

# Summary

## Introduction

The Freeport Regional Water Authority (FRWA) was created by exercise of a joint powers agreement between the Sacramento County Water Agency (SCWA) and the East Bay Municipal Utility District (EBMUD). FRWA's basic project purpose is to increase water service reliability for customers, reduce rationing during droughts, and facilitate conjunctive use of surface water and groundwater supplies in central Sacramento County. FRWA is proposing the Freeport Regional Water Project (FRWP) to meet this basic project purpose and others summarized under Project Purpose/Objectives and Need below.

## FRWA Member Agencies

### Sacramento County Water Agency

SCWA provides water to areas in central Sacramento County. SCWA is responsible for providing water supplies and facilities throughout these areas, including the Laguna, Vineyard, Elk Grove, and Mather Field communities, through a capital funding zone known as *Zone 40*.

The long-term master plan for Zone 40 envisions meeting present and future water needs through a program of conjunctive use of groundwater and surface water. SCWA presently has a Central Valley Project (CVP) entitlement of 22,000 acre-feet (af) through the Bureau of Reclamation (Reclamation). SCWA has subcontracted 7,000 af of this entitlement to the City of Folsom. CVP water for SCWA is currently delivered through the City of Sacramento's intake and treatment facilities based on SCWA need and available City capacity. SCWA's CVP contract also allows it to divert at the location identified as *Freeport* on the Sacramento River south of downtown Sacramento. SCWA expects to be able to provide additional anticipated surface water entitlements to serve Zone 40 demands, including an assignment of a portion of SMUD's existing CVP water supply contract, potential appropriative water rights on the American and Sacramento Rivers, and potential transfers of water from areas within Sacramento Valley. Total long-term average Zone 40 water demand is estimated to be 109,500 acre-feet per year (AFA). Long-term average surface water use is expected to be 68,500 AFA.

## East Bay Municipal Utility District

EBMUD is a multipurpose regional agency that provides water to more than 1.3 million municipal and industrial customers in portions of Contra Costa and Alameda Counties in the region east of San Francisco Bay (East Bay). EBMUD obtains most of its supply from Pardee Reservoir on the Mokelumne River, with the remainder collected from local runoff in East Bay terminal reservoirs. On July 26, 2001, EBMUD and Reclamation entered into an amendatory CVP contract that sets forth three potential diversion locations to allow EBMUD to receive its CVP supply. One of these locations is Freeport. EBMUD's CVP supply is 133,000 af in any 1 year, not to exceed 165,000 af in any consecutive 3-year period of drought when EBMUD total system storage is forecast to be less than 500,000 af. Subject to certain limitations, the contract also provides for a delivery location on the lower American River, and EBMUD retains the opportunity to take delivery of water at the Folsom South Canal should other alternatives prove infeasible. Additional environmental review is required prior to diversion under the contract.

## City of Sacramento

The City of Sacramento has joined FRWA as an Associate Member. The City's main interests lie in the design and construction of FRWA project facilities that may be located in the City or on various City properties or rights-of-way. A City representative sits on the FRWA Board of Directors as a nonvoting member.

## Project Purpose/Objectives and Need

The FRWP is intended to contribute to meeting the objectives of SCWA and EBMUD. The primary purposes, objectives, and needs of the project are as follows.

### Needs

- SCWA and Sacramento County have concluded that reliance solely on groundwater to serve development authorized in Sacramento County's General Plan will deplete the central county groundwater aquifer, resulting in shallow wells drying up, degradation of groundwater quality, increased pumping costs, land subsidence, and potential changes to local floodplains, and that the provision of surface water is necessary to meet the anticipated demand;
- EBMUD forecasts water shortages during drought periods, based on maintenance of existing Mokelumne River basin supply, or catastrophic

events exacerbated by increased flows for senior water right holders, resource protection, and increasing population.

## Purposes/Objectives

- support acquisition of additional SCWA surface water entitlements to promote efficient conjunctive use of groundwater in its Zone 40 area, consistent with the Sacramento Area Water Forum Agreement and County of Sacramento General Plan policies;
- provide facilities through which SCWA can deliver existing and anticipated surface water entitlements to Zone 40 area;
- provide facilities through which EBMUD can take delivery of a supplemental supply of water that would substantially meet its need for water and reduce existing and future customer deficiencies during droughts; and
- improve EBMUD system reliability and operational flexibility during droughts, catastrophic events, and scheduled major maintenance at Pardee Dam or Reservoir.

## Background

### Sacramento County Water Agency

SCWA was formed in 1952 by a special legislative act of the State of California. Among SCWA's purposes are:

- to make water available for any beneficial use of lands and inhabitants, and
- to produce, store, transmit, and distribute groundwater.

SCWA is governed by the Sacramento County Board of Supervisors, acting as the SCWA's Board of Directors. SCWA is legally authorized to purchase, sell, or acquire water, including acquiring water through contract with either the federal government or the State of California. SCWA also may construct and operate facilities.

In 1985, the SCWA Act was amended by the California Legislature, granting SCWA the authority to establish groundwater management zones for the purpose of distributing surface water to replenish the groundwater basin and to stabilize groundwater levels. The SCWA Act allows for collecting fees from the beneficiaries of these activities. A groundwater management zone is authorized to be formed in any area that would benefit from the importation and distribution of surface water for municipal and industrial uses.

Zone 40 was formed in May 1985, by SCWA Resolution No. 663, for the purpose of constructing facilities for the production, conservation, transmittal,

distribution, and sale of surface water and groundwater for conjunctive use in the Zone 40 area. In 1987, SCWA adopted a Zone 40 Water Supply Master Plan, a long-term plan for meeting future water needs in the newly developing Laguna and Vineyard areas, which historically have depended on groundwater. The plan was updated in 1995. On March 23, 1999, SCWA expanded the Zone 40 boundaries to the extent they exist today, as shown in Figure 1-1. SCWA is preparing an update of the Water Supply Master Plan based on these new boundaries; it was published in draft form in December 2002.

