenance	Land Planing	0.2	12.5	6.5
	Disc & Roll	Discing	1	1.2	
	Chisel	Discing	1	1.2	
	List	Weeding	1	0.8	
	Shape Beds	Weeding	1	0.8	
Grapes-Raisin	Terrace	Weeding	1	0.8	2.6
	Spring Tooth	Weeding	0.2	0.8	
	Subsoil	Ripping	0.05	4.6	
	Disc & Furrow-out	Discing	1	1.2	
	Level (new vineyard)	Land Planing	0.02	12.5	
Grapes-Table	Subsoil	Ripping	0.05	4.6	0.83
	Disc & Furrow-out	Discing	0.5	1.2	
Grapes-Wine	Level (new vineyard)	Land Planing	0.02	12.5	1.5
	Spring Tooth	Weeding	0.2	0.8	
	Subsoil	Ripping	0.05	4.6	
	Disc & Furrow-out	Discing	0.75	1.2	
Lettuce*	Land Maintenance	Land Planing	0.2	12.5	12.75
	Disc & Roll	Discing	2/2	1.2	
	Chisel	Discing	2/2	1.2	
	List	Weeding	2/2	0.8	
	Plane	Land Planing	½	12.5	
	Shape Beds & Roll	Weeding	2/2	0.8	
Melon	Plow	Discing	1	1.2	5.7
	Shape Beds	Weeding	1	0.8	
	Land Maintenance	Land Planing	0.2	12.5	
	Disc	Discing	1	1.2	
No Land Prep.	Unspecified	Discing	0	1.2	0
Onions	List	Weeding	1	0.8	6.5
	Shape Beds	Weeding	1	0.8	
	Land Maintenance	Land Planing	0.2	12.5	
	Chisel	Discing	1	1.2	
	Disc & Roll	Discing	1	1.2	

Agricultural Land Preparation

Table C-5. Summary of Crop Profile, Acre-Pass, and Emission Factor

Crop profile	Land Preparation Operations	Category	Acre-Pass	Emission Factor	
				Operation (lbs/Acre-pass)	Crop (lbs/Acre/year)
Rice	Chisel	Discing	1	1.2	20
	Land Maintenance	Land Planing	0.2	12.5	
	Post Burn/Harvest Disc	Discing	0.5	1.2	
	Roll	Weeding	1	0.8	
	3 Wheel Plane	Land Planing	1	12.5	
	Harrow Disc	Discing	1	1.2	
	Stubble Disc	Discing	1	1.2	
Safflower	List	Weeding	1	0.8	4.5
	Land Maintenance	Land Planing	0.2	12.5	
	Stubble Disc	Discing	1	1.2	
Sugar Beets	Disc	Discing	1	1.2	22.8
	Land Plane	Land Planing	1	12.5	
	Subsoil-deep chisel	Ripping	1	4.6	
	Stubble Disc	Discing	1	1.2	
	List	Weeding	1	0.8	
	Land Maintenance	Land Planing	0.2	12.5	
Tomatoes	Bed Preparation	Weeding	2	0.8	10.1
	Land Preparation	Discing	5	1.2	
	Land Maintenance	Land Planing	0.2	12.5	
Vegetables	Land Maintenance	Land Planing	0.2	12.5	8.5
	Unspecified	Discing	5	1.2	
Wheat	Stubble Disc	Discing	1	1.2	3.7
	Land Maintenance	Land Planing	0.2	12.5	

Source:

CARB. 2003. Emission Inventory Documentation, Section 7.4: Agricultural Land Preparation. January.

Accessed on: January 21, 2015. Available at: http://www.arb.ca.gov/ei/areasrc/arbmiscprocresfarmop.htm.

