CENTRAL VALLEY
FLOOD MANAGEMENT
PLANNING PROGRAM

FloodSAFE
CALIFORNIA

March 2012

2012 Central Valley Flood Protection Plan

Draft Program Environmental Impact Report

DEPARTMENT OF WATER RESOURCES
STATE OF CALIFORNIA

PUBLIC SAFETY ENVIRONMENTAL STEWARDSHIP ECONOMIC STABILITY

Cover Photo: Feather River near Yuba City (December 1955)

The flood of December 1955 was one of the most widespread and destructive floods in Central Valley history. A levee break on the Feather River at Yuba City (shown) flooded about 6,000 homes and resulted in 38 confirmed deaths and millions in property damage.

Executive Summary

Table of Contents

ES.1 Introduction ES–1

ES.2 History and Background of Flood Protection in the Central Valley ES–2

ES.3 Description of the Proposed Program ES–7
- ES.3.1 Near-Term and Long-Term Management Activities ES–9
- ES.3.2 Purpose of the Proposed Program ES–11
- ES.3.3 Objectives of the Proposed Program ES–12

ES.4 Study Area ES–14
- ES.4.1 Systemwide Planning Area Plus 2-Mile Buffer and Suisun Extension (Extended Systemwide Planning Area) ES–15
- ES.4.2 Sacramento and San Joaquin Valley Watersheds ES–15
- ES.4.3 SoCal/Coastal CVP/SWP Service Areas ES–15

ES.5 Areas of Known Controversy and Issues To Be Resolved ES–17

ES.6 Alternatives to the Proposed Program ES–19
- ES.6.1 No Project Alternative—Continued Operations Scenario ES–20
- ES.6.2 No-Project Alternative—No Additional Activities Scenario ES–20
- ES.6.3 Modified State Systemwide Investment Approach Alternative ES–21
- ES.6.4 Achieve SPFC Design Flow Capacity Alternative ES–21
- ES.6.5 Achieve SPFC Design Flow Capacity with Strict ETL Compliance Alternative ES–21
- ES.6.6 Protect High-Risk Communities Alternative ES–22
- ES.6.7 Enhance Flood System Capacity Alternative ES–22
- ES.6.8 Alternatives Carried Forward for Evaluation ES–22

ES.7 Summary of Environmental Impacts of the Proposed Program ES–23

ES.8 Comparison of Environmental Impacts of the Proposed Program and Alternatives ES–23

ES.9 Next Steps for the PEIR ES–26

Figures

ES.2-1 Chronology of Flood Management–Related Actions in the Central Valley ES–4
ES.4-1 PEIR Study Area ES–15

Tables

ES.8-1 Comparison of Impact Levels of the Proposed Program and the Alternatives ES–24
ES-1 Summary of Impacts and Mitigation Measures of the Proposed Program ES–27

EXECUTIVE SUMMARY

ES.1 Introduction

Historically, the Central Valley has experienced some of California's largest and most damaging floods. Floods have had devastating effects on life and property in the Central Valley and on the state's economic prosperity. The most recent large floods in the Central Valley, in 1986 and 1997, together caused more than $1 billion in damage (USACE 1997).

Despite the current flood management system in the Central Valley, the valley's residual flood risk remains among the highest in the country. Currently, even small flood events with a 5 percent chance of occurring annually can stress parts of the flood system.

"Residual Flood Risk" Residual risk is the portion of flood risk that remains after a flood control structure or works has been built. Risk remains because the likelihood exists for the design of the completed works to be surpassed by a flood event of sufficient intensity, resulting in structural failure.

Public awareness of flood risks was heightened by the catastrophic flooding in New Orleans associated with Hurricane Katrina in August 2005. That event caused estimated property damage exceeding $80 billion and took more than 1,800 lives.

In 2006, the California Department of Water Resources (DWR) launched FloodSAFE California, a multifaceted initiative to improve integrated flood management. In November of that year, the state's voters passed two important bond measures, Propositions 84 and 1E, which included approximately $3.3 billion in funds that could be used to support flood risk reduction efforts in the Central Valley.

In 2007, the California Legislature passed a package of several related flood bills, which included a requirement to prepare a Central Valley Flood Protection Plan (CVFPP). Additional requirements for the CVFPP were added in the Central Valley Flood Protection Act of 2008 (Senate Bill 5). That same year, DWR embarked on the Central Valley Flood Management Planning Program, which addresses flood management planning activities in the Central Valley that require leadership and participation by the State of California (State). The Central Valley Flood Management Planning Program is one of several programs managed by DWR under FloodSAFE California.

The CVFPP is a critical document intended to guide California's participation (and to influence federal and local participation) in managing flood risk along the Sacramento River and San Joaquin River systems. The CVFPP proposes a State Systemwide Investment Approach (SSIA) as its proposed program for sustainable, integrated flood management in areas currently protected by facilities of the State Plan of Flood Control (SPFC). The CVFPP is a program-level, rather than project-level, document. It articulates programs to further flood risk reduction in the Central Valley and suggests a range of potential

future projects that could help meet that goal. The CVFPP will be updated every 5 years, with each update providing the opportunity to update existing policies, programs, and suggested projects, or to add new ones.

After extensive outreach to stakeholders and the public, a draft of the CVFPP was released to the public on December 30, 2011. Pursuant to Section 9612 of the California Water Code, the Central Valley Flood Protection Board (Board) shall adopt the CVFPP by July 1, 2012.

This CVFPP program environmental impact report (PEIR) was developed to inform DWR, which is developing the CVFPP, and the Board, which will consider adopting the CVFPP, about potential program-level environmental effects and mitigation measures related to the components of the CVFPP. The PEIR is written so that DWR and the Board will be able to rely on this PEIR for future planning and feasibility studies pertinent to implementation.

This executive summary provides an overview of the CVFPP PEIR consistent with Section 15123(a) of the California Environmental Quality Act Guidelines (CEQA Guidelines), which states that an EIR "shall contain a brief summary of the proposed action and its consequences." As explained in Section 15123(b), the summary shall identify (1) each significant impact, with proposed mitigation measures and alternatives; (2) areas of controversy known to the lead agency; and (3) issues to be resolved in the EIR.

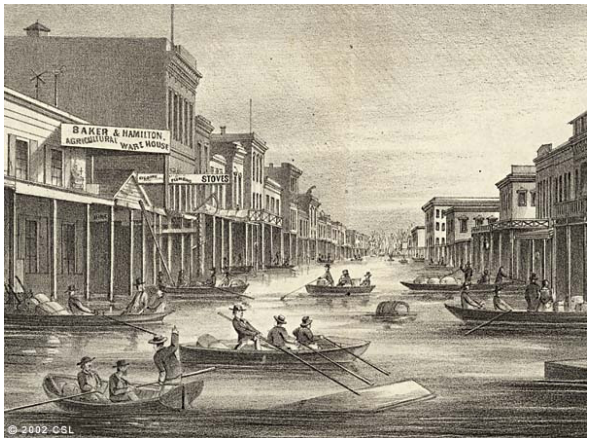
This draft PEIR (DPEIR) is being circulated for public review. Comments received during the public review will be considered by DWR and the Board, and responses to comments will be included in the final PEIR. Continued public outreach, including public hearings, will be conducted before the final PEIR is completed. See Section ES.9, "Next Steps for the PEIR," below, for additional information.

ES.2 History and Background of Flood Protection in the Central Valley

Before settlement associated with the Gold Rush began, the Central Valley routinely flooded, forming a vast inland sea. Flood management efforts in the Central Valley began toward the middle of the 19th century, when major settlement and land reclamation and cultivation began in California's two largest valleys. The drainage and levee construction originally undertaken by individual farmers shifted in the 1880s to collective efforts and financing by newly authorized levee and reclamation districts in both the Sacramento and San Joaquin valleys. Because individual public levee and reclamation districts were formed by landowners, flood control efforts were fundamentally local and uncoordinated. The system proved inadequate, especially for the Sacramento River system.

In lieu of building river levees to make the Sacramento River a single, ever-wider flood channel, a weir and bypass system known as the "Jackson Plan"

was conceived and formally adopted by the California Debris Commission in 1911. The Debris Commission was a federal body that had been created to address the effects of the deposition of mining debris on navigation. The bypass system proposed in the Jackson Plan consisted of weirs built to divert portions of the high Sacramento River flows from the river at different points into specially constructed, large-capacity flood channels to reduce flood stages in the river, and thereby to move floodwaters safely to the ocean. In 1911, the State authorized a means of funding the plan by creating a regional assessment district, the Sacramento–San Joaquin Drainage District, and a governing body for it, the State Reclamation Board. (The State Reclamation Board is now known as the Central Valley Flood Protection Board.) The plan, which became known as the Sacramento River Flood Control Project, was completed in 1960 by the U.S. Army Corps of Engineers (USACE).



1862 Flooding in Sacramento

The structures, such as levees and bypasses and other flood structures designed and primarily built by USACE in the watershed of the Sacramento and San Joaquin rivers, are known as the federal flood control facilities for the Central Valley. The levees that are part of federal flood control facilities are known as "project levees," which distinguishes them from levees that are not part of USACE's federal system of levees and other flood facilities in the Central Valley. These project levees are now called facilities of the SPFC. Construction of these facilities contributed to the loss of floodplain habitats and marshes over time.

About 45 percent of the levees in the Sacramento–San Joaquin Delta (Delta) are not project levees. The nonproject levees are maintained by local reclamation districts and are generally eligible for financial assistance from the State through the Delta Levees Subventions Program. The Delta Flood Protection Fund Act of 1988 substantially increased reimbursement opportunities for the local reclamation districts and added environmental mitigation and protection requirements for grant recipients. Multipurpose storage reservoirs on both the San Joaquin and Sacramento rivers that are not part of the federal flood control facilities also protect the valley from flooding.

Today, the Central Valley flood management system includes levees along the major rivers and streams of the valley floor and around the islands of the Delta, a major bypass system for the Sacramento River and its tributaries, several bypass segments along the San Joaquin River, and numerous reservoirs on almost all major rivers and streams draining to the Central Valley.

During major flood events, State, federal, and local agencies work together closely to forecast weather and runoff conditions, manage and coordinate flood releases from the reservoir system, patrol and conduct flood fights along the levee and bypass system, and operate the Sacramento Weir, drainage pumps, and other flood control structures.

Figure ES. 2-1 provides a chronology depicting the history of Central Valley flood management.

Figure ES. 2-1. Chronology of Flood Management–Related Actions in the Central Valley

Significant Flood Management Events

1849	California Gold Rush
1850	Federal Arkansas Act giving away "California Swamplands"
1850	California Statehood
1861	State Flood Control Act
	Reclamation District Act
1883	Federal Anti-Debris Act ends hydraulic mining
1911	State Reclamation Board Created
1933	Central Valley Project Authorized
2003	Paterno Decision
2005	DWR Flood Warning White Paper
2006	Propositions 1E and 84 Passed
2007	Flood Management Reform Legislation

Sacramento River Basin

1850	First Levee built in Sacramento
1917	Sacramento River Flood Control Project Authorized
1944	Shasta Dam was built
1955	Folsom Dam was built
1967	Oroville Dam was built
1969	New Bullards Bar Dam was built

San Joaquin River Basin

1944	Lower San Joaquin River and Tributaries Project
1949	Friant Dam Completed
1955	Bypasses and Levees authorized on the San Joaquin River above Merced River
1963	Camanche Dam was built
1964	New Hogan Dam was built
1967	New Exchequer Dam was built
1971	New Don Pedro Dam was built
1978	New Melones Dam was built
1993	Redbank/Fancher Creeks Project

1849 Sutter's Mill

1907 Flood in West Sacramento

1955 Folsom Dam was built

1997 Flood in Central Valley

1949 Friant Dam was built

1955 Flood in Visalia

1978 New Melones Dam was built

Over the past 150 years, funding levels for flood risk reduction activities in the Central Valley have varied considerably. Those funds have come from a variety of sources at the federal, State, and local levels, and have fluctuated as a result of factors such as competing priorities, changing levels of concern about flood risks, and economic concerns.

Geotechnical improvements to levees in the Pocket Area of Sacramento

As indicated above, in November 2006 California's voters passed two important general obligation bond measures, Propositions 84 and 1E, which provided approximately $3.3 billion for flood risk reduction activities in the Central Valley. Since the passage of Propositions 84 and 1E, DWR has been working with USACE and local agencies to improve flood management within areas protected by SPFC facilities. In the 5 years since these funds first became available, approximately $1.5 billion has been spent on a range of activities, the most important of which are summarized below.

A top priority was to repair portions of the levee system at critical risk of failure as a result of erosion or other factors. Since 2006, more than 120 critical levee erosion sites have been repaired, and a variety of conditions have been repaired at more than 220 other sites. DWR also undertook several major maintenance projects, including the removal of 3 million cubic yards of sediment from the bypasses, and rehabilitated seven flood system structures. More than 240,000 tons of rock have been stockpiled in the Delta to allow faster response to flood emergencies.