Historical groundwater use in Zone 40 was composed of agricultural, rural, and municipal pumping. Long-term reliance on groundwater has formed a groundwater cone of depression, known as the *Elk Grove cone of depression*, within Zone 40. Groundwater in this central Sacramento basin moves toward the center of the cone of depression, and groundwater extracted from the basin contributes to further declines at the cone of depression.

Management of the central groundwater basin is being considered under a successor process to the Sacramento Area Water Forum Agreement known as the Groundwater Forum. SCWA is a major sponsor and stakeholder in this broadly shared process.

In 1993, Sacramento County approved a general plan that changed the land use designation of large areas of central Sacramento County from agricultural uses to residential, commercial, and industrial uses. As a result, on March 23, 1999, SCWA expanded the boundary of Zone 40 as discussed above. The expanded boundary includes the urban policy area of the County's general plan and areas studied in previous master planning efforts. Recently, a combination of wet weather and the transition of land from agricultural uses to urban development has contributed to the stabilization of groundwater elevations in the central county groundwater basin. However, if buildout of the Sacramento County General Plan relied solely on groundwater, groundwater levels would decline an additional 160 feet, causing shallow wells to dry up, groundwater quality to become degraded, pumping costs to increase, land to subside, and local floodplains potentially to change. To avoid adversely affecting groundwater, it is necessary to use surface water supplies in conjunction with available groundwater supplies to meet the projected buildout demands in Zone 40.

## East Bay Municipal Utility District

EBMUD needs a supplemental water supply both to avoid water shortages during drought periods and to provide a supply during times when the Mokelumne River Basin supply is not available. Each of these scenarios is described below.

## Need during Drought Periods

When the original EBMUD system was planned in the early 1920s, the utility acquired rights to 200 million gallons per day (MGD) of water from the Mokelumne River. Pardee Dam was built to store that water during high river flows from spring snowmelt and rains. After World War II, the East Bay population grew rapidly, and EBMUD was granted water rights for another 125 MGD of Mokelumne River water. By the early 1960s, EBMUD planners were predicting more shortages as growth continued in the East Bay.

In 1964, completion of Camanche Reservoir below Pardee Reservoir provided some relief by giving EBMUD more ways to regulate Mokelumne River flows. Camanche's 417,000-af capacity is used to meet agricultural and fishery needs on the lower Mokelumne River, provide flood control, and allow EBMUD to hold a larger supply of high-quality water in Pardee Reservoir. Briones Reservoir, north of Orinda, was also completed in 1964 and provides another 60,000 af of backup water supplies in the East Bay.

Since 1964, no new water supply or storage has been added to the EBMUD system, and the population in the EBMUD service area has grown by nearly 250,000 people. Despite successful water conservation and reclamation programs, EBMUD's Mokelumne River supply is no longer sufficient to provide reliable water supplies during a drought without resulting in substantial hardship and economic impacts on its customers. Because EBMUD already has undertaken extensive conservation measures, it is more difficult to achieve additional water savings during droughts.

At the same time, demands on the Mokelumne River have increased. In 1996, EBMUD, in consultation with state and federal resource agencies, agreed to increase releases from Camanche Reservoir to provide higher flows for fish in the lower Mokelumne River and to contribute 20% (up to 20,000 af) of any actual yield from new water projects to Mokelumne River fishery flows.

The needs of new residential, business, and industrial customers within the EBMUD service area would be almost entirely offset in normal years by existing and planned conservation and water reclamation projects. However, over the next 20 years increased flows for senior water right holders and for resource protection in the Mokelumne River and the San Francisco Bay/Sacramento-San Joaquin River Delta (Delta) will reduce the available supply of water for the EBMUD service area.

Besides obtaining more water, it is EBMUD's policy to maintain a high-quality water source to meet customer expectations and best protect public health. Like other agencies throughout the state and nation, EBMUD must meet increasingly stringent drinking water standards set by U.S Environmental Protection Agency (EPA) and the California Department of Health Services. General agreement exists among water users and the regulatory community that the highest quality water source provides the safest end product for municipal consumers.

California drinking water quality laws and regulations set a tougher standard than federal law.

## **Need during Mokelumne Supply Outages**

EBMUD needs a supplemental water supply not only to reduce deficiencies during a drought, but also as an alternative supply in case of a catastrophic event or major maintenance at Pardee Dam or Reservoir. Currently, EBMUD is dependent on the Mokelumne River system to meet almost all of its customer needs. If Pardee Dam or Reservoir is damaged by a natural disaster or through other means, or if major scheduled repair or maintenance is required, most of EBMUD's water supply could be temporarily interrupted. EBMUD would be required to obtain its full needed supply from the terminal storage reservoirs in its service area. The amount of water available in these reservoirs is limited (only 138,000 af).

Under current conditions, if the terminal reservoirs could not meet customer demand until the Pardee delivery facilities resumed operation, no other source of water would be available to EBMUD; its customers could experience severe shortages in supply. Use of terminal reservoir supplies also could substantially reduce the water supply available for use during subsequent dry seasons. Provision of a supplemental water supply that is not dependent on operation of Pardee facilities would reduce the risk of diminished supplies during emergencies or other facility shutdowns.

## **Public and Agency Involvement**

Public involvement in the FRWP has been significant. FRWA and Reclamation have made substantial efforts to solicit public input on the project through public hearings, public workshops, small group meetings, and scoping meetings. Since initiation of the project, FRWA has continually updated the public on the progress of the project by conducting small group meetings and publishing fact sheets.

In March 2002, FRWA and Reclamation issued a notice of preparation of an EIR and a notice of intent to prepare an EIS for the FRWP informing agencies and the general public that a joint EIR/EIS was being prepared and inviting specific comments on the scope and content of the document. The NOP and NOI also requested participation at public scoping meetings.

The NOP/NOI was mailed to an extensive list of recipients, and notices of the scoping meetings were published in local newspapers. FRWA held five formal scoping meetings in April 2002 to solicit public comments in determining the scope of the FRWP EIR/EIS. Scoping meetings were held in Oakland, Sacramento, and Herald. Attendees were given the opportunity to provide both written and oral comments. A summary of comments received during scoping

meetings and copies of correspondence received are included in Volume 2, Appendix E of the EIR/EIS.