Agricultural Harvest Operations

Table C-6. Summary of Crop Emission Factor Assumptions

CDFA Crop Code	CDFA Crop Description	Crop Profile	Assumption	Emission Factor (lbs PM10/acre/yr)
101999	WHEAT ALL	Wheat	Wheat/1	5.8
104999	RYE FOR GRAIN	Wheat	Wheat/1	5.8
106199	RICE, FOR MILLING	Rice	Cotton/2	1.68
106269	FIELD CROP BY PRODUCTS	Cotton	Cotton/20	0.17
108999	FOOD GRAINS, MISC	Corn	Cotton/2	1.68
111559	CORN, WHITE	Corn	Cotton/40	0.08
111991	CORN FOR GRAIN	Corn	Cotton/2	1.68
111992	CORN FOR SILAGE	Corn	Cotton/20	0.17
112999	OATS FOR GRAIN	Wheat	Wheat/1	5.8
113994	BARLEY, MALTING	Wheat	Wheat/1	5.8
113995	BARLEY, FEED	Wheat	Wheat/1	5.8
113999	BARLEY, UNSPECIFIED	Wheat	Wheat/1	5.8
114991	SORGHUM, GRAIN	Wheat	Wheat/1	5.8
121219	COTTON LINT, UPLAND	Cotton	Cotton/1	3.37
121229	COTTON LINT, PIMA	Cotton	Cotton/1	3.37
121299	COTTON LINT, UNSPEC	Cotton	Cotton/1	3.37
132999	SUGAR BEETS	Sugar Beets	Cotton/2	1.68
151999	COTTONSEED	Cotton	Cotton/1	3.37
153999	PEANUTS, ALL	Safflower	Cotton/2	1.68
158269	SAFFLOWER	Safflower	Wheat/1	5.8
158316	SUNFLOWER SEED, PLANTING	Corn	Wheat/1	5.8
158319	SUNFLOWER SEED	Corn	Wheat/1	5.8
158499	JOJOBA	Melon	Cotton/40	0.08
161131	BEANS, LIMAS, LG. DRY	DryBeans	Cotton/2	1.68
161132	BEANS, LIMAS, BABY DRY	DryBeans	Cotton/2	1.68
161199	LIMA BEANS, UNSPECIFIED	DryBeans	Cotton/2	1.68
161717	BEANS, RED KIDNEY	DryBeans	Cotton/2	1.68
161721	BEANS, PINK	DryBeans	Cotton/2	1.68
161741	BEANS, BLACKEYE (PEAS)	DryBeans	Cotton/2	1.68
161742	BEANS, GARBANZO	Garbanzo	Cotton/2	1.68
162399	BEANS, FAVA	DryBeans	Cotton/2	1.68
163999	PEAS, DRY EDIBLE	DryBeans	Cotton/20	0.17
169999	BEANS,UNSPEC. DRY EDIBLE	DryBeans	Cotton/2	1.68
171019	SEED WHEAT	Wheat	Wheat/1	5.8
171049	SEED RYE	Wheat	Wheat/1	5.8
171069	SEED RICE	Rice	Cotton/2	1.68
171129	SEED OATS	Wheat	Wheat/1	5.8
171139	SEED BARLEY	Wheat	Wheat/1	5.8
171519	SEED, COTTON FOR PLANTING	Cotton	Cotton/1	3.37
171582	SEED, SAFFLOWER, PLANTING	Safflower	Wheat/1	5.8
171619	SEED BEANS	DryBeans	Cotton/2	1.68
171639	SEED PEAS	DryBeans	Cotton/20	0.17
171949	SEED, MISC FIELD CROP	Corn	Cotton/20	0.17
171959	SEED, VEG & VINECROP	Vegetables	Cotton/20	0.17
172119	SEED, ALFALFA	Alfalfa	Zero/1	0
172289	CLOVER, UNSPECIFIED SEED	Alfalfa	Zero/1	0
173079	SEED, BERMUDA GRASS	Alfalfa	Zero/1	0
173669	SEED, SUDAN GRASS	Alfalfa	Zero/1	0
173999	SEED, GRASS, UNSPECIFIED	Alfalfa	Zero/1	0
178999	SEED, OTHER (NO FLOWERS)	Alfalfa	Cotton/20	0.17
181999	HAY, ALFALFA	Alfalfa	Zero/1	0