DWR also began extensive evaluations of the status of the flood system to provide the necessary factual support for flood planning efforts. To date, the department has collected topographic data and light detection and ranging (or LiDAR) data for 9,000 square miles along the flood system, conducted engineering and geotechnical evaluations for urban and nonurban levees, and developed a comprehensive medium-scale GIS data set of riparian vegetation for the Central Valley. DWR has also added about 50 flood forecasting and water supply gauging sites, developed the Flood Emergency Response Infor-

mation System, developed a forecast coordinated operations program for the Yuba-Feather River system, and updated hydrology information for Central Valley streams. Major products of these efforts include the *State Plan of Flood Control Descriptive Document* in 2009 and the *Flood Control System Status Report in 2011*.

These activities have included an increased understanding of and emphasis on habitat and other environmental factors in the management of the flood risk reduction system. DWR has assessed major fish passage barriers within the flood protection system, evaluated potential floodplain restoration opportunity areas, catalogued and summarized conservation objectives from 30 conservation planning efforts, prepared a public draft Conservation Framework, and implemented 12 Flood Corridor Program projects in the Central Valley, providing habitat conservation on more than 4,000 acres and agricultural land conservation on more than 500 acres. There has been enhanced environmental integration of emergency response activities, including an emergency response exercise conducted with environmental resource and regulatory agencies.

DWR has also taken steps to improve its planning processes and coordinate those activities with other maintaining and regulatory agencies. In 2005, DWR initiated and coordinated the Interagency Flood Management Collaborative Program, a working group of federal, State, and local officials from key regulatory and maintaining agencies that meets monthly to address issues of mutual concern. The department is developing several integrated flood management and environmental initiatives in partnership with resource and regulatory agencies, including a Corridor Management Strategy and the Small Erosion Repair Program (SERP). SERP will streamline the permitting process for small erosion repair projects, so that the repairs can be undertaken before further erosion occurs and requires a larger, more costly repair with greater impacts on the riverine habitat and the environment. SERP will help avoid duplicative permitting efforts that can delay repairs and divert resources from more pressing environmental issues. DWR is taking the lead in developing a statewide policy framework and draft approach for Regional Advance Mitigation Planning.

To assist local planning entities, DWR has prepared voluntary flood-related Building Standards Code specifications (California Code of Regulations, Title 24, Parts 2 and 2.5) for single-family residential occupancy groups R-3 and R-3.1, for adoption by cities and counties. It has initiated mapping of the Central Valley Levee Flood Protection Zones and sent flood-risk notification letters to 300,000 affected property owners in the Central Valley in 2010 and 2011.

During the past 5 years, the State, USACE, and local agencies have also been working on major projects to upgrade the State-federal flood management system in the Central Valley. These projects include the American River Common Features Project, to provide improved flood protection to areas protected

by levees along the following reaches: the American River downstream from Folsom Dam; the Sacramento River downstream from the American River; and the Natomas Basin. Other important projects include the following:

- Folsom Dam Modifications (as part of the Folsom Dam Joint Federal Project)
- Marysville Ring Levee Improvement Project
- Geotechnical improvements to levees in the Pocket Area of Sacramento
- Mid-Valley Area Levee Reconstruction Project
- South Sacramento Streams Project
- Three Rivers Levee Improvement Authority, Feather River Levee Improvement Project, Yuba County
- Three Rivers Levee Improvement Authority, Upper Yuba River Levee Improvement Project, Yuba County
- Levee District 1, Star Bend levee setback on the Feather River, Sutter County
- Reclamation District 2103, Bear River North Levee Rehabilitation Project, Sutter, Yuba, and Placer counties
- Reclamation District 17, 100-Year Seepage Area Project, San Joaquin River, San Joaquin County
- West Sacramento Area Flood Control Agency, Capital Outlay, City of West Sacramento
- West Sacramento Project, repair of two Yolo Bypass east bank levee slips in West Sacramento (under way)
- West Sacramento Setback Levee and Slurry Wall at River Mile 57.2 right bank constructed under the Sacramento River Bank Protection Project (under way)

These activities during the past 5 years have provided DWR with enhanced interagency relationships, improved planning and project implementation capabilities, and the information necessary to support the preparation of the CVFPP and this PEIR.

ES.3 Description of the Proposed Program

The SSIA is DWR's proposed program for sustainable, integrated flood management in areas currently protected by SPFC facilities. The SSIA described in the CVFPP is the proposed program evaluated in this PEIR. The proposed program includes broad management actions to improve the flood management system, policies, and institutions at a systemwide level, while enabling flexibility in addressing changing needs and funding scenarios. The program also integrates environmental conservation strategies and actions to improve

the flood management system's long-term sustainability while improving ecosystem function. At the same time, it provides additional options for addressing compliance with environmental regulations related to long-term operation and maintenance.

"Sustainable" A project is considered sustainable when it is socially, environmentally, and financially feasible for an enduring period. For the CVFPP, a sustainable project will also have the flexibility to adapt to potential future changes such as climate change.

Flooding poses different threats to the people, critical infrastructure, and properties within the valley's varied land uses. Consequently, the proposed program provides different approaches to improve flood protection depending on the land use and its requirements. These land use areas have been delineated in the proposed program as urban areas, small communities, and rural-agricultural areas. Briefly, the key features of the proposed program can be characterized as follows:

- Improve levees that protect existing urban and urbanizing areas (populations greater than 10,000) to achieve an urban level of flood protection (protection against a 0.5-percent-chance event), at minimum.
- Reduce flood risk in existing small communities (with populations less than 10,000), where feasible.
- Improve rural-agricultural area levees included in the proposed program to reflect the lower levels of development within these floodplains.
- Improve the overall ability of the SPFC to convey large flood events through modified (or potentially new) weirs, bypass systems, hydraulic structures, and easements.
- Improve ecological conditions on a systemwide basis, using integrated policies, programs, and projects.

Implementation of the proposed program would depend on both the collaboration and independent decision-making of federal, State, and local cooperating and regulatory agencies. Follow-on feasibility studies and CVFPP updates are expected to refine the proposed program and assess the potential costs, benefits, and impacts of site-specific implementation projects.

ES.3.1 Near-Term and Long-Term Management Activities

For purposes of the PEIR, proposed activities that are part of the proposed program are divided into near-term management activities (NTMAs) and long-term management activities (LTMAs). NTMAs are those management activities that would be initiated during the first 5 years after approval of the CVFPP, with many having the potential to be completed during that initial period; LTMAs are management activities that would be initiated at any time beyond 5 years after adoption of the CVFPP. In the PEIR, NTMAs are evaluated at a greater level of specificity than LTMAs for the following reasons:

- NTMAs are better defined and less conceptual than LTMAs, are more likely to be implemented in the short term (within the first 5 years after approval of the CVFPP), and are generally less complex.
- NTMAs have more secure funding sources than LTMAs.
- Environmental impacts of NTMAs can generally be evaluated more accurately than impacts of LTMAs.

NTMAs can consist of any of the following types of activities:

- Conveyance management activities:
    - » Sediment removal
    - » Levee repair, reconstruction, and/or improvements:
        - ◦ Raise levees by adding earthen material or constructing floodwalls.
        - ◦ Strengthen levees to enhance their integrity by improving the properties and geometry of embankment soils to resist slope and seepage failures.
        - ◦ Address seepage with seepage berms, stability berms, impermeable barrier curtains (slurry cutoff walls) in the levee and/or its foundation, and relief wells and toe drains.
        - ◦ Armor the landside of the levees to improve levee resiliency during overtopping episodes.
        - ◦ Construct small setback levees (generally less than 0.75 mile long).

San Joaquin River at Friant Dam

- Storage management activities:
  - » Change reservoir operations criteria to alter the timing, magnitude, and frequency of flood releases to downstream channels, providing reductions in river flood stage and volume.
    - ◦ Coordinate operation among different reservoirs to increase objective releases from reservoirs.
    - ◦ More effectively use weather forecasting in conjunction with reservoir operations.
    - ◦ Use weather forecasting to support more flexibility in short-term allocations of available storage space between water supply and flood control.
- Other management activities:
  - » Implement a vegetation management strategy.
  - » Purchase floodplain easements and/or other interests in land.
  - » Integrate conservation strategies to improve the overall sustainability of and ecosystem benefits provided by the flood management system.
  - » Refine flood emergency response, improve flood system operations and maintenance, continue floodplain risk management, conduct feasibility studies, and implement flood risk reduction projects in coordination and partnership with local and federal agencies.

All other types of CVFPP activities fall within the LTMA category and consist of the following types of activities:

- Widening floodways (through setback levees and/or purchase of easements)
- Constructing or modifying weirs and bypasses
- Improving and remediating levees
- Constructing new levees
- Removing some facilities from the SPFC
- Using long-term forecasts to improve operation of existing reservoirs
- Achieving protection of urban areas from a flood event with 0.5 percent risk of occurrence in any given year
- Achieving protection of small communities from a flood event with 1 percent risk of occurrence in any given year
- Protecting rural-agricultural area against floods by facilitating inspection and flood fighting, improving levee performance, and purchasing agricultural easements
- Changing policies, guidance, standards, and institutional structures
- Implementing additional and ongoing conservation elements

Construction of a new levee in the Natomas Basin of Sacramento

However, because NTMA-type activities would continue to be implemented in the CVFPP study area into the longer term time frame of the LTMAs (e.g., remediation of existing levees), LTMAs include a continuation of activities described as part of the NTMAs.

ES.3.2 Purpose of the Proposed Program

The broad purpose of the proposed program is to respond to the California Legislature's direction in Senate Bill 5 to develop and implement a sustainable, integrated flood management plan for the Central Valley. In taking an integrated flood management approach, the proposed program recognizes that flood management is connected to water resource management; land use planning; environmental stewardship; and long-term economic, environmental, and social sustainability. Integrated flood management also recognizes the importance of evaluating opportunities and potential impacts from a systemwide perspective, and the importance of coordinating across geographic and agency boundaries to effectively manage flood flows in any given hydrologic unit.

Much of the legacy flood management system is characterized by aging infrastructure, making it increasingly difficult for DWR and local maintaining agencies to carry out maintenance programs. The proposed program reflects the State's vision for modernizing the SPFC to address current challenges and future trends and to meet the proposed program's objectives.

The proposed program would be implemented over time by the State, federal agencies, and local agencies such as reclamation districts, municipal and regional flood management agencies, and cities and counties.

The CVFPP is part of a long-term planning effort and is to be updated every 5 years. As the first edition of the plan, the 2012 CVFPP does the following:

- Describes a broadly supported vision for improving flood management in the Central Valley
- Recommends initial management actions to reduce flood risks
- Identifies potential modifications to the flood management system for further study
- Describes a framework for implementing future improvements
- Describes a framework for developing a conservation strategy for the flood system

ES.3.3 Objectives of the Proposed Program

Eight program objectives were formulated to guide development of this PEIR and a reasonable range of alternatives to be evaluated in the PEIR. Five of these objectives address the underlying goals of the proposed program: a primary objective to improve flood risk management and supporting objectives to improve operations and maintenance, promote ecosystem functions, improve institutional support, and promote multi-benefit projects. The remaining three program objectives guiding this PEIR reflect direction provided in the authorizing legislation: maximize flood-risk reduction benefits within the practical constraints of available funds; adopt the CVFPP by July 1, 2012; and promote as feasible the multiple objectives provided in Section 9616 of the California Water Code. These objectives are presented below.

Primary Objective

- **Improve Flood Risk Management**—Reduce the chance of flooding and damages, once flooding occurs, and improve public safety, preparedness, and emergency response through the following:
    - » Identifying, recommending, and implementing structural and nonstructural projects and actions that benefit lands currently receiving protection from facilities of the SPFC.
    - » Formulating standards, criteria, and guidelines to facilitate implementation of structural and nonstructural actions for protecting urban areas and other lands of the Sacramento and San Joaquin river basins and the Delta.

Supporting Objectives

- **Improve Operations and Maintenance**—Reduce systemwide maintenance and repair requirements by modifying the flood management systems in ways that are compatible with natural processes, and adjust, coordinate, and streamline regulatory and institutional standards, funding, and practices for operations and maintenance, including significant repairs.
- **Promote Ecosystem Functions**—Integrate the recovery and restoration of key physical processes, self-sustaining ecological functions, native habitats, and species into flood management system improvements.
- **Improve Institutional Support**—Develop stable institutional structures, coordination protocols, and financial frameworks that enable effective and adaptive integrated flood management (designs, operations and maintenance, permitting, preparedness, response, recovery, and land use and development planning).
- **Promote Multi-Benefit Projects**—Describe flood management projects and actions that also contribute to broader integrated water management objectives identified through other programs.