## **Approach to Alternatives Development**

CEQA and NEPA require that EIRs and EISs describe and evaluate reasonable alternatives to a proposed action, and both must describe an alternative that assumes that the proposed action and alternatives would not be implemented. To comply with these regulations, FRWA has prepared an alternatives screening report (Volume 2, Appendix B) to evaluate a range of alternatives and to identify the most promising alternatives for detailed study.

## **Alternatives Considered in Detail in the EIR/EIS**

FRWA and Reclamation have undertaken considerable work in formulating the alternatives evaluated in this EIR/EIS. Cost and engineering factors, water quality and reliability objectives, institutional considerations, and many environmental factors have had substantial influence in shaping the alternatives summarized below.

### **Alternative 1: No Action**

Under Alternative 1, FRWA does not implement a project. SCWA will divert its existing Fazio entitlement through City of Sacramento facilities based on existing agreements with the City of Sacramento. EBMUD would not divert water from the Sacramento River, nor would EBMUD enlarge Pardee Reservoir.

### **Alternative 2: Freeport Intake Facility to Mokelumne Aqueducts—with the Meadowview/Mack/Gerber/Florin Pipeline Alignment**

Alternative 2 represents a water supply project for achieving the identified water delivery needs of FRWA. The design capacity of the system is 185 MGD. Up to 85 MGD of water would be diverted under Sacramento County's existing Reclamation water service contract and other anticipated water entitlements. This water would be used to meet municipal and industrial demands in the Zone 40 area of south Sacramento County, consistent with the Water Forum Agreement.

Up to 100 MGD of water also would be diverted under EBMUD's amended Reclamation water service contract. This supplemental water would be used to

reduce existing and future EBMUD customer deficiencies to manageable levels during drought conditions and would provide an alternative water supply in case of planned or unplanned outages at EBMUD's Mokelumne River diversion facilities.

The primary features of Alternative 2 include the following components:

- a 185 MGD–capacity intake facility (Freeport Intake Facility) and pumping plant located on the Sacramento River near the community of Freeport;
- a reservoir and a water treatment plant (known as the Zone 40 Surface Water Treatment Plant [WTP]) located in central Sacramento County;
- a terminal facility located at the point of delivery to the Folsom South Canal (FSC);
- a canal pumping plant located at the FSC terminus;
- a series of settling basins;
- an aqueduct pumping plant and pretreatment facility situated near the Mokelumne Aqueducts/Camanche Reservoir area;
- four pipelines carrying the water from the intake facility to the Zone 40 Surface WTP and to the Mokelumne Aqueducts:
  - a 185 MGD–capacity (84-inch) pipeline from the intake facility to the turnout to the Zone 40 Surface WTP,
  - an 85 MGD–capacity (60-inch) pipeline from the turnout to the Zone 40 Surface WTP,
  - a 100 MGD–capacity (66-inch) pipeline from the turnout to FSC, and
  - a 100 MGD–capacity (66-inch) pipeline from the terminus of the FSC to the Mokelumne Aqueducts.

## **Alternatives 3–5: Freeport Intake Facility to Mokelumne Aqueducts—with Various Pipeline Alignments**

The project components proposed under Alternatives 3–5 are the same as those described above for Alternative 2. Alternatives 2, 3, 4, and 5 differ from one another in that the pipelines have different alignments under each alternative.

## **Alternative 6: Freeport Intake to Zone 40 Surface Water Treatment Plant/Enlarge Pardee Reservoir**

Under Alternative 6, SCWA water needs would be met by conveying water from the Sacramento River, and EBMUD water needs would be met by enlarging its Pardee Reservoir water storage facility on the Mokelumne River. Alternative 6 would consist of the following components:

- Freeport intake facility, including settling basins;
- pipeline from the intake facility to the Zone 40 Surface WTP, including the pipeline from the turnout to the WTP;
- Zone 40 Surface WTP; and
- enlarge Pardee Reservoir (which includes the addition and relocation of facilities, such as dams, roads, etc.).

The location and design of the intake facility, the pipeline from the intake facility to the Zone 40 Surface WTP, and the Zone 40 Surface WTP would be the same as described for Alternative 5.

For the enlarge Pardee Reservoir component, Alternative 6 would increase the storage capacity of Pardee Reservoir by 172,000 af; no water would be diverted under EBMUD's amended Reclamation water service contract.

The maximum water supply storage elevation of Pardee Reservoir would be raised about 33 feet (ft), and the maximum flood control elevation would be raised about 46 ft. The storage capacity of the reservoir would increase approximately 87%, from 198,000 af to 370,000 af.

Major components for the proposed reservoir enlargement under Alternative 6 include:

- replacement of the concrete dam and spillway, powerhouse, and saddle dams;
- modifications to the intake tower and Pardee Tunnel;
- a new pressure reduction facility;
- relocation of roads and bridges, including the State Route (SR) 49 bridge, Pardee Dam Road, and Stony Creek Road;
- removal of the Middle Bar Bridge and construction of fishing piers;
- relocation of utilities; and
- replacement of the existing Pardee Reservoir recreation areas.

## Preferred Alternative

FRWA and Reclamation have identified Alternative 5 as the preferred alternative. The selection was made based on Alternative 5's ability to fully meet the project purpose and objectives, engineering and economic feasibility, minimization of environmental impacts, and input received during the public scoping process. Additionally, the selection of Alternative 5 as the preferred alternative is based on the conclusions of the impact analysis presented in Chapters 3 through 20.

## Environmentally Superior Alternative

Alternative 5 is environmentally superior. While there are many similarities between the environmental impacts associated with Alternatives 2 through 5, Alternative 5 is preferred because it minimizes construction-related impacts associated with traffic, air quality, and noise and is the most consistent with community input received during the public scoping process. Alternatives 2 through 5 are identical with regard to hydrology, water supply, and power; water quality; and fish; and generally have fewer impacts on reservoir levels, river flows, and water temperatures than Alternative 6. Although the No Action Alternative would cause fewer direct environmental impacts, it would not meet the purpose and need or objectives of the proposed project.