Agricultural Harvest Operations

Table C-6. Summary of Crop Emission Factor Assumptions

CDFA Crop Code	CDFA Crop Description	Crop Profile	Assumption	Emission Factor (lbs PM10/acre/yr)
188499	HAY, GRAIN	Alfalfa	Cotton/2	1.68
188799	HAY, WILD	Alfalfa	Cotton/2	1.68
188899	HAY, SUDAN	Alfalfa	Zero/1	0
188999	HAY, OTHER UNSPECIFIED	Alfalfa	Cotton/2	1.68
194599	PASTURE, IRRIGATED	No Land	Zero/1	0
194699	PASTURE, RANGE	No Land	Zero/1	0
194799	PASTURE, MISC. FORAGE	No Land	Zero/1	0
195199	SILAGE	Wheat	Cotton/20	0.17
195299	HAY, GREEN CHOP	Alfalfa	Zero/1	0
195399	STRAW	Alfalfa	Wheat/1	5.8
198199	RICE, WILD	Rice	Cotton/2	1.68
198999	FIELD CROPS, UNSPEC.	Corn	Cotton/20	0.17
201119	ORANGES, NAVEL	Citrus	Cotton/40	0.08
201519	ORANGES, VALENCIAS	Citrus	Cotton/40	0.08
201999	ORANGES, UNSPECIFIED	Citrus	Cotton/40	0.08
202999	GRAPEFRUIT, ALL	Citrus	Cotton/40	0.08
203999	TANGERINES & MANDARINS	Citrus	Cotton/40	0.08
204999	LEMONS, ALL	Citrus	Cotton/40	0.08
205999	LIMES, ALL	Citrus	Cotton/40	0.08
206999	TANGELOS	Citrus	Cotton/40	0.08
207999	KUMQUATS	Citrus	Cotton/40	0.08
208059	CITRUS, MISC BY-PROD	Citrus	Cotton/40	0.08
209999	CITRUS, UNSPECIFIED	Citrus	Cotton/40	0.08
211999	APPLES, ALL	Citrus	Cotton/40	0.08
212199	PEACHES, FREESTONE	Citrus	Cotton/40	0.08
212399	PEACHES, CLINGSTONE	Citrus	Cotton/40	0.08
212999	PEACHES, UNSPECIFIED	Citrus	Cotton/40	0.08
213199	CHERRIES, SWEET	Citrus	Cotton/40	0.08
214199	PEARS, BARLETT	Citrus	Cotton/40	0.08
214899	PEARS, ASIAN	Citrus	Cotton/40	0.08
214999	PEARS, UNSPECIFIED	Citrus	Cotton/40	0.08
215199	PLUMS	Citrus	Cotton/40	0.08
215399	PLUMCOTS	Citrus	Cotton/40	0.08
215999	PRUNES, DRIED	Citrus	Cotton/40	0.08
216199	GRAPES, TABLE	Grapes-Table	Cotton/20	0.17
216299	GRAPES, WINE	Grapes-Wine	Cotton/20	0.17
216399	GRAPES, RAISIN	Grapes-Raisin	Cotton/20	0.17
216999	GRAPES, UNSPECIFIED	Grapes-Wine	Cotton/20	0.17
217999	APRICOTS, ALL	Citrus	Cotton/40	0.08
218199	NECTARINES	Citrus	Cotton/40	0.08
218299	PERSIMMONS	Citrus	Cotton/40	0.08
218399	POMEGRANATES	Citrus	Cotton/40	0.08
218499	QUINCE	Citrus	Cotton/40	0.08
218839	CHERIMOYAS	Citrus	Cotton/40	0.08
218889	ORCHARD BIOMASS	Almonds	Cotton/40	0.08
218899	FRUITS & NUTS, UNSPEC.	Citrus	Cotton/40	0.08
221999	AVOCADOS, ALL	Citrus	Cotton/40	0.08
224999	DATES	Citrus	Almonds/20	2.04
225999	FIGS, DRIED	Citrus	Almonds/20	2.04
226999	OLIVES	Citrus	Cotton/40	0.08
228019	GUAVAS	Citrus	Cotton/40	0.08