Statutory Objectives

- **Maximize Flood Risk Reduction Benefits within the Practical Constraints of Available Funds**—Ensure that technically feasible and cost-effective solutions are implemented to maximize the flood risk reduction benefits given the practical limitations of available funding, and provide a feasible, comprehensive, and long-term financing plan for implementing the plan.
- **Adopt the CVFPP by July 1, 2012**—Complete all steps necessary to develop and adopt the CVFPP by July 1, 2012, or such other date as may be provided by the Legislature.
- **Meet Multiple Objectives Established in Section 9616 of the California Water Code, Wherever Feasible:**
    - » *Reduce the risk to human life, health, and safety from flooding, including protection of public safety infrastructure.*
    - » *Expand the capacity of the flood management system in the Sacramento–San Joaquin Valley to either reduce flood flows or convey floodwaters away from urban areas.*
    - » *Link the flood protection system with the water supply system.*
    - » *Reduce flood risks in currently nonurbanized areas.*
    - » *Increase the engagement of local agencies willing to participate in improving flood protection, ensuring a better connection between State flood protection decisions and local land use decisions.*

- *Improve flood protection for urban areas to the urban level of flood protection.*
- *Promote natural dynamic hydrologic and geomorphic processes.*
- *Reduce damage from flooding.*
- *Increase and improve the quantity, diversity, and connectivity of riparian, wetland, floodplain, and shaded riverine aquatic habitats, including the agricultural and ecological values of these lands.*
- *Minimize flood management system operations and maintenance requirements.*
- *Promote the recovery and stability of native species' populations and overall biotic community diversity.*
- *Identify opportunities and incentives for expanding or increasing use of floodway corridors.*
- *Provide a feasible, comprehensive, and long-term financing plan for implementing the CVFPP.*
- *Identify opportunities for reservoir reoperation in conjunction with groundwater flood storage.*

ES.4 Study Area

The proposed program would be implemented primarily in the Systemwide Planning Area (SPA) of the CVFPP. The SPA includes lands that receive protection from the SPFC and are subject to flooding under the current facilities and operation of the Sacramento–San Joaquin River Flood Management System, including lands with facilities that provide substantial systemwide benefits or that protect urban areas in the Sacramento–San Joaquin Valley. The SPA also includes lands with facilities that are not part of the SPFC, including federal and local reservoirs that have allocated flood storage.

Effects of management actions implemented in the SPA may extend beyond this area. Therefore, the PEIR study area is divided into three regions for describing the environmental setting and potential environmental effects of implementing the CVFPP. These areas are described below and illustrated in Figure ES. 4-1.

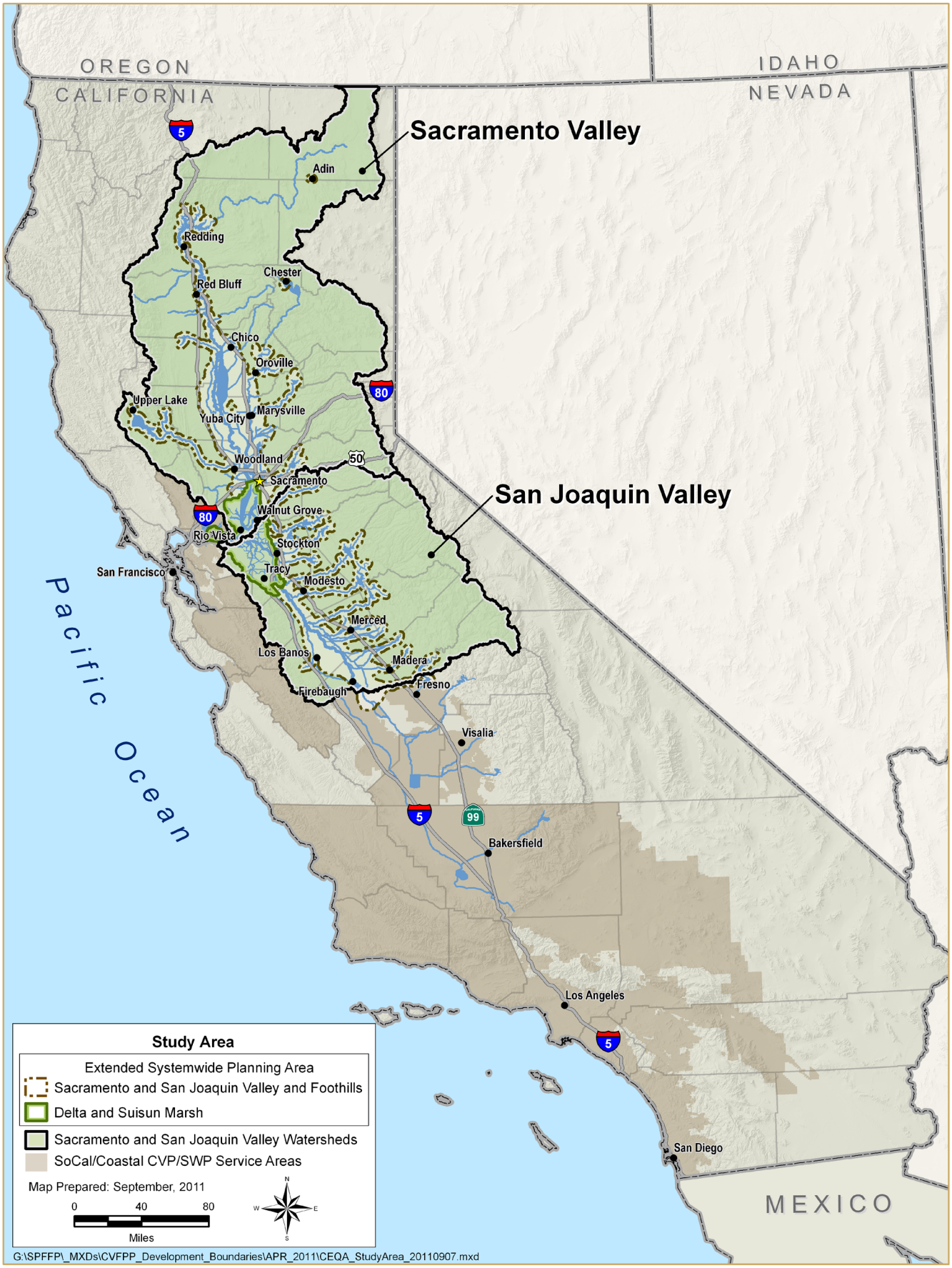


Figure ES. 4-1. PEIR Study Area

ES.4.1 Systemwide Planning Area Plus 2-Mile Buffer and Suisun Extension (Extended Systemwide Planning Area)

The Extended SPA includes a 2-mile-wide buffer around the SPA to provide the environmental context for direct and indirect impacts on areas adjacent to the SPA. Because of topographical and land use considerations, the buffer is 1 mile wide in urban areas and does not extend beyond the adjacent ridgeline along foothill waterways. The buffer is wider than 2 miles in the Suisun Marsh area so that the Extended SPA encompasses the hydrologically influenced areas. The Extended SPA is divided into two subregions:

- **Sacramento and San Joaquin Valley and Foothills**—This area consists of the Sacramento and San Joaquin valleys and the surrounding foothills along several major waterways. Most of the management actions would be implemented in this area.
- **Delta and Suisun Marsh**—This area encompasses the Delta and portions of Suisun Marsh where upstream management actions may affect water flows or quality. At Suisun Marsh, the boundary is at the west end of Montezuma Slough.

ES.4.2 Sacramento and San Joaquin Valley Watersheds

The Sacramento and San Joaquin Valley watersheds are the portions of the watershed upstream from the Extended SPA that may be affected by the management actions employed in these watersheds. These watersheds are discussed in less detail in this PEIR than the Extended SPA.

ES.4.3 SoCal/Coastal CVP/SWP Service Areas

The Southern California and coastal service areas of the Central Valley Project (CVP) and State Water Project (SWP) (referred to in this document as the "SoCal/coastal CVP/SWP service areas") consist of those portions of the CVP/SWP service areas that are not in the Extended SPA. These CVP/SWP service areas are located primarily in Southern California and the Central Coast areas and include CVP/SWP service areas in the Tulare Lake Basin. There are only limited mechanisms by which the SSIA might affect the environment in the SoCal/coastal CVP/SWP service areas, and these areas are discussed in less detail in this PEIR than are the Extended SPA and the Sacramento and San Joaquin Valley watersheds.

ES.5 Areas of Known Controversy and Issues To Be Resolved

Overcoming challenges to improving flood management in the Central Valley will require diligent collaboration, effective partnerships, and public outreach and participation. The CVFPP reflects the State's effort to take a balanced approach to achieving the objectives established in the Central Valley Flood Protection Act of 2008 and the primary and supporting goals defined in the initial phase of CVFPP formulation. Various areas of controversy and challenges associated with implementation of the CVFPP have been identified and are described briefly below.

- **Determining the appropriate level of public investment in flood protection.** Although $3.3 billion of funds were provided by Propositions 84 and 1E, substantial additional funds will be required to implement the proposed program. The State has a fundamental interest in promoting the safety of its people, sustainable economic growth, and a healthy ecosystem; however, all levels of government share the responsibility for managing flood risks. The allocation of finite public resources raises questions related to the level at which the State should invest in flood management and related activities, the degree to which such investments can and should maximize local and federal cost-sharing, and the extent to which State investments should accommodate local objectives. The amount of State funding available and the timing of the funding are also uncertain. Ultimately, although DWR has recommended a level of public investment reflected in the proposed program, the California Legislature and voters will make the final decisions regarding the amounts of State funds to be invested. Federal appropriations and local financial inputs will also be needed.
- **Relative level of expenditures in urban versus rural/agricultural areas.** Controversy exists regarding the focus and/or geographic distribution of flood management project expenditures within the program area. For example, if expenditures were to be allocated solely based on maximizing public safety, then a larger proportion of funding would be allocated to urban areas with concentrated populations. Similarly, if funding were to be allocated to multi-purpose projects that serve multiple needs (e.g., local flood protection, regional system improvements, ecosystem enhancement), then a wider variety of projects in geographically diverse areas would receive funding. Generally, local interests support investments in their local facilities. DWR, however, is required to take a broader statewide perspective and make difficult decisions to resolve these often-competing interests.
- **Financial responsibility for public investments.** Opinions differ regarding the financial responsibility for improving and maintaining the flood management system in the Central Valley. The "beneficiary pays" approach (i.e., only those with property in the specific flood protected area pay for system improvements) can be challenging, particu-

larly when the beneficiaries' capacity to fund improvements is limited. Debate continues regarding the responsibility of the State as a whole (including taxpayers residing outside the Central Valley) to contribute to improved flood management, when local areas primarily benefit from improved flood protection, which in turn supports the State and regional economy and infrastructure.

- **Requirements imposed on local planning entities by the 2007 California flood risk management legislation.** The 2007 flood legislation states that after the adoption of the CVFPP, local agencies within the Sacramento–San Joaquin Valley must amend their general plans and zoning ordinances, and must make certain findings related to the appropriate level of flood protection (200-year protection in urban and urbanizing areas and 100-year protection in nonurbanized areas) before making certain land use decisions. To make these findings, cities and counties will need information on floodplain extent (floodplain mapping) and frequency, which may not be readily available in all areas. Concern also has been raised about the financial burden placed on local cities and counties by these legislative requirements and the feasibility of the legislative timetable.
- **Issues raised by proposals to develop in floodplains.** There is controversy about the extent to which the State should discourage new development in floodplains, without infringing on the land use authority of local jurisdictions. Efforts by the State to effectively manage flood risks and associated liabilities in areas protected by the SPFC, especially in deep floodplains, may influence land uses and subsequently affect landowners, local governments, and developers.
- **Serving multiple benefits with flood system improvements.** Allocating investments to serve the State's interest in public safety while also accommodating other interests and needs, such as ecosystem sustainability and habitat enhancement, are not without challenges and controversy. Continued coordination with all affected stakeholders and agencies is necessary to implement flood management improvements that will serve multiple interests and achieve a balanced use of public funds, while meeting legislative requirements.
- **The appropriate level of vegetation management on levees.** In the wake of Hurricane Katrina, USACE has revisited its nationwide policies regarding vegetation management. USACE currently requires that all woody vegetation be removed from levees in the absence of a USACE-issued variance, if maintaining agencies such as DWR wish to retain eligibility for federal emergency repair funding under Public Law 84-99. This policy is memorialized in USACE's Engineering Technical Letter 1110-2-571 (ETL), *Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures,* adopted April 10, 2009. (All references to the "ETL" in this chapter are specifically to ETL 1110-2-571.)

DWR does not believe that the science supports USACE's underlying assumption that all woody vegetation increases risks to public safety. In fact, in most circumstances, vegetation helps protect levees from erosion and other risk factors, while also providing important habitat values. Moreover, DWR has estimated that strict compliance with USACE's policy in the Central Valley could cost in excess of $10 billion, and would result in massive and likely unmitigable habitat losses. As a result, DWR has proposed a vegetation management strategy (VMS) that would retain all vegetation on the waterside slope of levees up to a line 20 feet below the levee crown (other than vegetation presenting a demonstrable risk, which would be removed); the VMS would limit vegetation management elsewhere to measures necessary for visibility and access. To further accommodate USACE's new policy, however, DWR is also proposing a life-cycle management (LCM) component of the VMS that would limit the recruitment of replacement trees on the upper waterside slope, crown, and landside of levees, which over time would reduce the amount of woody vegetation in those areas. Resource management agencies and environmental interests have expressed concerns about this LCM component.