## Summary of Environmental Impacts and Available Mitigation Measures

Table S-1 summarizes the significant environmental impacts and table S-2 summarizes the less-than-significant environmental impacts of the FRWP alternatives. Table S-3 summarizes significant cumulative impacts. The tables are organized to present impacts by environmental topic area and to indicate the significance of each impact, available mitigation measures, and the significance of each impact if mitigation is implemented.

FRWA and Reclamation have incorporated certain mitigation measures into the project description as environmental commitments. These commitments include preparation and implementation of the following:

- general construction measures
- erosion and sediment control plan
- storm water pollution prevention plan
- traffic control plan

- dust suppression plan
- fire control plan
- Phase I and Phase II hazardous materials studies
- hazardous materials management plan
- channel and levee restoration plan
- hydrologic simulation modeling and scour analysis
- agricultural land restoration
- spoils disposal plan
- environmental training
- access point/staging areas plan
- trench safety plan
- private property acquisition and access
- noise compliance
- coordinated operations between FRWA and SRCSD
- project planning, coordination, and communication plan

## Areas of Controversy

Primary areas of controversy include:

- disruption in urban areas during construction of the project, particularly under Alternatives 2 and 3;
- increased noise levels as a result of project construction and operation;
- potential effects of the alternatives on river flows and water temperatures and related effects on important fish species;
- potential effects on water supply and water quality for the Delta and downstream water users;
- potential effects on whitewater recreational activities on the Mokelumne River upstream of the existing Pardee Reservoir; and
- potential growth-related effects within Sacramento County's Zone 40 area and EBMUD's service area.

**Table S-1.** Summary of Significant Impacts and Mitigation Measures for the Freeport Regional Water Project

Resource Topic/Impact	Applicable Alternative	Mitigation Measure	Level of Significance after Mitigation
<b>Hydrology, Water Supply, and Power—No significant impacts</b>			
<b>Water Quality—No significant impacts</b>			
<b>Fish—No significant impacts</b>			
<b>Recreation</b>			
Loss of recreational area from inundation of a segment of the Mokelumne Coast to Crest Trail	Alternative 6	Implement Mitigation Measure 6-1: Relocate a portion of the Mokelumne Coast to Crest Trail	LS
Loss of the New Middle Bar take-out facility because of inundation	Alternative 6	Implement Mitigation Measure 6-2: Replace necessary Middle Bar Take-Out Facility amenities	LS
Loss of whitewater boating on the Upper Mokelumne River Electra Run	Alternative 6	Implement Mitigation Measure 6-3: Ensure availability of a take-out on the Electra Run	SU
Loss of whitewater boating on the Upper Mokelumne River between Middle Bar Bridge and SR 49 Bridge	Alternative 6	No mitigation available	SU
<b>Vegetation and Wetland Resources</b>			
Temporary disturbance to or potential loss of sensitive vegetation and wetland resources near active construction areas	Alternatives 2–6	Implement Mitigation Measure 7-1: Confine construction activities and equipment to the designated construction work area  Implement Mitigation Measure 7-2: Avoid and protect sensitive vegetation and wetland resources near designated construction work areas  Implement Mitigation Measure 7-3: Reestablish preconstruction site conditions to allow natural colonization of plant species and reseed, if necessary	LS
Potential introduction and spread of noxious weeds	Alternatives 2–6	Implement Mitigation Measure 7-4: Implement best management practices during construction activities	LS

Resource Topic/Impact	Applicable Alternative	Mitigation Measure	Level of Significance after Mitigation
Degradation of blue oak woodlands and loss of individual locally protected trees	Alternatives 2–6	Implement Mitigation Measure 7-5: Identify and avoid oak woodland and individual locally protected trees  Implement Mitigation Measure 7-6: Obtain and comply with county tree removal permits and implement conditions of permits	LS
Loss of or disturbance to riparian communities	Alternatives 2–6	Implement Mitigation Measure 7-7: Establish a protection buffer around woody riparian communities  Implement Mitigation Measure 7-8: Compensate for unavoidable riparian woodland losses	LS
Loss of or disturbance to jurisdictional waters of the United States, including wetlands	Alternatives 2–6	Implement Mitigation Measure 7-9: Avoid and minimize impacts on jurisdictional waters of the United States, including wetlands, by installing protective barriers and implementing best management practices  Implement Mitigation Measure 7-10: Obtain and comply with state and federal wetland permits  Implement Mitigation Measure 7-11: Compensate for unavoidable impacts on jurisdictional waters of the United States	LS
Potential loss of special-status plant populations	Alternatives 2–6	Implement Mitigation Measure 7-12: Conduct preconstruction surveys in areas not previously inventoried  Implement Mitigation Measure 7-13: Avoid known special-status plant populations during project design  Implement Mitigation Measure 7-14: Compensate for impacts on special-status plant populations	LS
Permanent loss of riparian woodland and riparian scrub communities within the inundation zone	Alternative 6	Implement Mitigation Measure 7-15: Compensate for unavoidable riparian habitat losses	LS
Potential impacts on jurisdictional waters of the United States, including wetlands and riparian woodland, within the water fluctuation zone	Alternative 6	Implement Mitigation Measure 7-16: Monitor and adaptively manage vegetation affected by inundation	LS