Agricultural Harvest Operations

Table C-6. Summary of Crop Emission Factor Assumptions

CDFA Crop Code	CDFA Crop Description	Crop Profile	Assumption	Emission Factor (lbs PM10/acre/yr)
229999	KIWIFRUIT	Citrus	Cotton/40	0.08
230639	BERRIES, BLACKBERRIES	Grapes-Table	Cotton/40	0.08
230869	BERRIES, BOYSENBERRIES	Grapes-Table	Cotton/40	0.08
234799	BERRIES, LOGANBERRIES	Grapes-Table	Cotton/40	0.08
236199	BERRIES, RASPBERRIES	Grapes-Table	Cotton/40	0.08
237199	STRAWBERRIES, FRESH MKT	Melon	Cotton/40	0.08
237299	STRAWBERRIES, PROC	Melon	Cotton/40	0.08
237999	STRAWBERRIES, UNSPECIFIED	Melon	Cotton/40	0.08
239999	BERRIES, BUSH, UNSPECIFIED	Grapes-Table	Cotton/40	0.08
261999	ALMONDS, ALL	Almonds	Almonds/1	40.77
263999	WALNUTS, ENGLISH	Almonds	Almonds/1	40.77
264999	PECANS	Almonds	Almonds/10	4.08
265999	WALNUTS, BLACK	Almonds	Almonds/1	40.77
266999	CHESTNUTS	Almonds	Almonds/10	4.08
267999	MACADAMIA NUT	Almonds	Almonds/10	4.08
268079	PISTACHIOS	Almonds	Almonds/10	4.08
268099	ALMOND HULLS	Almonds	Almonds/1	40.77
301999	ARTICHOKES	Melon	Cotton/40	0.08
302199	ASPARAGUS, FRESH MKT	Melon	Cotton/2	1.68
302299	ASPARAGUS, PROC	Melon	Cotton/2	1.68
302999	ASPARAGUS, UNSPECIFIED	Melon	Cotton/2	1.68
303999	BEANS, GREEN LIMAS	DryBeans	Cotton/2	1.68
304199	BEANS, SNAP FR MKT	DryBeans	Cotton/20	0.17
304299	BEANS, SNAP PROC	DryBeans	Cotton/20	0.17
304399	BEANS FRESH UNSPECIFIED	DryBeans	Cotton/20	0.17
304999	BEANS, UNSPECIFIED SNAP	DryBeans	Cotton/20	0.17
305999	BEETS, GARDEN	Sugar Beets	Cotton/2	1.68
306999	RAPINI	Sugar Beets	Cotton/40	0.08
307189	BROCCOLI,FOOD SERV	Vegetables	Cotton/40	0.08
307199	BROCCOLI, FR MKT	Vegetables	Cotton/40	0.08
307299	BROCCOLI, PROC	Vegetables	Cotton/40	0.08
307919	BROCCOLI, UNSPECIFIED	Vegetables	Cotton/40	0.08
308999	BRUSSELS SPROUTS	Melon	Cotton/40	0.08
309999	CABBAGE, CH. & SPECIALTY	Lettuce	Cotton/40	0.08
310999	CABBAGE, HEAD	Lettuce	Cotton/40	0.08
313189	CARROTS, FOOD SERV	Sugar Beets	Cotton/20	0.17
313199	CARROTS, FR MKT	Sugar Beets	Cotton/20	0.17
313299	CARROTS, PROC	Sugar Beets	Cotton/20	0.17
313999	CARROTS, UNSPECIFIED	Sugar Beets	Cotton/20	0.17
314189	CAULIFLOWER, FOOD SERV	Vegetables	Cotton/40	0.08
314199	CAULIFLOWER, FR MKT	Vegetables	Cotton/40	0.08
314299	CAULIFLOWER, PROC	Vegetables	Cotton/40	0.08
314999	CAULIFLOWER, UNSPECIFIED	Vegetables	Cotton/40	0.08
316189	CELERY, FOOD SERV	Lettuce	Cotton/40	0.08
316199	CELERY, FR MKT	Lettuce	Cotton/40	0.08
316299	CELERY, PROC	Lettuce	Cotton/40	0.08
316999	CELERY, UNSPECIFIED	Lettuce	Cotton/40	0.08
318999	RADICCHIO	Lettuce	Cotton/40	0.08
320999	CHIVES	Lettuce	Cotton/40	0.08
322999	COLLARD GREENS	Lettuce	Cotton/40	0.08
323999	CORN, SWEET ALL	Corn	Cotton/40	0.08