- **Coordination with other collaborative processes and local planning efforts.** Multiple ongoing planning efforts in the Central Valley (e.g., the CALFED Bay-Delta Program, Bay Delta Conservation Plan, habitat conservation plans/natural communities conservation plans) overlap with the CVFPP in both geography and scope. Challenges exist when balancing the needs of these many efforts where jurisdictions and project timing overlap, and where the actions of one program may preclude (or limit) the actions of another.
- **Differing policies and guidance from permitting and implementing agencies.** Several agencies inform or oversee project permitting and implementation: DWR, the Board, USACE, local maintaining agencies, the California Department of Fish and Game, cities and counties, the State Water Resources Control Board, the regional water quality control boards, and the U.S. Fish and Wildlife Service and National Marine Fisheries Service. Each agency has its own requirements, guidance, and role in project implementation, and there are challenges associated with meeting the needs of all agencies.

ES.6 Alternatives to the Proposed Program

Development of the CVFPP involved formulating and evaluating substantially different preliminary alternatives to address CVFPP goals. The preliminary alternatives were used primarily to explore different potential physical changes to the existing flood management system and to assist in highlighting the need for policy changes or other management actions.

As described below, seven alternatives were considered for analysis in this PEIR:

- No-Project Alternative—Continued Operations Scenario
- No-Project Alternative—No Additional Activities Scenario
- Modified SSIA Alternative
- Achieve SPFC Design Flow Capacity Alternative
- Achieve SPFC Design Flow Capacity with Strict ETL Compliance Alternative
- Protect High-Risk Communities Alternative
- Enhance Flood System Capacity Alternative

ES.6.1 No Project Alternative—Continued Operations Scenario

Under the No-Project Alternative—Continued Operations Scenario, and without a systemwide flood management plan such as the CVFPP, current flood management trends in the Central Valley would likely continue. Projects that are planned or under way and supported by reasonably anticipated funds would commence and/or continue to completion. The Federal Emergency Management Agency would continue to remap the floodplains protected by the SPFC with less than 100-year flood protection. Existing partnerships among the federal government, the State, and local entities to implement flood risk reduction projects would continue. However, this alternative assumes that funding beyond that currently authorized under Propositions 84 and 1E would not be available, substantially constraining the scale of construction and other activities under this alternative. Local agencies' planning obligations that would be triggered by adoption of the CVFPP would not be triggered under this alternative, and system maintenance would still be challenged by the need to complete annual maintenance activities. The VMS, including the LCM component, would be implemented with or without the adoption of the CVFPP.

"100-Year Flood" is a shorthand expression for a flood that has a 1-in-100 chance of being exceeded in any given year. This may also be expressed as the 1-percent-annual-chance-of-exceedence flood, or "1-percent-annual-chance flood" for short. Similarly, a 200-year flood has a 1-in-200 (or 0.5-percent) chance of being exceeded in any given year.

ES.6.2 No-Project Alternative—No Additional Activities Scenario

The No-Project Alternative—No Additional Activities Scenario is similar to the No-Project Alternative—Continued Operations Scenario, except that this scenario does not assume that projects not already under way will be commenced, and further does not assume that funding will be forthcoming for projects other than those already commenced. This scenario also assumes that the component of the VMS reflected in *California's Central Valley Flood System Improvement Framework*, signed on February 27, 2009—vegetation management in the vegetation management zone for purposes of visibility

and access—will continue to be implemented by maintaining agencies. However, it assumes that the LCM component—long-term elimination of trees in the vegetation management zone—will not be adopted or applied. Under this scenario, some recruitment of new trees on SPFC levees will incidentally be prevented by maintenance undertaken for purposes of visibility and access, but less thoroughly and at a slower rate than would be the case with LCM, so that some trees likely would remain.

ES.6.3 Modified State Systemwide Investment Approach Alternative

The Modified SSIA Alternative is similar to the proposed program in that it is based on the urban protection provided by the Protect High-Risk Communities Alternative and adds some small-community protection, but with more limited construction activities than for other alternatives. The alternative also includes expanding the Yolo Bypass and widening Fremont Weir, but does not include any of the other bypass expansions and related improvements contained in the proposed program. This alternative presents a less construction-intensive alternative that addresses only the most critical stressors on public safety, operations and maintenance, and ecosystem function, while minimizing potential adverse environmental effects. Work would focus on repairing and improving existing levees in urban areas with only limited work on expanding floodways.

ES.5.4 Achieve SPFC Design Flow Capacity Alternative

The Achieve SPFC Design Flow Capacity Alternative focuses on addressing the condition of existing SPFC levees so that the channels convey their design flows with a high degree of reliability based on current engineering criteria. The system was largely constructed based on geometric criteria using available soil materials without extensive investigation of foundation conditions. The majority of SPFC levees do not meet current engineering criteria. This alternative addresses an element of the authorizing legislation (California Water Code, Section 9614(g)), which requires that DWR evaluate structural projects that could be undertaken to reconstruct SPFC facilities to bring each of the facilities of the SPFC to within its design standard. This alternative involves addressing levee conditions primarily in place, without making major changes to the footprint or operation of those facilities. Levee improvements would be made regardless of the areas they protect or the level of protection they provide. This alternative would provide little opportunity to incorporate benefits beyond flood management.

ES.6.5 Achieve SPFC Design Flow Capacity with Strict ETL Compliance Alternative

The Achieve SPFC Design Flow Capacity with Strict ETL Compliance Alternative is the same as the Achieve SPFC Design Flow Capacity Alternative but presents a different method of addressing the issue of vegetation on levees. The Achieve SPFC Design Flow Capacity with Strict ETL Compliance Alternative involves meeting two goals simultaneously:

1. Improve existing SPFC levees so that they convey their design flow capacities.
2. Ensure the strictest compliance with USACE guidance provided in the ETL.

This alternative assumes that DWR would not use USACE's associated draft policy guidance letter, *Process for Requesting a Variance from Vegetation Standards for Levees and Floodwalls; Additional Findings* (77 *Federal Register* 9637–9650, February 17, 2012). The variance process allows for retention of some woody vegetation on or near levees under certain very specific circumstances.

ES.6.6 Protect High-Risk Communities Alternative

The Protect High-Risk Communities Alternative evaluates improvements to levees to protect life safety and property for high-risk population centers, including urban and small communities. Most levees in rural-agricultural areas would remain in their existing configurations; however, new training levees, ring levees, or floodwalls immediately adjacent to the communities may be constructed. This alternative would provide a minor opportunity to incorporate benefits beyond flood management.

ES.6.7 Enhance Flood System Capacity Alternative

The Enhance Flood System Capacity Alternative involves seeking opportunities to achieve multiple benefits by enhancing the flood system's storage and conveyance capacity, protecting high-risk communities, and fixing levees in place in rural-agricultural areas. This alternative combines the features of other alternatives and provides greater capacity within flood conveyance channels to lower flood stages in most of the system.

ES.6.8 Alternatives Carried Forward for Evaluation

Two alternatives described above—the Achieve SPFC Design Flow Capacity with Strict ETL Compliance and Protect High-Risk Communities alternatives—were considered for further evaluation in the PEIR but were rejected. These alternatives were rejected because they failed to meet most of the basic program objectives, were determined to be infeasible, would not avoid or substantially lessen significant environmental impacts, and/or would be so similar to another alternative that they would not add to expand the range of alternatives evaluated in this PEIR.

The other five alternatives were carried forward for further analysis and evaluation in this PEIR. These alternatives were determined to meet most of the program objectives, were found to be feasible, would avoid or substantially lessen significant environmental impacts, would collectively provide a reasonable range of feasible alternatives to evaluate in this PEIR, and/or were specifically included in the CVFPP planning process by the California Legislature. These alternatives carried forward are the No-Project Alternative—Continued Operations Scenario, No-Project Alternative—No Additional Activities Sce-

nario, Modified SSIA Alternative, Achieve SPFC Design Flow Capacities Alternative, and Enhance Flood System Capacity Alternative. See Section ES.8, "Comparison of Environmental Impacts of the Proposed Program and Alternatives," below.

ES.7 Summary of Environmental Impacts of the Proposed Program

The PEIR impact analysis examines all potentially significant impacts that would occur with implementation of the CVFPP. Impacts and mitigation measures are described for NTMAs and LTMAs.

The impact analysis addresses construction, operations and maintenance, and policy actions for both activity categories. Construction-related, operational, and maintenance-related impacts would result in direct and indirect impacts, while policy actions would result only in indirect impacts.

Potential environmental impacts of the proposed program and associated mitigation measures are summarized in Table ES-1 at the end of this Executive Summary.

ES.8 Comparison of Environmental Impacts of the Proposed Program and Alternatives

This section compares the environmental impacts of each of the five retained alternatives (described above) with the impacts of the proposed program.

The CEQA Guidelines (Section 15126.6(d)) permit evaluation of the alternatives in less detail than for a proposed project. Consistent with Section 15126.6(d) of the CEQA Guidelines, the analysis below generally compares the environmental effects of the alternatives against the effects of the proposed program, focusing on whether the alternative would result in effects greater than, less than, or similar to those identified for the proposed program.

Table ES.8-1 provides a summary comparison of the impact levels of the proposed program, and alternatives when compared to the proposed program. The impact levels listed for the proposed program in Table ES.8-1 reflect the most substantial environmental effects identified for each environmental resource area.

Table ES. 8-1. Comparison of Impact Levels of the Proposed Program and the Alternatives

ENVIRONMENTAL RESOURCE	PROPOSED PROGRAM[1]	NO-PROJECT—CONTINUED OPERATIONS SCENARIO	NO-PROJECT—NO ADDITIONAL ACTIVITIES SCENARIO	MODIFIED SSIA	ACHIEVE SPFC DESIGN FLOW CAPACITIES	ENHANCE FLOOD SYSTEM CAPACITY
Aesthetics	Less than significant after mitigation	Similar	Similar	Lesser	Lesser	Greater
Agriculture and Forestry Resources	Potentially significant and unavoidable	Lesser	Lesser	Lesser	Lesser	Greater
Air Quality	Potentially significant and unavoidable	Similar	Lesser	Lesser	Lesser	Greater
Biological Resources—Aquatic	Potentially significant and unavoidable	Greater	Greater	Greater	Greater	Greater
Biological Resources—Terrestrial	Potentially significant and unavoidable	Greater	Greater	Greater	Greater	Greater
Climate Change and Greenhouse Gas Emissions	Less than significant	Greater	Greater	Similar	Greater	Unknown
Cultural and Historic Resources	Potentially significant and unavoidable	Lesser	Lesser	Lesser	Lesser	Greater
Energy	Less than significant	Lesser	Lesser	Lesser	Lesser	Similar
Geology, Soils, and Seismicity (Including Mineral and Paleontological Resources)	Potentially significant and unavoidable	Lesser	Lesser	Lesser	Lesser	Greater
Groundwater Resources	Less than significant after mitigation	Greater	Greater	Greater	Greater	Lesser
Hazards and Hazardous Materials	Less than significant after mitigation	Greater	Greater	Greater	Greater	Lesser
Hydrology	Less than significant after mitigation	Greater	Greater	Lesser	Greater	Lesser
Land Use and Planning	Significant and unavoidable	Lesser	Lesser	Lesser	Lesser	Greater

Table ES. 8-1. Comparison of Impact Levels of the Proposed Program and the Alternatives (contd.)

ENVIRONMENTAL RESOURCE	PROPOSED PROGRAM[1]	NO-PROJECT—CONTINUED OPERATIONS SCENARIO	NO-PROJECT—NO ADDITIONAL ACTIVITIES SCENARIO	MODIFIED SSIA	ACHIEVE SPFC DESIGN FLOW CAPACITIES	ENHANCE FLOOD SYSTEM CAPACITY
Noise	Less than significant after mitigation	Lesser	Lesser	Lesser	Similar	Similar
Population, Employment, and Housing	Less than significant	Greater	Greater	Greater	Greater	Lesser
Public Services	Less than significant	Greater	Greater	Similar	Greater	Greater
Recreation	Less than significant after mitigation	Lesser	Lesser	Similar	Lesser	Similar
Transportation and Traffic	Potentially significant and unavoidable	Lesser	Lesser	Similar	Similar	Greater
Utilities and Service Systems	Less than significant after mitigation	Greater	Greater	Similar	Greater	Similar
Water Quality	Less than significant after mitigation	Greater	Greater	Greater	Greater	Lesser

Source: Data compiled by AECOM in 2012

Notes:
[1] Impact categories listed for the proposed program provide the most severe impact category identified for the environmental issue area. If there are one or more significant and unavoidable impacts, then "Significant and unavoidable" or "Potentially significant and unavoidable" is placed in the column. If the most severe impact within the environmental issue area is "Less than significant after mitigation," then this designation is placed in the column. If every impact for the environmental issue area is less than significant, then "Less than significant" is placed in the column.