Resource Topic/Impact	Applicable Alternative	Mitigation Measure	Level of Significance after Mitigation
Loss of or disturbance to jurisdictional waters of the United States, including wetlands, as a result of inundation	Alternative 6	Implement Mitigation Measures 7-9 through 7-11	LS
Permanent loss of oak woodland communities within the inundation and flood zone	Alternative 6	Implement Mitigation Measure 7-17: Replace individual trees  Implement Mitigation Measure 7-18: Permanently preserve intact blue oak woodland	LS
Loss of or disturbance to oak woodland communities with the water fluctuation zone	Alternative 6	Implement Mitigation Measures 7-16 through 7-18	LS
Permanent loss of special-status plants and habitats within the inundation and flood zone	Alternative 6	Implement Mitigation Measure 7-19: Compensate for impacts on sensitive vegetative communities and associated special-status plants	LS
<b>Wildlife</b>			
Loss or alteration of vernal pools, vernal swales, and other temporary ponds that could provide habitat for vernal pool fairy shrimp, vernal pool tadpole shrimp, midvalley fairy shrimp, and California linderiella	Alternatives 2–6	Implement Mitigation Measure 8-1: Conduct surveys and develop a mitigation plan for vernal pool fairy shrimp and vernal pool tadpole shrimp	LS
Potential mortality of, disturbance to, or removal of habitat of the valley elderberry longhorn beetle during construction	Alternatives 2–6	Implement Mitigation Measure 8-2: Conduct preconstruction surveys for valley elderberry longhorn beetle and avoid or compensate for loss of habitat	LS
Potential mortality of, disturbance to, or loss of habitat for giant garter snake and western pond turtle	Alternatives 2–6	Implement Mitigation Measure 8-3: Avoid, minimize, and compensate for unavoidable impacts on jurisdictional waters of the United States, including wetlands, and implement associated wildlife protection and compensation measures	LS
Potential mortality of, disturbance to, or loss of habitat for the California tiger salamander and western spadefoot	Alternatives 2–6	Implement Mitigation Measure 8-4: Conduct preconstruction surveys and compensate for loss of California tiger salamander and western spadefoot habitat if these species are present	LS
Loss of or disturbance to active raptor nests or tricolored blackbird nests	Alternatives 2–6	Implement Mitigation Measure 8-5: Conduct surveys for nesting raptors and tricolored blackbirds	LS

Resource Topic/Impact	Applicable Alternative	Mitigation Measure	Level of Significance after Mitigation
Disturbance of nesting Swainson’s hawks	Alternatives 2–6	Implement Mitigation Measure 8-5  Implement Mitigation Measure 8-6: Consult with the California Department of Fish and Game if hawks are present and follow mitigation guidelines to avoid disturbance of nesting hawks	LS
Loss of Swainson’s hawk foraging habitat	Alternatives 2–6	Implement Mitigation Measure 8-7: Consult with California Department of Fish and Game and Sacramento County and compensate for loss of foraging habitat	LS
Loss of or disturbance to nesting western burrowing owls	Alternatives 2–6	Implement Mitigation Measure 8-5  Implement Mitigation Measure 8-8: Consult with California Department of Fish and Game and follow the burrowing owl mitigation guidelines	LS
Potential loss of habitat for Sacramento anthicid beetle and Sacramento valley tiger beetle	Alternatives 2–6	Implement Mitigation Measures 7-7 and 7-8	LS
Loss of or alteration to riparian wildlife habitat	Alternative 6	Implement Mitigation Measures 7-15 and 7-8	LS
Potential mortality to or disturbance of nesting cliff swallows	Alternative 6	Implement Mitigation Measure 8-9: Conduct preconstruction surveys for nesting birds  Implement Mitigation Measure 8-10: Avoid active nests during the breeding season	LS
Mortality or disturbance of nesting birds in the vegetation clearance and inundation zone	Alternative 6	Implement Mitigation Measure 8-11: Avoid removal of trees and other vegetation during the bird breeding season	LS
Potential mortality to roosting bat species of concern	Alternative 6	Implement Mitigation Measure 8-12: Conduct preconstruction bat clearance surveys	LS
<b>Geology, Soils, Seismicity, and Groundwater</b>			
Inadvertent soil loss from clearing operations	Alternative 6	Implement Mitigation Measure 9-1: Prevent inadvertent soil loss from clearing operations	LS
<b>Land Use—No significant impacts</b>			
<b>Agricultural Resources</b>			

Resource Topic/Impact	Applicable Alternative	Mitigation Measure	Level of Significance after Mitigation
Loss or conversion of prime farmland and farmland of statewide importance	Alternatives 2–6	Implement Mitigation Measure 11-1: Comply with Sacramento County General Plan requirements	LS
<b>Traffic and Transportation</b>			
Reduced access options for area residents	Alternative 6	Implement Mitigation Measure 12-1: Replace the Middle Bar Bridge with a new bridge	LS
<b>Air Quality</b>			
Short-term increase in NOx and CO emissions in Sacramento County	Alternatives 2–5	Implement Mitigation Measure 13-1: Include air quality mitigation measures as part of the proposed project’s construction management plan	LS
Short-term increase in NOx emissions in San Joaquin County	Alternatives 2–5	Implement Mitigation Measure 13-1	LS
Short-term increase in PM10 emissions in San Joaquin County	Alternatives 2–5	Implement Mitigation Measure 13-2: Comply with Regulation VIII for control measures of fugitive PM10	LS
Short-term increase in NOx emissions in Sacramento County	Alternative 6	Implement Mitigation Measure 13-1	LS
Short-term increase in PM10 emissions in Amador and Calaveras Counties	Alternative 6	Implement Mitigation Measure 13-3: Implement dust control measures	LS
<b>Noise</b>			
Short-term increases in construction noise levels during daytime hours	Alternatives 2–6	Implement Mitigation Measure 14-1: Provide public notice of proposed activities and provide noise shielding to the extent feasible	SU
Exposure of noise-sensitive land uses to general construction noise at night	Alternatives 2–6	Implement Mitigation Measure 14-1 Implement Mitigation Measure 14-2: Minimize nighttime construction activity	SU
Increase in noise levels from facility operation	Alternatives 2–6	Implementation of noise attenuation environmental commitment could minimize this impact	SU
<b>Public Health and Safety—No significant impacts</b>			