Agricultural Harvest Operations

Table C-6. Summary of Crop Emission Factor Assumptions

CDFA Crop Code	CDFA Crop Description	Crop Profile	Assumption	Emission Factor (lbs PM10/acre/yr)
325999	CUCUMBERS	Vegetables	Cotton/40	0.08
330999	EGGPLANT, ALL	Vegetables	Cotton/40	0.08
331999	ENDIVE, ALL	Lettuce	Cotton/40	0.08
332999	ESCAROLE, ALL	Lettuce	Cotton/40	0.08
333999	ANISE (FENNEL)	Lettuce	Cotton/2	1.68
335999	GARLIC, ALL	Garlic	Cotton/2	1.68
337999	KALE	Lettuce	Cotton/40	0.08
338999	KOHLRABI	Lettuce	Cotton/40	0.08
339196	LETTUCE, BULK SALAD PRODS.	Lettuce	Cotton/40	0.08
339999	LETTUCE, UNSPECIFIED	Lettuce	Cotton/40	0.08
340999	LETTUCE, HEAD	Lettuce	Cotton/40	0.08
341999	LETTUCE, ROMAINE	Lettuce	Cotton/40	0.08
342999	LETTUCE, LEAF	Lettuce	Cotton/40	0.08
343999	MELON, CANTALOUPE	Melon	Cotton/40	0.08
348999	MELON, HONEYDEW	Melon	Cotton/40	0.08
354299	MELON, UNSPECIFIED	Melon	Cotton/40	0.08
354999	MELON, WATER MELONS	Melon	Cotton/40	0.08
355999	MUSHROOMS	No Land Prep.	Zero/1	0
356999	MUSTARD	Lettuce	Cotton/40	0.08
357999	OKRA	Lettuce	Cotton/40	0.08
358999	ONIONS	Onions	Cotton/2	1.68
359999	PARSLEY	Lettuce	Cotton/40	0.08
361299	PEAS, GREEN, PROCESSING	DryBeans	Cotton/20	0.17
361999	PEAS, GREEN, UNSPECIFIED	DryBeans	Cotton/20	0.17
363999	PEPPERS, BELL	Tomatoes	Cotton/40	0.08
364999	PEPPERS, CHILI, HOT	Tomatoes	Cotton/40	0.08
366999	PUMPKINS	Melon	Cotton/20	0.17
367999	RADISHES	Sugar Beets	Cotton/40	0.08
368999	RHUBARB	Lettuce	Cotton/40	0.08
370999	RUTABAGAS	Sugar Beets	Cotton/2	1.68
372999	ONIONS, GREEN & SHALLOTS	Onions	Cotton/40	0.08
374189	SPINACH, FOOD SERV	Lettuce	Cotton/40	0.08
374199	SPINACH, FR MKT	Lettuce	Cotton/40	0.08
374299	SPINACH, PROC	Lettuce	Cotton/40	0.08
374999	SPINACH UNSPECIFIED	Lettuce	Cotton/40	0.08
375999	SQUASH	Melon	Cotton/20	0.17
376999	SWISSCHARD	Lettuce	Cotton/40	0.08
378199	TOMATOES, FRESH MARKET	Tomatoes	Cotton/40	0.08
378299	TOMATOES, PROCESSING	Tomatoes	Cotton/20	0.17
378999	TOMATOES, UNSPECIFIED	Tomatoes	Cotton/20	0.17
380999	TURNIPS, ALL	Sugar Beets	Cotton/2	1.68
381999	GREENS, TURNIP & MUSTARD	Lettuce	Cotton/40	0.08
387999	LEEKS	Onions	Cotton/40	0.08
391999	POTATOES, IRISH ALL	Sugar Beets	Cotton/2	1.68
392999	SWEET POTATOES	Sugar Beets	Cotton/2	1.68
393999	HORSERADISH	Onions	Cotton/40	0.08
394199	SALAD GREENS NEC	Lettuce	Cotton/40	0.08
394999	PEAS, EDIBLE POD (SNOW)	DryBeans	Cotton/20	0.17
395999	VEGETABLES, ORIENTAL, ALL	Vegetables	Cotton/40	0.08
396999	SPROUTS, ALFALFA & BEAN	Lettuce	Cotton/40	0.08
398199	CUCUMBERS, GREENHOUSE	No Land Prep.	Zero/1	0

Agricultural Harvest Operations

Table C-6. Summary of Crop Emission Factor Assumptions

CDFA Crop Code	CDFA Crop Description	Crop Profile	Assumption	Emission Factor (lbs PM10/acre/yr)
398299	TOMATOES, GREENHOUSE	No Land Prep.	Zero/1	0
398399	TOMATOES, CHERRY	Tomatoes	Cotton/40	0.08
398499	TOMATILLO	Tomatoes	Cotton/40	0.08
398559	CILANTRO	Lettuce	Cotton/40	0.08
398599	SPICES AND HERBS	Lettuce	Cotton/40	0.08
398899	VEGETABLES, BABY	Vegetables	Cotton/40	0.08
398999	VEGETABLES, UNSPECIFIED	Vegetables	Cotton/20	0.17
832919	POTATOES SEED	Sugar Beets	Cotton/2	1.68
892999	NURSERY TURF	No Land Prep.	Zero 1	0

Source:

CARB. 2003. Emission Inventory Documentation, Section 7.5: Agricultural Harvest Operations. January. Accessed on: January 21, 2015. Available at: http://www.arb.ca.gov/ei/areasrc/arbmiscprocresfarmop.htm.