Key:
SPFC = State Plan of Flood Control
SSIA = State Systemwide Investment Approach

ES.9 Next Steps for the PEIR

The DPEIR is available for public review and comment for 45 days. Written comments must be received at the physical or e-mail address below no later than the close of business (5 p.m. Pacific time) on Friday, April 20, 2012:

Mary Ann Hadden, Staff Environmental Scientist
DWR, DFM
c/o MWH
3321 Power Inn Road, Suite 300
Sacramento, CA 95826
(916) 574-1431
DPEIRcomments@water.ca.gov

Please include "Comments on the March 2012 CVFPP DPEIR" in the subject line of e-mail or paper comments submitted.

All documents referenced in the DPEIR are available at MWH, 3321 Power Inn Road, Suite 300, Sacramento, California. The DPEIR is available on the following Web site where it may be viewed or downloaded: http://www.water.ca.gov/cvfmp/documents.cfm.

The DPEIR schedule is presented below, with public hearings indicated in italics.

Public Release Date of DPEIR	March 6, 2012
Public Hearing—Sacramento, Resources Building, Auditorium, 1416 Ninth Street	April 5, 2012 – 2 p.m.
Public Hearing—Marysville, Yuba County Government Office, Board of Supervisors Boardroom, 915 8th Street	April 6, 2012 – 2 p.m.
Public Hearing—Stockton, San Joaquin County Robert J. Cabral Agricultural Center, 2101 E. Earhart Avenue	April 9, 2012 – 2 p.m.
Public Hearing—Woodland, Yolo County Board of Supervisors Building, 625 Court Street	April 11, 2012 – 2 p.m.
End of 45-day DPEIR Public Comment Period	April 20, 2012 – 5 p.m.

Table ES-1. Summary of Impacts and Mitigation Measures of the Proposed Program

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
3.2 Aesthetics					
Impact VIS-1 (NTMA & LTMA): *Temporary, Short-Term Construction-Related Changes in Scenic Vistas, Scenic Resources, and Existing Visual Character*	LTS		N/A	LTS	
Impact VIS-2 (NTMA & LTMA): *Degradation of Scenic Vistas, Scenic Resources, and Existing Visual Character Resulting from Conveyance-Related Management Activities*	LTS		N/A	LTS	
Impact VIS-3 (NTMA & LTMA): *Degradation of Scenic Vistas, Scenic Resources, and Existing Visual Character Resulting from Storage-Related Management Activities*	LTS		N/A	LTS	
Impact VIS-4 (NTMA & LTMA): *New Sources of Substantial Light and Glare*	PS		Mitigation Measure VIS-4 (NTMA & LTMA): *Establish and Require Conformance to Lighting Standards, and Prepare and Implement a Lighting Plan* Not all measures listed below may be applicable to each management action. Rather, these measures serve as an overlying mitigation framework to be used for specific management actions. The applicability of measures listed below would vary based on the lead agency, location, timing, and nature of each management action. The project proponent will ensure that the following measures are implemented where project activities occur in the vicinity of sensitive light receptors to reduce potentially significant adverse effects associated with light and glare: • If construction lighting is needed, contractors will be required to shield or screen lighting fixtures and direct lights downward onto the work site and prevent light spill onto adjacent properties. • Contractors will place and direct flood or area lighting needed for construction activities or for security so as not to disturb adjacent residential areas, passing motorists, or other light-sensitive receptors. • The use of harsh mercury vapor, low-pressure sodium, or fluorescent bulbs or light fixtures that are of unusually high intensity or brightness will be prohibited. • Where applicable, lighting fixtures will meet lighting standards of the local jurisdiction. Design features that will reduce the effects of nighttime lighting, namely directional shielding for all substantial light sources, will be included in the project designs. In addition, the use of automatic shutoffs or motion sensors for lighting features will be considered in the project designs to further reduce excess nighttime lighting. All nighttime lighting will be shielded to prevent the light from shining off the surface intended to be illuminated. • Materials with natural colors and low-reflection materials will be used on all new or replacement structures to the extent feasible so that the facilities appear more consistent with the existing character of the area and do not generate excessive glare.	LTS	
Impact VIS-5 (NTMA & LTMA): *Effects of Other NTMAs and LTMAs on Aesthetic Resources*	LTS		N/A	LTS	

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
3.3 Agriculture and Forestland Resources					

Impact AG-1 (NTMA & LTMA): *Conversion of Substantial Amounts of Important Farmland to Nonagricultural Uses and Conversion of Land under Williamson Act Contracts to an Inconsistent Use Resulting from Conveyance-Related Management Activities*	PS		Mitigation Measure AG-1a (NTMA & LTMA): *Preserve Agricultural Productivity of Important Farmland to the Extent Feasible*
			
			In a May 4, 2005, memorandum to California Resources Agency departments, boards, and commissions, the Secretary stated that "in selecting and developing resource-related projects, departments under the Resources Agency should consider ways to reduce effects on productive agricultural lands" and encouraged departments to incorporate, where appropriate, the strategies identified in the CALFED Bay-Delta Program (CALFED) EIR to reduce the impact of the CALFED Ecosystem Restoration Program on agricultural land and water use.
			
			The measures listed below include the applicable strategies identified in the CALFED EIR and some additional measures. Not all measures listed below may be applicable to each management action. Rather, these measures serve as an overlying mitigation framework to be used for specific management actions. The applicability of measures listed below would vary based on the lead agency, location, timing, and nature of each management action.
			
			The project proponent will ensure that the following measures are implemented as applicable to reduce effects and preserve agricultural productivity on Important Farmland:
			
			• Site projects and project footprints to minimize the permanent conversion of Important Farmland to nonagricultural uses.
			• Identify and implement project design features that will benefit flood management, agriculture, and natural resources.
			• When selecting sites and methods for repair, reconstruction, and improvement of flood control facilities, minimize the splitting or fragmentation of parcels that are to remain in agricultural use.
			• Maximize contiguous parcels of agricultural land of a size sufficient to support their efficient use for continued agricultural production.
			• Where the construction or operation of a facility could limit access to ongoing agricultural operations, maintain a means of convenient access to these agricultural properties as part of project design, construction, and implementation.
			• At borrow sites to be returned to agricultural production, remove and stockpile, at a minimum, the upper 2 feet of topsoil and replace the topsoil after project completion as part of borrow site reclamation.
			• In areas permanently disturbed by program activities, and where topsoil is removed as part of project construction (e.g., stripping topsoil under a levee foundation) and not reused as part of the project, make the topsoil available to less productive agricultural lands that could benefit from the introduction of good-quality soil. By agreement between the project proponent or landowners of affected properties and the recipient(s) of the topsoil, the recipient(s) must use the topsoil for agricultural purposes.
			• Relocate and/or replace wells, pipelines, power lines, drainage systems, and other infrastructure that are needed for ongoing agricultural uses and would be affected by project construction or operation.
			• Minimize disturbance of Important Farmland and continuing agricultural operations during construction by implementing the following measures:
			  ◆ To the extent possible, locate construction laydown and staging areas on sites that are fallow, already developed or disturbed, or to be discontinued for use as agricultural land.
			  ◆ Use existing roads to access construction areas to the extent possible.
			• Coordinate with growers to develop appropriate construction practices to minimize construction-related impairment of agricultural productivity. Practices may include coordinating the movement of heavy equipment and implementing traffic control measures.
			• Support the testing and application of alternative crops (i.e., agroforestry or energy crops) on idle farmland.
				PSU	

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
			Mitigation Measure AG-1b (NTMA & LTMA): *Minimize Impacts on Williamson Act–Contracted Lands, Comply with Government Code Sections 51290–51293, and Coordinate with Landowners and Agricultural Operators* The project proponent will consider the following mitigation measures and implement them, as applicable, to reduce effects on lands under Williamson Act contracts: • The project proponent will comply with applicable provisions of California Government Code Sections 51290–51295 with regard to acquiring lands under Williamson Act contract. Sections 51290(a) and 51290(b) specify that State policy, consistent with the purpose of the Williamson Act to preserve and protect agricultural land, is to avoid locating public improvements and any public utilities improvements in agricultural preserves, whenever practicable. If such improvements must be located within a preserve, they will be located on land that is not under contract, if practicable. • More specifically, the project proponent will comply with the following basic requirements stated in the California Government Code: ◆ Whenever it appears that land within a preserve or under contract may be required for a public improvement, DOC and the city or county responsible for administering the preserve must be notified (Section 51291(b)). ◆ Within 30 days of being notified, DOC and the city or county must forward comments, which will be considered by the proponent of the public improvement (Section 51291(b)). ◆ A public improvement may not be located within an agricultural preserve unless findings are made that (1) the location is not based primarily on the lower cost of acquiring land in an agricultural preserve and (2) for agricultural land covered under a contract for any public improvement, no other land exists within or outside the preserve where it is reasonably feasible to locate the public improvement (Sections 51291(a) and 51291(b)). If the land is acquired for the purpose of flood damage reduction measures, the project proponent(s) is exempt from the findings required in California Government Code Section 51292 (Section 51293(e)(1)). ◆ The contract is normally terminated when land is acquired by eminent domain or in lieu of eminent domain (Section 51295). ◆ DOC must be notified within 10 working days upon completion of the acquisition (Section 51291(c)). ◆ DOC and the city or county must be notified before completion of any proposed work of any significant changes related to the public improvement (Section 51291(d)). ◆ If, after acquisition, the acquiring public agency determines that the property would not be used for the proposed public improvement, DOC and the city or county administering the involved preserve must be notified before the land is returned to private ownership. The land will be reenrolled in a new contract or encumbered by an enforceable restriction at least as restrictive as that provided by the Williamson Act (Section 51295). • The project proponent will coordinate with landowners and agricultural operators to sustain existing agricultural operations, at the landowners' discretion, until the individual agricultural parcels are needed for project construction.		

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
			Mitigation Measure AG-1c (NTMA & LTMA): *Establish Conservation Easements Where Potentially Significant Agricultural Land Use Impacts Remain after Implementation of Mitigation Measures AG-1a (NTMA) and AG-1b (NTMA)* As discussed in Mitigation Measures AG-1a (NTMA) and AG-1b (NTMA), in general, where there is a reduction or termination of agricultural activities to undertake flood protection, environmental protection, or other conservation measures, project proponents should consider other measures before considering purchasing easements or other measures of compensation (collectively referred to as "easements" below). If after implementing all other applicable measures, the proposed project could still result in a potentially significant environmental impact, easements should be considered. Easements are most likely appropriate where there would be serious degradation or elimination of the physical conditions or natural processes that provide the land's resource qualities for agriculture. In this situation, there would normally also be other impacts on the environment. Where easements are applicable, the following factors will be considered: • Where easements are considered for other resources such as terrestrial biological resources, purchase of easements should be coordinated where possible so that agricultural resources are also addressed. For example, if it were determined that a project would permanently terminate agricultural activities on a piece of land that served as Swainson's hawk foraging habitat, if an easement on another property were determined appropriate to address losses of Swainson's hawk foraging habitat, the replacement land could also support the same kind of agricultural activity as the original converted property. • Applicable methods established in the area of the specific project activity will be considered. Methods for compensation may include but are not limited to establishing agricultural conservation easements, paying in-lieu fees toward agricultural conservation easements, supporting agricultural land trusts, and participating in habitat conservation plans or natural communities conservation plans that include conservation of agricultural lands. The appropriate ratio of purchase or establishment of agricultural conservation easements relative to conversion of Important Farmland will be established on a case-by-case basis for each project. Depending on the specifics of the impact, available agricultural conservation programs in various locations, and local or regional regulatory standards, there are some circumstances where less than a 1-to-1 compensation ratio may be appropriate, and other circumstances where greater ratios are required. Where conservation easements are established by the project proponent, they may be held by land trusts, local governments, or other appropriate agencies that are responsible for ensuring that these lands are maintained in agricultural use. When determining whether effects on agricultural land warrant purchase of an easement, the following factors should be considered: • Whether the change would affect the use of the land for agricultural purposes (i.e., ceasing agricultural activities and allowing land to be fallowed or be used for resource restoration in such a way that land could be returned to agricultural production) • Whether the change would permanently take land out of production (i.e., depositing sediment on agricultural lands) • Whether the land could be used for agricultural production but has not been or is not likely to be able to be used for such purposes because of flooding, bad soils, lack of dependable water supplies, or other reasons • Whether the land is currently being used for agricultural production and would not be able to be used for similar purposes in the future because of the project, but the project would provide benefits to nearby or other land that could be or is being used for agricultural purposes • Whether the land is currently being used for agricultural production and would not be able to be used for similar purposes in the future because of the project, but the land is not Prime Farmland, Unique Farmland, or Farmland of Statewide Importance • Whether the land is currently being used for agricultural production and would not be able to be used for similar purposes in the future because of physical changes brought about by the project, and the land is Prime Farmland, Unique Farmland, or Farmland of Statewide Importance • Whether thse land would be converted to a use that would reduce ancillary environmental benefits		
Impact AG-2 (NTMA & LTMA): *Conversion of Important Farmland to Nonagricultural Uses and Conversion of Land under Williamson Act Contracts to an Inconsistent Use Resulting from Storage-Related Management Activities*	LTS		N/A	LTS	
Impact AG-3 (NTMA &LTMA): *Effects of Other NTMAs [& LTMAs] on Important Farmland and Williamson Act Contract Land*	PS		Mitigation Measure AG-3 (NTMA & LTMA): *Implement Mitigation Measures AG-1a (NTMA), AG-1b (NTMA), and AG-1c (NTMA)*	PSU	