Resource Topic/Impact	Applicable Alternative	Mitigation Measure	Level of Significance after Mitigation
<b>Visual Resources</b>			
Adverse impacts on views of the Zone 40 Surface WTP	Alternatives 2–6	Implement Mitigation Measure 16-1: Reduce visual intrusion by preparing design plans consistent with rural visual character, providing vegetative buffer	LS
Adverse change to views of the canal pumping plant site	Alternatives 2–5	Implement Mitigation Measure 16-1	LS
Adverse change to views of the aqueduct pumping plant and pretreatment facility site (Camanche site and optional Brandt site)	Alternatives 2–5	Implement Mitigation Measure 16-2: Implement appropriate aesthetic treatment at the aqueduct pumping plant and pretreatment facility site	LS
Changes in visual resources from inundation of the area upstream of the existing Pardee Reservoir (Upper Mokelumne River)	Alternative 6	No mitigation available	SU
<b>Cultural Resources</b>			
Disturbance of known cultural resources	Alternatives 2–5	Implement Mitigation Measure 17-1: Prepare and implement a cultural resources significance evaluation, effects analysis, and mitigation plan for known cultural resources	LS
Disturbance of unidentified cultural resources	Alternatives 2–5	Implement Mitigation Measure 17-2: Prepare and implement a cultural resources inventory, significance evaluation, effects analysis, and mitigation plan for unidentified cultural resources  Implement Mitigation Measure 17-3: Prepare and implement a plan for unanticipated discovery of cultural resources	LS
Disturbance of known cultural resources at Pardee Reservoir that are listed on the National Register of Historic Places	Alternative 6	Implement Mitigation Measure 17-4: Conduct Historic American Engineering Record documentation where avoidance to structures is impossible	LS
Disturbance to other known cultural resources from the intake facility to the Zone 40 Surface WTP and at Pardee Reservoir	Alternative 6	Implement Mitigation Measure 17-1	LS

Resource Topic/Impact	Applicable Alternative	Mitigation Measure	Level of Significance after Mitigation
Disturbance of unidentified cultural resources from the intake facility to the Zone 40 Surface WTP and at Pardee Reservoir	Alternative 6	Implement Mitigation Measures 17-2 and 17-3	LS
LS = Less than significant			
SU = Significant and unavoidable			

**Table S-2.** Summary of Less-than-Significant Impacts and Mitigation Measures for the Freeport Regional Water Project

Resource Topic/Impact	Applicable Alternative	Mitigation Measure
<b>Hydrology, Water Supply, and Power</b>		
Changes in Upper Sacramento River Basin hydrologic conditions	Alternatives 2–6	No mitigation required
Changes in Lower Sacramento River, Delta Inflow, and Delta Outflow hydrologic conditions	Alternatives 2–6	No mitigation required
Changes in Mokelumne River Basin hydrologic conditions	Alternatives 2–6	No mitigation required
Changes in south-of-Delta water supply delivery operations	Alternatives 2–6	No mitigation required
Hydropower and energy production changes at CVP facilities	Alternatives 2–6	No mitigation required
<b>Water Quality</b>		
Potential contaminant discharges during construction could occur for approximately 2 years, and disturbed construction areas would be exposed to storms that could transport materials	Alternatives 2–5	No mitigation required
Operational effects during reverse flow in the Sacramento River associated with diversion of water from the Freeport intake facility could result in diluted discharges	Alternatives 2–5	No mitigation required
Operational effects on water quality in the Sacramento River downstream of the diversion (the Freeport intake facility) could result due to reduced background streamflow and increased SRWWTP effluent discharges	Alternatives 2–5	No mitigation required
Changes to reservoir temperature patterns for Camanche and Pardee Reservoirs attributable to project-related diversions of Sacramento River water	Alternatives 2–5	No mitigation required
Increased inorganic mineral content and nutrients could incrementally increase the frequency or duration of adverse taste and odor events in EBMUD terminal reservoirs	Alternatives 2–5	No mitigation required
Changes to Folsom South Canal water quality, attributable to project-related diversions of Sacramento River water that will be discharged to the FSC	Alternatives 2–5	No mitigation required
Operation effects on Delta water quality	Alternatives 2–5	No mitigation required
Pipeline operation effects on surface drainages attributable to change in discharge levels	Alternatives 2–5	No mitigation required

Resource Topic/Impact	Applicable Alternative	Mitigation Measure
Freeport Intake Facility to Zone 40 Surface WTP/Enlarge Pardee Reservoir has potential for contaminant discharges hazardous to aquatic habitats and existing vegetation during construction	Alternative 6	No mitigation required
Operating effects during reverse flow in the Sacramento River could reduce or increase the distance of travel and/or limit dilution water in the river that is available for SRWWTP effluent discharge compliance	Alternative 6	No mitigation required
Operational effects on water quality in the Sacramento River downstream of the diversion (the Freeport intake facility) could result due to reduced background streamflow and increased SRWWTP effluent discharges	Alternative 6	No mitigation required
Changes to reservoir temperature patterns	Alternative 6	No mitigation required
Discharges of contaminants during construction of Pardee Dam	Alternative 6	No mitigation required
Operational effects of chloride and EC differences on Delta water quality	Alternative 6	No mitigation required
<b>Fish</b>		
Negative impact on spawning habitat of fish species from construction-related activities	Alternatives 2–6	No mitigation required
Negative impact on rearing habitat of fish species from construction-related activities	Alternatives 2–6	No mitigation required
Negative impact on migration habitat of fish species from construction-related activities	Alternatives 2–6	No mitigation required
Introduction of contaminants harmful to fish populations during construction	Alternatives 2–6	No mitigation required
Creation of additional habitat for predators of native fish populations from temporary structures	Alternatives 2–6	No mitigation required
Direct injury to fish from construction activities	Alternatives 2–6	No mitigation required
Adverse impacts on spawning habitat of fish resulting from decreased flows during ongoing operations	Alternatives 2–6	No mitigation required
Adverse impacts on rearing habitat of fish resulting from decreased flows during ongoing operations	Alternatives 2–6	No mitigation required
Adverse impacts on migration habitat of fish resulting from decreased flows during ongoing operations	Alternatives 2–6	No mitigation required
Adverse impacts on water temperature resulting from changes in reservoir storage and river flow during operations	Alternatives 2–6	No mitigation required