Windblown Dust - Agricultural Lands

Table 92. Windblown Dust - Agricultural Lands

Air Basin Code	County Name	Emission Factor (tons/acre/yr)	Process Rate (acres)	PM Emissions (tons/year)
NCC	Monterey	0.020478	279,178.00	5,717.07
	San Benito	0.015936	50,009.00	796.96
	Santa Cruz	0.002485	14,873.00	36.97
SCC	San Luis Obispo	0.006876	109,694.00	754.2
	Santa Barbara	0.00319	80,732.00	257.56
	Ventura	0.018418	54,568.00	1,005.02
SED	Imperial	0.141666	490,409.00	69,474.43
SJV	Fresno	0.013761	864,164.00	11,891.35
	Kern	0.008662	408,313.48	3,536.73
	Kings	0.012856	473,817.00	6,091.62
	Madera	0.008032	141,617.00	1,137.47
	Merced	0.013659	364,804.00	4,982.86
	San Joaquin	0.003527	387,278.00	1,365.96
	Stanislaus	0.009052	229,805.00	2,080.26
	Tulare	0.004693	471,664.00	2,213.29
SV	Butte	0.001154	116,869.00	134.87
	Colusa	0.004702	229,747.00	1,080.31
	Glenn	0.004957	186,067.00	922.39
	Placer	0.002172	6,962.90	15.12
	Sacramento	0.002479	117,770.00	291.92

Note:
Fraction of PM10 (FRPM10): 0.50
(PM10 Emissions = PM x FRPM10)

Table 93. Windblown Dust - Pasture Lands

Air Basin Code	County Name	Emission Factor (tons/acre/yr)	Process Rate (acres)	PM Emissions (tons/year)
NCC	Monterey	0.00110562	1,108,000	1,225.03
	San Benito	0.00109336	512,000	559.8
	Santa Cruz	0.0001605	8,000	1.28
SCC	Santa Barbara	0.00021801	602,913	131.44
	San Luis Obispo	0.00046964	1,102,500	517.78
	Ventura	0.00050356	210,918	106.21
SED	Imperial	0.00867346	158,449	1,374.30
SJV	Fresno	0.00149089	907,300	1,352.69
	Kern	0.00082834	1,527,603	1,265.37
	Kings	0.00146875	142,777	209.7
	Madera	0.00116178	421,000	489.11
	Merced	0.00155578	642,700	999.9
	San Joaquin	0.0005228	167,700	87.67
	Stanislaus	0.00107875	434,300	468.5
	Tulare	0.00063424	713,400	452.47
SV	Butte	0.00014292	288,500	41.23
	Colusa	0.00046444	181,900	84.48
	Glenn	0.00048846	256,575	125.33
	Placer	0.00026499	65,656	17.4
	Sacramento	0.00019538	118,000	23.05
	Shasta	0.00034146	459,000	156.73
	Solano	0.00039453	131,360	51.83
	Sutter	0.00037084	71,500	26.51
	Tehama	0.00035146	955,350	335.76
	Yolo	0.00061919	136,870	84.75
	Yuba	0.00023892	207,600	49.6

Note:
Fraction of PM10 (FRPM10): 0.50
(PM10 Emissions = PM x FRPM10)

Table 94. County Size

County	Area (acres)	
	Non-Pasture	Pasture
Butte	n/a	n/a
Colusa	n/a	n/a
Fresno	n/a	n/a
Glenn	n/a	n/a
Imperial	n/a	n/a
Kern	n/a	n/a
Kings	n/a	n/a
Madera	n/a	n/a
Merced	n/a	n/a
Monterey	n/a	n/a
Placer	n/a	n/a
Sacramento	n/a	n/a
San Benito	n/a	n/a
San Joaquin	n/a	n/a
San Luis Obispo	n/a	n/a
Santa Barbara	n/a	n/a
Santa Cruz	n/a	n/a
Shasta	n/a	n/a
Solano	n/a	n/a
Stanislaus	n/a	n/a
Sutter	n/a	n/a
Tehama	n/a	n/a
Tulare	n/a	n/a
Ventura	n/a	n/a
Yolo	n/a	n/a
Yuba	n/a	n/a
Total	**0**	**0**

Source:
CARB. 1997. Emission Inventory Documentation, Section 7.12: Windblown Dust - Agricultural Lands. July. Accessed on: January 21, 2015. Available at: http://www.arb.ca.gov/ei/areasrc/arbmiscprocfugwbdst.htm.