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
Impact AG-4 (NTMA & LTMA): *Conversion of Forest Land to Nonforest Uses Resulting from Conveyance-Related Management Activities*	S		Mitigation Measure AG-4 (NTMA & LTMA): *Implement Mitigation Measure BIO-T-1a (NTMA), "Conduct Biological Resources Surveys to Quantify Sensitive Natural Communities in Project Areas, and Avoid, Minimize, and, Where Appropriate, Compensate for Construction-Related Effects"*	LTS	
Impact AG-5 (NTMA & LTMA): *Conversion of Forest Land to Nonforest Uses Resulting from Storage-Related Management Activities*	LTS		N/A	LTS	
Impact AG-6 (NTMA & LTMA): *Effects of Other NTMAs [& LTMAs] on Forest Land*	PS		Mitigation Measure AG-6 (NTMA & LTMA): *Implement Mitigation Measure BIO-A-2b (NTMA), "Ensure Full Compensation for Losses of Riparian Habitat Functions and Values Caused by Implementing the Vegetation Management Strategy Along Levees"*	LTS	

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
3.4 Air Quality					

Impact AQ-1 (NTMA & LTMA): *Construction-Related Emissions of Criteria Air Pollutants and Ozone Precursors Resulting from Conveyance and Other Components that Could Exceed Local CEQA Thresholds of Significance*	PS		Mitigation Measure AQ-1 (NTMA & LTMA): *Implement Measures to Reduce Construction-Related Emissions*
			
			The following measures will be considered during project-level evaluation of specific management actions. Not all measures listed below may be applicable to each management action. Rather, these measures serve as an overlying mitigation framework to be used for specific management actions. The applicability of measures listed below would vary based on the lead agency, location, timing, and nature of each management action.
			
			The mitigation measures described below are grouped according to whether they address construction in general, fugitive dust emissions, or exhaust emissions.
			
			GENERAL CONSTRUCTION MITIGATION
			The following measures are designed to reduce all construction-related emissions:
			• Comply with and implement applicable air district rules and regulations that pertain to construction activities (e.g., asphalt ROG requirements, administrative requirements, fugitive dust management practices). As applicable, implement construction-related requirements from air districts or local governments with authority over the project at the commencement of and during each construction activity.
			• Do not use open burning to dispose of any excess materials generated during site preparation or other project activities.
			
			FUGITIVE DUST EMISSIONS
			The following measures may be used to reduce fugitive dust emissions:
			• Submit a dust control plan to the local air district, and obtain approval of the plan before the grading permit is issued. Implement the plan during construction. The dust control plan will specifically identify measures that would demonstrate that earth-moving activities in areas of the site would comply with applicable requirements of the local air district.
			• Phase long-duration construction activities to reduce the size of the disturbed area at any given time.
			• Water all exposed surfaces three times a day or sufficiently to prevent visible dust emissions from exceeding 20 percent opacity beyond the construction boundaries.
			• Apply water, nontoxic chemical stabilizers, or dust suppressants or use tarps or other suitable material (e.g., vegetative ground cover) in all disturbed areas that will not be used for 10 days or more.
			• Suspend excavation and grading activities when winds exceed 15 mph.
			• Restrict the speed of construction vehicles to 15 mph on any unpaved surface.
			• Prevent carryout and trackout of fugitive dust on construction vehicles. Methods to limit carryout and trackout include using wheel washers; sweeping any trackout on adjacent public streets at the end of each workday; and lining access points with gravel, mulch, or wood chips.
			• Cover access roads within 100 feet of paved roads with a 6- to 12-inch layer of wood chips or mulch or a 6-inch layer of gravel to reduce the generation of road dust and road dust carryout onto public roads.
			• Clean up carryout and trackout using any of the following methods:
			  ◆ Manually sweeping and picking up
			  ◆ Operating a rotary brush or broom accompanied or preceded by sufficient wetting to limit visible dust emissions to 20 percent opacity
			  ◆ Operating a PM_{10}-efficient street sweeper that has a pickup efficiency of at least 80 percent
			  ◆ Flushing with water if curbs or gutters are not present and if using water would not either result in a source of trackout material, result in adverse impacts on stormwater drainage systems, or violate any National Pollutant Discharge Elimination System permit program
			• Cover or wet the filled cargo compartment of material transport trucks to limit visible dust emissions during transport, and maintain at least 2 feet of freeboard from the top of the container.
			• Clean or cover the cargo compartment of empty material transport trucks before they leave the site.
			• Install sandbags or other erosion control measures on sites with a slope greater than 1 percent to prevent runoff of silt to public roadways.
			• Limit the number of areas subject to excavation, grading, and other ground-disturbing activities at any given time.
				PSU	

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
			EXHAUST EMISSIONS The following measures may be used to reduce exhaust emissions: • Develop a comprehensive construction-activity management plan to minimize the amount of large construction equipment operating at any given time. • Implement a shuttle service to and from retail services and food establishments during lunch hours, or employ a catering service to bring lunch to the project site. • Use diesel-powered construction equipment that meets CARB's 1996 or newer certification standard for off-road heavy-duty diesel engines. • Schedule construction truck trips during nonpeak traffic hours to reduce peak-hour emissions and traffic congestion to the extent feasible. • Use alternative-fueled (e.g., compressed natural gas (CNG), liquefied natural gas (LNG), propane, biodiesel) or electricity-powered construction equipment, where feasible. Project-specific analysis should confirm that using any alternative fuel would not increase NO_x emissions. • Install diesel oxidation catalysts, catalyzed diesel particulate filters, or other applicable air district–approved emission reduction retrofit devices where feasible. • Use the newest equipment available to try to maintain a Tier 1 fleet equipment average. The following measures from Mitigation Measure CLM-1a (NTMA) in Section 3.7, "Climate Change and Greenhouse Gas Emissions," could help to further reduce exhaust emissions of criteria air pollutants and ozone precursors: • *BMP 6*. Minimize idling time by requiring that equipment be shut off after 5 minutes when not in use (as required by the State airborne toxics control measure (Title 13, Section 2485 of the California Code of Regulations)). Provide clear signage that posts this requirement for workers at the entrances to the site and provide a plan for the enforcement of this requirement. • *BMP 7*. Maintain all construction equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition. Maintenance schedules shall be detailed in an air quality control plan prior to commencement of construction. • *BMP 8*. Implement a tire inflation program on jobsite to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives on-site and every 2 weeks for equipment that remains on-site. Check vehicles used for hauling materials off-site weekly for correct tire inflation. Procedures for the tire inflation program shall be documented in an air quality management plan prior to commencement of construction. • *BMP 9*. Develop a project-specific ride share program to encourage carpools, shuttle vans, transit passes, and/or secure bicycle parking for construction worker commutes.		
Impact AQ-2 (NTMA & LTMA): *Potential for Construction-Related Emissions of Criteria Air Pollutants and Ozone Precursors Resulting from Storage-Related NTMAs [& LTMAs] to Exceed Local CEQA Thresholds of Significance*	LTS		N/A	LTS	

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
Impact AQ-3 (NTMA & LTMA): *Potential for Long-Term Operational and Maintenance-Related Emissions of Criteria Air Pollutants and Ozone Precursors to Exceed Local CEQA Thresholds of Significance*	LTS	PS	Mitigation Measure AQ-3 (LTMA): *Implement Measures to Reduce Operational Emissions* The following measures will be considered during project-level evaluation of specific management actions. Not all measures would be applicable to each management activity. Rather, these measures serve as an overlying mitigation framework to be used when individual projects are evaluated. The applicability of measures listed below would vary based on the lead agency, location, timing, and nature of each management action. The following measures may be implemented to reduce exhaust emissions from vehicles and equipment where operations and maintenance activities for specific projects exceed applicable emissions thresholds: • Develop and implement a comprehensive maintenance-activity management plan to miniize the amount of vehicle travel associated with maintenance actions. • Develop and implement a worker trip reduction plan to achieve average vehicle ridership of 1.5 persons or greater where applicable. • Maintain all equipment (including maintenance trucks) to the manufacturers' specifications. The equipment should be checked by a certified mechanic on a regular basis. • Minimize idling time either by shutting off equipment when it is not in use or by reducing the time of idling to no more than 5 minutes. Provide clear signage regarding idling at locations visible to maintenance staff. • Schedule maintenance trips during nonpeak traffic hours to reduce peak-hour emissions and traffic congestion to the extent feasible. • Use alternative-fueled (e.g., CNG, LNG, propane), electricity-powered, or catalyst-equipped diesel vehicles where feasible. The following measures from Mitigation Measure CLM-1b (NTMA) in Section 3.7, "Climate Change and Greenhouse Gas Emissions," could help to further reduce operational emissions of criteria air pollutants and ozone precursors: • Implement all current standards and/or requirements as part of any DWR sustainability plan or guidelines. • Use renewable energy generated on site (i.e., solar, wind, hydroelectric) where feasible. • Use alternative fuels for maintenance vehicles and equipment. • Use energy-efficient equipment for operation and maintenance of proposed facilities (e.g., pumps, hydraulic equipment, maintenance equipment). Equipment and operation of equipment will conform to U.S. Department of Energy best practices, Consortium for Energy Efficiency initiatives and guidance, and National Electrical Manufacturers Association standards where feasible. • Require proposed buildings to exceed California Building Standards Code Title 24 energy efficiency standards by 20 percent or more.	N/A	PSU
Impact AQ-4 (NTMA & LTMA): *Construction-Related and Operational Emissions from Conveyance and Other NTMAs [or LTMAs] that Could Result in Cumulatively Considerable Net Increases in Criteria Air Pollutants for Which the Project Region is Nonattainment under Applicable Federal or State Ambient Air Quality Standards*	PS		Mitigation Measure AQ-4 (NTMA & LTMA): *Implement Mitigation Measure AQ-1 (NTMA)*	PSU	
Impact AQ-5 (NTMA & LTMA): *Potential for Construction-Related and Operational Emissions from Storage-Related NTMAs [& LTMAs] to Result in Cumulatively Considerable Net Increases in Criteria Air Pollutants for Which the Project Region is Nonattainment under Applicable Federal or State Ambient Air Quality Standards*	LTS		N/A	LTS	

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
Impact AQ-6 (NTMA & LTMA): *Potential Construction-Related Exposure of Sensitive Receptors to Substantial Pollutant Concentrations through Diesel PM and Naturally Occurring Asbestos or Potential Generation of Substantial Concentrations of TACs during Operations*	PS		Mitigation Measure AQ-6 (NTMA & LTMA): *Implement Strategies to Protect Sensitive Receptors from Substantial Construction-Related Emissions of Naturally Occurring Asbestos* Not all measures listed below may be applicable to each management action. Rather, these measures serve as an overlying mitigation framework to be used for specific management actions. The applicability of measures listed below would vary based on the lead agency, location, timing, and nature of each management action. It will be assumed that any construction within one-half mile of State-identified NOA areas is operating in serpentine or ultramafic rock and will comply with all requirements outlined in CARB's Asbestos Air Toxic Control Measures for Construction, Grading, Quarrying, and Surface Mining Operations. These requirements include all of the following: • Prepare and implement an asbestos dust mitigation plan, which must be approved by the local air district before construction begins and must be implemented at the commencement and maintained throughout the duration of construction and grading activities in known NOA areas. • Prepare and implement an asbestos health and safety program in known NOA areas, if required under California Code of Regulations Title 8, Section 1529(4), Asbestos. The asbestos dust mitigation plan, as required by Title 17, Sections 93105(e)(2) and 93105(e)(4) of the California Code of Regulations, will identify dust mitigation practices that are sufficient to ensure that no equipment or operations emit dust that is visible and crossing property lines. The plan will also identify trackout prevention and control measures, control measures for disturbed surface areas and storage piles that would remain inactive for more than 7 days, postconstruction stabilization measures, and asbestos monitoring measures, if required. Examples of these measures include wetting, covering, or crusting the surface; applying chemical dust suppressants or stabilizers; installing wind barriers; enforcing speed limits in construction areas; controlling truck spillage; and establishing vegetative covers. In addition, the asbestos dust mitigation plan will include recordkeeping and reporting requirements that will be used to document the results of any air monitoring, geologic evaluation, and asbestos bulk sampling. The asbestos health and safety program will be implemented if permissible exposure limits for airborne asbestos are found to be exceeded within the study area. Implementation will include applicable measures to protect construction employees as defined under Title 8, Section 1529(g) of the California Code of Regulations, and any additional measures required by the California Occupational Safety and Health Administration to reduce exposure of construction employees to airborne asbestos.	LTS	
Impact AQ-7 (NTMA & LTMA): *Potential for Construction-Related and Operational Generation of Odors that Could Affect a Substantial Number of People*	LTS		N/A	LTS	
3.5 Biological Resources–Aquatic					
Impact BIO-A-1 (NTMA & LTMA): *Potential Effects on Special-Status Fish, Fish Movement, Nursery Ground Usage, Riparian Habitat, Designated Critical Habitat, and Essential Fish Habitat Caused by Siltation and Degradation of Water Quality during Construction or Operations and Maintenance Activities*	LTS		N/A	LTS	