Resource Topic/Impact	Applicable Alternative	Mitigation Measure
Potential risk of fish entrainment at the intake facility	Alternatives 2–6	No mitigation required
Adverse impacts on fish habitat resulting from changes in reservoir storage during project operations	Alternatives 2–6	No mitigation required
<b>Recreation</b>		
Temporary disruption to recreational opportunities during construction of the intake facility	Alternatives 2–6	No mitigation required
Temporary disruption to recreational opportunities during construction of the pipeline from the intake facility to Zone 40 Surface WTP/FSC	Alternatives 2–6	No mitigation required
Temporary disruption to recreational opportunities along the Folsom South Canal	Alternatives 2–5	No mitigation required
Temporary disruption to recreational opportunities during construction of the pipeline from the Folsom South Canal to the Mokelumne Aqueducts	Alternatives 2–5	No mitigation required
Change in water-dependent and water-enhanced recreation opportunities at Shasta, Oroville, and Trinity Reservoirs and the Sacramento River	Alternatives 2–6	No mitigation required
Change in water-dependent and water-enhanced recreation opportunities at Folsom Reservoir	Alternatives 2–6	No mitigation required
Change in water-dependent recreation opportunities on the lower American River	Alternatives 2–6	No mitigation required
Disruption to recreation opportunities on the Sacramento River associated with location of the intake facility	Alternatives 2–6	No mitigation required
Potential inconsistency with local plans and policies addressing recreation	Alternatives 2–6	No mitigation required
Temporary disruption of whitewater use along the Electra Run near State Route 49	Alternative 6	No mitigation required
Temporary disruption of water-dependent recreation activities near Pardee Dam	Alternative 6	No mitigation required
Temporary disruption to water-dependent and water-enhanced recreation activities on Pardee Reservoir	Alternative 6	No mitigation required
Change in water-dependent recreation opportunities on Pardee Reservoir	Alternative 6	No mitigation required
Change in recreation opportunities at Camanche Reservoir from increased storage	Alternative 6	No mitigation required
Change in recreation opportunities on the Lower Mokelumne River from increased water release	Alternative 6	No mitigation required
Loss of recreation area from inundation of the Pardee Recreation Area	Alternative 6	No mitigation required

Resource Topic/Impact	Applicable Alternative	Mitigation Measure
Loss of fishing access attributable to inundation of Middle Bar Bridge	Alternative 6	No mitigation required
<b>Vegetation and Wetland Resources</b>		
Temporary disturbance to and permanent loss of developed areas, agricultural land, eucalyptus stands, artificially created roadside drainage ditches, and annual grassland habitat within construction corridor	Alternatives 2–6	No mitigation required
Permanent loss of developed areas, non-serpentine chaparral, and annual grassland habitat within the inundation zone	Alternative 6	No mitigation is required
<b>Wildlife</b>		
Loss of or disturbance to developed and agricultural lands and associated wildlife habitats	Alternatives 2–6	No mitigation required
Temporary loss or alteration of Swainson’s hawk foraging habitat	Alternative 2–6	No mitigation required
Temporary loss of San Joaquin pocket mouse habitat	Alternative 2–6	No mitigation required
Loss of grassland habitats for wildlife	Alternative 6	No mitigation required
Loss of chaparral-type habitats for wildlife	Alternative 6	No mitigation required
Loss of upland woodland wildlife habitats	Alternative 6	No mitigation required
Loss of perching habitat for bald eagles	Alternative 6	No mitigation required
Increase in open water and shoreline habitat for waterfowl, waterbirds, and associated species	Alternative 6	No mitigation required
<b>Geology, Soils, Seismicity, and Groundwater</b>		
Localized erosion and sedimentation from construction-related activities	Alternatives 2–6	No mitigation required
Threat of hydrological hazards from potential trench dewatering	Alternatives 2–6	No mitigation required
Destruction of unique geological features from construction-related activities	Alternatives 2–6	No mitigation required
Threat of ground shaking and fault rupture	Alternatives 2–6	No mitigation required
Subsidence south of the Delta from increased groundwater pumping	Alternatives 2–6	No mitigation required
Threat of a reservoir-induced seismic event	Alternative 6	No mitigation required
Erosion and sedimentation within the expanded reservoir inundation zone from reservoir operations	Alternative 6	No mitigation required
<b>Land Use</b>		
Construction-period conflicts with residential and urbanized land uses	Alternatives 2–6	No mitigation required

Resource Topic/Impact	Applicable Alternative	Mitigation Measure
Postconstruction conflicts with residential and urbanized land uses	Alternatives 2–6	No mitigation required
Inconsistency with local plans and policies and land use designations	Alternatives 2–6	No mitigation required
Conflicts with planned new land uses	Alternatives 2–6	No mitigation required
Disproportionate impacts on low income residents and other environmental justice considerations	Alternatives 2–6	No mitigation required
Conflict with proposed scenic highway designation for SR 49	Alternative 6	No mitigation required
Loss of land because of inundation associated with enlarging Pardee Reservoir	Alternative 6	No mitigation required
Conflict with mineral resources zone general plan classification	Alternative 6	No mitigation required
<b>Agricultural Resources</b>		
Loss of agricultural production	Alternatives 2–6	No mitigation required
Nonrenewal or termination of Williamson Act Contracts	Alternatives 2–6	No mitigation required
Reduction in agricultural productivity in the San Joaquin Valley	Alternatives 2–6	No mitigation required
<b>Traffic and Transportation</b>		
Alteration of present patterns of vehicular circulation, increased traffic delay, and increased traffic hazards during construction of facilities	Alternatives 2–6	No mitigation required
Damage to the roadway surface during construction of facilities	Alternatives 2–6	No mitigation required
Disruption of rail traffic during construction	Alternatives 2–6	No mitigation required
Interference with emergency response routes during construction	Alternatives 2–6	No mitigation required
Interference with bicycle routes during construction	Alternatives 2–6	No mitigation required
Congestion of roadways and the permanent alteration of present patterns of vehicular circulation from the facility operations	Alternatives 2–6	No mitigation required
<b>Air Quality</b>		
Short-term increase in ROG and PM10 emissions in Sacramento County from construction	Alternatives 2–5	No mitigation required
Short-term increase in ROG and CO emissions in San Joaquin County from construction	Alternatives 2–5	No mitigation required
Long-term increase in emissions in Sacramento and San Joaquin Counties from operations	Alternatives 2–6	No mitigation required