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
			Mitigation Measure BIO-A-2a (NTMA & LTMA): *Secure Applicable State and/or Federal Permits and Implement Permit Requirements* Not all measures listed below may be applicable to each management action. Rather, these measures serve as an overlying mitigation framework to be used for specific management actions. The applicability of measures listed below would vary based on the lead agency, location, timing, and nature of each management action. The project proponent will ensure that the following measures are implemented to reduce the effects of repairing, reconstructing, and improving levees on trees within stream zones, shaded riverine aquatic habitat, IWM, listed fish species, and designated critical habitat: • A Section 1602 streambed alteration agreement will be obtained from DFG before any trees are removed from a stream zone that is under DFG jurisdiction. The project proponent will comply with all terms and conditions of the streambed alteration agreement, including measures to protect habitat or to restore, replace, or rehabilitate any habitat. • The project proponent will consult or coordinate with USFWS and NMFS as required under the federal ESA, and with DFG as required under the CESA, regarding potential impacts on listed fish species, including the loss of habitat. The project proponent will implement any additional measures developed through the ESA and CESA consultation processes, including the conditions of Section 7 biological opinions, Section 10 HCPs, and Section 2081 permits. Where an existing approved HCP, NCCP, or similar plan covers an NTMA [or LTMA] and provides for compliance with applicable State or federal regulations, the project proponent may participate in and comply with the terms of such a plan to achieve the permit compliance measures listed above. Any mitigation plantings in the floodway will not be permitted if they would result in substantial increases in flood stage elevations.		
Impact BIO-A-2 (NTMA & LTMA): *Effects on Special-Status Fish, Fish Movement, Nursery Ground Usage, Riparian Habitat, Designated Critical Habitat, and Essential Fish Habitat Caused by Loss of Overhead Cover and Instream Woody Material as Part of the Vegetation Management Strategy*	PS		Mitigation Measure BIO-A-2b (NTMA & LTMA): *Ensure Full Compensation for Losses of Riparian Habitat Functions and Values Caused by Implementing the Vegetation Management Strategy Along Levees* DWR will coordinate with the Board and levee maintenance agencies tasked with implementing the vegetation management strategy to develop and implement a plan to record data on riparian vegetation lost or removed due to implementation of the vegetation management strategy, and to ensure adequate compensation for losses of riparian habitat functions and values. Although this mitigation measure is written as if a single plan is prepared, multiple plans addressing individual regions, watersheds, river corridors, or other geographic subdivisions are also acceptable. The plan will be completed and suitable for implementation before the start of riparian habitat removal under the vegetation management strategy. The plan will include mechanisms to, at a minimum, record and track the acreage, type, and location of riparian habitat to be removed through implementation of the vegetation management strategy or lost over time through LCM. The plan will also address compensation for the loss and degradation of riparian habitat through the enhancement, restoration, or creation of riparian habitat in other locations. Assessment of the value of lost or degraded habitat and of compensation habitat will take into account issues such as the differing functions of waterside and landside riparian habitat, continuity and connectivity of habitat, types of riparian habitat removed vs. type of compensation habitat (e.g., riparian scrub vs. cottonwood riparian forest), and ability of habitat to support special-status species. DWR will track habitat compensation efforts and only authorize implementation of vegetation removal under the vegetation management strategy at a rate and in locations consistent with the volume and type of compensation habitat that has been established. This habitat compensation tracking program will be included in the program MMRP prepared to support this PEIR. The plan must, at a minimum, meet the following basic performance standard: • Authorized losses of habitat do not exceed the function and value of available compensation habitat. DWR will coordinate with USFWS and DFG during preparation and implementation of the plan to incorporate into the plan appropriate compensation for effects on special-status species from vegetation management along the levee system. Various mechanisms may be employed to provide compensation habitat under the plan, as long as the performance standard identified above is met. The mechanisms include but are not limited to the following: • Implementation of the CVFPP Conservation Strategy Framework • Participation in existing NCCPs, HCPs, or other conservation plans • Purchase of habitat credits at an established mitigation bank • Habitat restoration implemented by a levee maintenance agency or other entity Any mitigation plantings in the floodway will not be permitted if they would result in substantial increases in flood stage elevations, or alter flows in a manner that would have a substantial adverse effect on the opposite bank	PSU	

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
Impact BIO-A-3 (NTMA & LTMA): *Effects on Special-Status Fish, Fish Movement, Nursery Ground Usage, Riparian Habitat, Designated Critical Habitat, and Essential Fish Habitat Caused by Loss of Overhead Cover and Instream Woody Material during Construction*	S		Mitigation Measure BIO-A-3 (NTMA & LTMA): *Inventory and Replace Shaded Riverine Aquatic Habitat* The project proponent will require that the following measures be implemented to reduce the effects of program construction activities on special-status fish, fish movement, nursery sites, riparian habitat, designated critical habitat, and EFH. These measures may already be incorporated into the conditions of permits identified above in Mitigation Measure BIO-A-2a. • An inventory of shaded riverine aquatic habitat will be conducted before construction activities begin. Any shaded riverine aquatic habitat that is removed will be replaced, with replacement to occur on site when feasible. This includes IWM and other instream structures, overhead shade, and shallow-water habitat. • Mitigation credits may be purchased from a public or private mitigation bank approved by USFWS and/or NMFS. The final number of credits to be purchased will be determined by agency staff. • A mitigation and monitoring plan will be developed and implemented to ensure that the proposed bank treatments and any off-site mitigation treatments fully compensate for losses of shaded riverine aquatic habitat. On-site revegetation is the preferred method of compensation, and could reduce the impact to a less-than-significant level, and even potentially to a beneficial level. If on-site compensation is not feasible, off-site mitigation will be established either before or as soon as feasible after existing vegetation is removed, or mitigation bank credits will be purchased before existing vegetation is removed. As much of the mitigation habitat as feasible will be created at or near the project site. If off-site mitigation is necessary, a location that does not currently support riparian vegetation and is capable of supporting riparian habitats will be preferred. Revegetation requirements may be accomplished as part of implementation of the CVFPP Conservation Framework. Any mitigation plantings in the floodway will not be permitted if they would result in increases in flood stage elevations, or alter flows affecting the opposite bank.	LTS	SU
Impact BIO-A-4 (NTMA & LTMA): *Effects on Special-Status Fish, Fish Movement, Nursery Ground Usage, Designated Critical Habitat, and Essential Fish Habitat Caused by an Increase in Hydrostatic Pressure, Underwater Noise, and Vibrations during Construction*	PS		Mitigation Measure BIO-A-4 (NTMA & LTMA): *Conform to NMFS Guidelines for Pile-Driving Activities* Several measures may be effective in reducing potential impacts on listed fish species, either by decreasing the level of underwater sound or by decreasing the number of fish exposed to the sound. The project proponent and construction contractors will implement the following measures to the extent feasible, as construction activities and site-specific conditions allow: • Use fewer piles, smaller piles, or a different type of pile to minimize the number and/or intensity of pile hammer impacts. • Drive piles when species of concern are not present, as determined either from surveys or by known migration and use patterns for species occurring in the project area. • Use a vibratory hammer rather than an impact hammer. • Use a cushioning block between the hammer and pile. • Use a confined or unconfined air bubble curtain. • Drive piles during periods of reduced currents. Pile-driving activities at project sites will be monitored to ensure that the effects of pile driving on listed fish species are minimized. If any injury or mortality to fish is observed, DFG, NMFS and/or USFWS will be immediately notified and in-water pile driving will cease.	LTS	
Impact BIO-A-5 (NTMA & LTMA): *Effects on Special-Status Fish, Fish Movement, Nursery Ground Usage, Riparian Habitat, Designated Critical Habitat, and Essential Fish Habitat Caused by Rock Placement*	PS		Mitigation Measure BIO-A-5 (NTMA & LTMA): *Implement Mitigation Measures BIO-A-2a (NTMA) and BIO-A-2b (NTMA)*	PSU	
Impact BIO-A-6 (NTMA & LTMA): *Effects on Special-Status Fish, Fish Movement, Nursery Ground Usage, Riparian Habitat, Designated Critical Habitat, and Essential Fish Habitat Caused by the Increased Availability of Floodplain Habitat Generated by Setback Levees*	PS		Mitigation Measure BIO-A-6 (NTMA & LTMA): *Design and Implement Floodplain Habitat to Minimize Stranding* To avoid or minimize the potential for fish stranding associated with the creation of new floodplain habitat, the existing topographic and hydrologic characteristics of the floodplain will be examined to define the flooding regime, drainage patterns, water depths, and potential risks of fish stranding. Potential floodplain habitat will slope to a main channel or slough to facilitate complete drainage and avoid depressions or other low-lying floodplain features that may strand fish. Periodic recontouring (e.g., filling and excavation) of floodplain surfaces may be required to avoid stranding fish.	LTS	
Impact BIO-A-7 (LTMA): *Effects on Passage by Special-Status Fish and Fish Movement*	N/A	B	N/A	N/A	B

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
3.6 Biological Resources–Terrestrial					
Impact BIO-T-1 (NTMA & LTMA): *Construction-Related Effects on Sensitive Natural Communities and Habitats*	S		Mitigation Measure BIO-T-1a (NTMA & LTMA): *Conduct Biological Resources Surveys to Quantify Sensitive Natural Communities in Project Areas, and Avoid, Minimize, and, Where Appropriate, Compensate for Construction-Related Effects* Not all measures listed below may be applicable to each management action. Rather, these measures serve as an overlying mitigation framework to be used for specific management actions. The applicability of measures listed below would vary based on the lead agency, location, timing, and nature of each management action. The project proponent will ensure that applicable elements of the following measures are implemented to reduce construction-related effects of proposed NTMAs [or LTMAs] on sensitive natural communities. Where measures below call for field surveys, the project proponent may be able to rely on previous surveys that were conducted for the project area if these surveys meet the applicable agency guidelines. • Before an NTMA [or LTMA] is implemented, the CNDDB will be searched to determine whether sensitive communities, habitats, and species observation records may be present in or near the project area. These communities, habitats, and species occurrences will be identified, mapped, and quantified as deemed appropriate. The project proponent, assisted by the primary engineering and construction contractors, will coordinate with a qualified biologist to ensure that implementation of NTMAs [or LTMAs minimizes direct and indirect disturbance of sensitive communities, habitats, and species to the extent feasible. In consultation with USFWS and DFG, the project proponent will develop measures to minimize and, where appropriate, compensate for construction-related effects on sensitive communities, habitats, and species. • Before an NTMA [or LTMA] is implemented and if the project so warrants, waters of the United States will be delineated according to methods established in the USACE wetlands delineation manual and Arid West Supplement (Environmental Laboratory 1987, 2008). The delineation will map and quantify the acreage of wetland habitats in the area, and will be submitted to USACE for verification. Not all projects involving construction activities may require a delineation of waters. • If wetlands are found within the proposed construction site or any other area to be disturbed, a wetland delineation report will be prepared and submitted to USACE. After USACE verifies the acreage of waters and wetlands, the project proponent will determine how many acres of waters of the United States and waters of the State would be affected by the NTMA [or LTMA]. The verified wetland delineation, field observation, and as needed, hydraulic modeling will be used to make this determination. Where feasible, impacts will be avoided and minimized by establishing a buffer around wetlands and waterways. • The project proponent will replace, restore, or enhance the acreage of all wetlands, other waters of the United States, and waters of the State that cannot be avoided and will be removed and/or degraded. Thus, the project will achieve "no net loss" of wetland functions and values, in accordance with the requirements of USACE and the Central Valley RWQCB. Wetland habitat will be restored, enhanced, and/or replaced at an acreage and location agreed upon by the project proponent, USACE, and the Central Valley RWQCB, as appropriate. The acreage, location, and methods will be determined during the Section 401 and Section 404 permitting processes, and will be based on a USACE-verified wetland delineation. Methods to be used will be approved by the agency with jurisdiction over the area. • In consultation with the appropriate resource agency (typically DFG), native woodland areas will be identified, mapped, and quantified as deemed appropriate. The project proponent, assisted by the primary engineering and construction contractors, will coordinate with a qualified biologist to ensure that construction activities of NTMAs [& LTMAs] minimize disturbance of native woodlands, including riparian habitats, to the extent feasible. Temporary fencing will be installed during construction to prevent avoidable disturbance of native trees that are located adjacent to construction areas. In consultation with DFG, the project proponent will develop measures to minimize and, where appropriate, compensate for effects on native woodlands. • Protected areas that are managed by federal, State, and local governments or agencies and private entities will be identified, mapped, and quantified as deemed appropriate. The project proponent will coordinate with the appropriate government or agency manager to minimize disturbance of the protected habitats, to the extent feasible.	LTS	