Resource Topic/Impact	Applicable Alternative	Mitigation Measure
Short-term increase in ROG, CO, and PM10 emissions in Sacramento County from construction	Alternative 6	No mitigation required
Short-term increase in ROG, NOx, and CO emissions in Amador and Calaveras Counties from construction	Alternative 6	No mitigation required
Short-term release of NOx, CO, and PM10 from blasting at the existing Pardee Reservoir during construction	Alternative 6	No mitigation required
Long-term increase in emissions in Amador and Calaveras Counties from continued operation	Alternative 6	No mitigation required
<b>Noise</b>		
Exposure of existing structures to vibration from pile driving activities	Alternatives 2–6	No mitigation required
Exposure of existing structures and noise-sensitive uses to noise and vibration from blasting activities at enlarged Pardee Reservoir	Alternative 6	No mitigation required
Exposure of noise-sensitive land uses to continued operation of power-generating facilities	Alternative 6	No mitigation required
<b>Public Health and Safety</b>		
Exposure of people to existing contamination	Alternatives 2–6	No mitigation required
Contamination of soil and water during construction	Alternatives 2–6	No mitigation required
Increased risk of fires during construction	Alternatives 2–6	No mitigation required
Increased flooding along Sacramento River	Alternatives 2–6	No mitigation required
Increased flooding during pipeline construction	Alternatives 2–6	No mitigation required
Increased risk from use and storage of hazardous materials during operations	Alternatives 2–6	No mitigation required
Increased risk from transportation of hazardous materials during operations	Alternatives 2–6	No mitigation required
Construction activity hazards to workers	Alternative 6	No mitigation required
Downstream flood hazards from rupture of the proposed dam	Alternative 6	No mitigation required
Increased flooding during dam construction	Alternative 6	No mitigation required
<b>Visual Resources</b>		
Short-term changes to views associated with construction of project components	Alternatives 2–5	No mitigation required
Adverse changes to views of the intake facility site	Alternatives 2–5	No mitigation required
Adverse changes to views along the pipeline from the intake facility to Zone 40 Surface WTP/FSC	Alternatives 2–5	No mitigation required

Resource Topic/Impact	Applicable Alternative	Mitigation Measure
Adverse changes to views along the pipeline from the FSC to the Mokelumne Aqueducts	Alternatives 2–5	No mitigation required
Short-term changes to views associated with construction of project components from the intake facility to the Zone 40 Surface WTP	Alternative 6	No mitigation required
Short-term changes to views associated with construction of the enlarged Pardee Reservoir	Alternative 6	No mitigation required
Adverse changes to views of the intake facility site	Alternative 6	No mitigation required
Adverse changes to views along the pipeline from the intake facility to Zone 40 Surface WTP	Alternative 6	No mitigation required
Adverse impacts on visual resources from raising Pardee Reservoir water elevations	Alternative 6	No mitigation required
Adverse impacts on visual resources from inundation of the area downstream of the existing Pardee Dam (Middle Mokelumne River)	Alternative 6	No mitigation required
Adverse impacts on visual resources from changes in Camanche Reservoir water elevations	Alternative 6	No mitigation required
Change in views of the Pardee replacement dam	Alternative 6	No mitigation required
Change in views of the new Pardee saddle dams	Alternative 6	No mitigation required
Change in view of the new Jackson Creek saddle dams	Alternative 6	No mitigation required
Change in view of the raised intake tower	Alternative 6	No mitigation required
Change in views of raised or relocated utility lines	Alternative 6	No mitigation required
Change in views of new roads and bridges	Alternative 6	No mitigation required
Change in views from the new Pardee Recreation Area	Alternative 6	No mitigation required
<b>Cultural Resources</b> —No less-than-significant impacts		

**Table S-3.** Summary of Significant Cumulative Impacts and Mitigation Measures for the Freeport Regional Water Project

Resource Topic/Impact	Applicable Alternative	Mitigation Measure	Result
<b>Hydrology, Water Supply, and Power</b> —No project-related contribution			
<b>Water Quality</b> —No project-related contribution			
<b>Fish</b> —No project-related contribution			
<b>Recreation</b> —No project-related contribution			
<b>Vegetation and Wetland Resources</b>			
Effects of local and regional projects and general growth in the region, in combination with the FRWP, on the cumulative loss of identified sensitive resources, including wetlands and riparian woodlands.	Alternatives 2–6	Implementing all mitigation measures described in Chapter 7, “Vegetation and Wetland Resources,” will eliminate any contribution to cumulative effects.	Not cumulatively considerable
<b>Wildlife</b>			
Effects of local and regional projects and general growth in the region on the cumulative loss of identified sensitive resources, including habitats for sensitive wildlife species.	Alternatives 2–6	Implementing all mitigation measures described in Chapter 8, “Wildlife,” will eliminate any contribution to cumulative effects.	Not cumulatively considerable
<b>Geology, Soils, Seismicity, and Groundwater</b> —No significant impacts			
<b>Land Use</b> —No project-related contribution			
<b>Agricultural Resources</b>			
Effects of local and regional projects and general growth in the region, in combination with the FRWP, on the cumulative loss of prime agricultural lands.	Alternatives 2–6	No mitigation available to reduce effect to less than cumulatively considerable	SU
<b>Traffic and Transportation</b> —No project-related contribution			
<b>Air Quality</b> —No project-related contribution			
<b>Noise</b> —No project-related contribution			

Resource Topic/Impact	Applicable Alternative	Mitigation Measure	Result
<b>Public Health and Safety</b> —No project-related contribution			
<b>Visual Resources</b> —No project-related contribution			
<b>Cultural Resources</b>			
Effects of local and regional projects and general growth in the region on the cumulative loss of cultural (archeological and historic) resources.	Alternatives 2–6	Implementing all mitigation measures described in Chapter 17, “Cultural Resources,” will eliminate any contribution to cumulative effects.	Not cumulatively considerable
SU = Significant and unavoidable			