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
			Mitigation Measure BIO-T-1b (NTMA & LTMA): *Minimize Construction-Related Effects on Critical Habitat and Compensate for Unavoidable Adverse Effects* Before an NTMA [or LTMA] is implemented, USFWS-designated critical habitat in the project area will be identified, mapped, and quantified by a qualified biologist. The project proponent will consult with USFWS to develop and implement measures to avoid, minimize, and, where necessary, compensate for construction-related effects on primary constituent elements and potential adverse modification of critical habitat. Compensation would likely consist of enhancement, restoration, and/or creation of habitat types and vegetation communities that serve as primary constituent elements for the critical habitat affected. Compensation habitat would be enhanced/restored/created within the geographic range of critical habitat for the species in question.		
Impact BIO-T-2 (NTMA & LTMA): *Construction-Related Effects on Water Quality in Sensitive Natural Communities and Special-Status Species' Habitats*	LTS		N/A	LTS	
Impact BIO-T-3 (NTMA & LTMA): *Construction-Related Effects on Special-Status Plants and Wildlife*	S		Mitigation Measure BIO-T-3a (NTMA & LTMA): *Conduct Focused Surveys for Special-Status Plants and Wildlife, and Avoid Impacts* Not all measures listed below may be applicable to each management action. Rather, these measures serve as an overlying mitigation framework to be used for specific management actions. The applicability of measures listed below would vary based on the lead agency, location, timing, and nature of each management action. The project proponent will verify whether species survey and avoidance protocols have been established for species that might be affected by the specific project, or will coordinate with the appropriate regulatory agency (e.g., USFWS or DFG) to determine an acceptable alternative method for surveying and avoiding effects on a species. To avoid effects of proposed construction activities on special-status plants and wildlife, the project proponent will ensure that the following measures are implemented before commencement of ground-disturbing activities. Where measures below call for field surveys, the project proponent may rely on previous surveys that were conducted for the project area if these surveys meet the applicable agency guidelines. If avoidance consistent with these measures cannot be achieved, the project proponent will implement the minimization and compensation measures included in Mitigation Measure BIO-T-3b described below. Where surveys for special-status species may be necessary, the project proponent may be able to rely on previous surveys that were conducted for the project area if these surveys meet the applicable agency guidelines. • The CNNDB will be searched to determine whether any records describe species observations and indicate the presence of habitat for those species in or near the project area. These habitats and species occurrences will be identified, mapped, and quantified as deemed appropriate. The project proponent, assisted by the primary engineering and construction contractors, will coordinate with a qualified biologist to ensure that disturbance of sensitive communities, habitats, and species is minimized during construction to the extent feasible. In consultation with USFWS and DFG, the project proponent will develop measures to minimize and, where appropriate, compensate for construction-related effects on sensitive habitats and special-status species. • A qualified botanist will conduct surveys for special-status plants (as listed in Table 3.6-3) with potential to occur in appropriate habitat within the project area. The surveys will follow applicable guidelines established by USFWS and/or DFG, and will be conducted at the appropriate time of year when the target species would be clearly identifiable. If no special-status plants have the potential to occur in the project area or none are found during focused surveys, no further action is required. If special-status plants are found, areas of occupied habitat will be identified. The construction contractor will avoid these areas where feasible. Temporary fencing will be installed to protect all occupied habitat that is located adjacent to construction areas but can be avoided. • A qualified biologist will conduct a survey in areas where elderberry shrubs could occur within 100 feet of construction and inundation areas. Surveys and stem counts will follow the USFWS conservation guidelines for the valley elderberry longhorn beetle (USFWS 1999). If elderberry shrubs are found, the project proponent will implement avoidance measures that are consistent with the USFWS conservation guidelines for this species (USFWS 1999). Where feasible, effects will be avoided by establishing and maintaining a 100-foot-wide buffer around elderberry plants. Where a 100-foot buffer is not feasible, effects may be minimized by providing a minimum setback, with a buffer around elderberry plants measuring at least 20 feet wide.	LTS	

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
			• Protocol surveys of all potential nesting trees and habitat in the area will be completed during the raptor nesting season (generally February 15–September 15 but may be adjusted for individual species), particularly if any construction activity is to occur during that season. Potential nesting trees and other nesting habitats (e.g., grasslands for northern harriers and burrowing owls) that are within one-half mile of proposed activity will be surveyed. To avoid the loss of active raptor nests, if the project proponent elects to remove trees suitable for nesting, the trees will be removed during the non-nesting season (generally between September 15 and February 15), to the extent practicable. Where feasible and depending on the species (particularly for Swainson's hawk), construction activities within one-quarter mile of active nests will be avoided during the raptor nesting season. Other nesting raptors may tolerate a much smaller buffer (e.g., one-tenth mile). • Surveys for other special-status wildlife listed in Table 3.6-4 with potential to occur in the project area will be conducted by a qualified biologist at the appropriate time of year when the target species would be clearly identifiable. Not all wildlife species require surveys, because their presence may be assumed based on habitat components and known locality records or they clearly will not be present in the area. USFWS and DFG will be consulted to determine for which species surveys should be conducted; appropriate species protocols will be followed. Occupied and potentially suitable habitat will be avoided where feasible by installing temporary exclusionary fencing. • If potentially suitable aquatic habitat for giant garter snake is identified, a buffer area of 200 feet will be established around the aquatic habitat, where feasible. These buffers will be indicated by temporary fencing, high-visibility flagging, or other equally effective means. • If nesting areas for pond turtles are identified, a buffer area of 300 feet will be established between the nesting site and nearby wetlands, where feasible. (The nesting site may be adjacent to wetlands or extend up to 400 feet away from wetland areas in uplands.) These buffers will be indicated by temporary fencing if construction has begun or will be established before nesting periods are ended (the period from egg laying to emergence of hatchlings is normally April to November). • Preconstruction surveys for special-status bat species will be conducted to determine the presence of roosts. When colonial roosting sites located in trees or structures must be removed, removal will occur outside of the nursery and/or hibernation seasons. Unless otherwise approved by DFG, such removal will occur during dusk and/or evening hours after bats have left the roosting site. When hibernation sites are identified on the project site, nursery and hibernation sites will be sealed before the hibernation season (November–March). Additional measures, such as monitoring and on-site mitigation roosts, will be implemented, as feasible (see H.T. Harvey & Associates 2004). • Participation in and compliance with an existing approved HCP, NCCP, or similar plan applicable to an NTMA [or LTMA] may replace the specific survey and avoidance actions listed above if all of the following conditions are met: • The existing approved HCP, NCCP, or similar plan is applicable to the NTMA [or LTMA]. • The NTMA [or LTMA] is within the permit area. • The NTMA [or LTMA] is a covered activity under the existing plan. • The plan addresses methods to identify, avoid, minimize, and compensate for effects on special-status species. Mitigation Measure BIO-T-3b (NTMA & LTMA): *If Avoiding Construction-Related Effects on Special-Status Plants and Wildlife is Infeasible, Minimize and, Where Appropriate, Compensate for Effects on Special-Status Species and Loss of Habitat* If the focused surveys described above in Mitigation Measure BIO-T-3a have been completed and avoiding effects on special-status species is infeasible, the project proponent will coordinate with the appropriate regulatory agency (e.g., USFWS or DFG) to determine acceptable methods for minimizing or compensating for effects on a species. Various minimization and compensation measures are described below. The CVFPP Conservation Strategy Framework may be a suitable source of compensation habitat. The project proponent will ensure that the following measures are implemented to minimize and compensate for effects of proposed levee improvements on special-status plants and wildlife: • If special-status plants cannot be avoided, the project proponent will coordinate with USFWS and/or DFG (depending on which agency has jurisdiction over the particular species) to determine appropriate minimization and compensation measures. Some local plans and policies, if applicable to the project being implemented, may require that the project proponent completely avoid effects on a special-status plant species or pay a fee to mitigate impacts. Where feasible and applicable, the project proponent will consult and/or coordinate with local agencies on these plans and policies. In some instances, sensitive plants may be relocated to an area approved by DFG or USFWS.		

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
			• If ground-disturbing activities are to occur within 20 feet of the dripline of an elderberry shrub, minimization and compensation measures consistent with the USFWS conservation guidelines (USFWS 1999) will be implemented. These measures include transplanting elderberry shrubs and planting compensatory elderberry seedlings and associated native plantings. • If an active raptor nest is found, a biologist, in coordination with DFG, will determine an appropriate buffer that minimizes the potential for disturbing the nest. Setbacks will be marked by brightly colored temporary fencing. Based on the coordination with DFG, no construction activities will begin in the buffer area until a qualified biologist has confirmed that the nest is no longer active or that the birds are not dependent on it. A qualified biologist will monitor construction to ensure that project activities will not substantially adversely affect the nesting pair or their young. The size of the buffer may vary, depending on the nest location, nest stage, construction activity, and monitoring results. If establishing the buffer becomes infeasible or construction activities result in an unanticipated nest disturbance, DFG will be consulted to determine the appropriate course of action. • Minimization and compensation measures for other special-status wildlife species will be developed in consultation with DFG and/or USFWS. DFG and USFWS provide standardized minimization measures for several species; for example, the giant garter snake has specific minimization measures, such as restrictions on the construction season and a requirement for biological surveys and monitoring. Participation in and compliance with an existing approved HCP, NCCP, or similar plan applicable to an NTMA [or LTMA] may replace the specific minimization and compensation actions listed above if all of the following conditions are met: • The existing approved HCP, NCCP, or similar plan is applicable to the NTMA [or LTMA]. • The NTMA [or LTMA] is within the permit area. • The NTMA [or LTMA] is a covered activity under the existing plan. • The plan addresses methods to identify, avoid, minimize, and compensate for effects on special-status species. All construction-related activities will be subject to all applicable permitting requirements. The mitigation measures described above, when combined with applicable permit requirements, must, at a minimum, meet the following basic performance standard: • Authorized losses of habitat will not exceed the function and value of available compensation habitat. DWR will also track these habitat compensation efforts as part of the MMRP for this PEIR. These measures will be designed to ensure that construction activities will not result in a substantial reduction in the population size or range of any special-status plants or wildlife. Mitigation Measure BIO-T-3c (NTMA & LTMA): *Secure Applicable State and/or Federal Permits and Implement Permit Requirements* The project proponent will ensure that the following measures are implemented to reduce construction-related effects of proposed levee or other repairs, remediation, and improvements on trees and shrubs within stream zones, listed plant and wildlife species, and wetlands: • A streambed alteration agreement, as required under Section 1602 of the California Fish and Game Code, will be obtained from DFG before any vegetation is removed from a stream zone under DFG jurisdiction. The project proponent will comply with all terms and conditions of the streambed alteration agreement, including measures to protect habitat or to restore, replace, or rehabilitate any habitat. • The project proponent will consult or coordinate with USFWS under the federal ESA and DFG under the CESA regarding potential impacts on listed plant and wildlife species and associated critical habitat. The project proponent will implement any additional measures developed through the ESA and CESA consultation processes, including conditions of Section 7 biological opinions and Section 2081 permits. • Before ground-disturbing activities begin on a project reach that contains waters of the United States, authorization for fill of such waters will be secured from USACE through the Section 404 permitting process. This permitting process will include providing compensatory mitigation for affected wetlands to ensure no net loss of wetland functions and values. Participation in and compliance with an existing approved HCP, NCCP, or similar plan applicable to an NTMA [or LTMA] may be used to achieve the permit compliance measures listed above if all of the following conditions are met: • The existing approved HCP, NCCP, or similar plan is applicable to the NTMA [or LTMA]. • The NTMA [or LTMA] is within the permit area. • The NTMA [or LTMA] is a covered activity under the existing plan. • The plan provides for compliance with applicable State or federal regulations.		
Impact BIO-T-4 (NTMA & LTMA): *Construction-Related Effects on Wildlife Movement*	PS		Mitigation Measure BIO-T-4 (NTMA & LTMA): *Implement Mitigation Measures BIO-T-1a (NTMA), BIO-T-3a (NTMA), BIO-T-3b (NTMA), and BIO-T-3c (NTMA)*	LTS	

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
Impact BIO-T-5 (NTMA & LTMA): *Potential for Construction-Related Effects to Conflict with Local Plans and Policies*	PS		Mitigation Measure BIO-T-5a (NTMA & LTMA): *Implement Mitigation Measures BIO-T-1a (NTMA), BIO-T-3a (NTMA), BIO-T-3b (NTMA), and BIO-T-3c (NTMA)* Mitigation Measure BIO-T-5b (NTMA & LTMA): *Identify Local Plans and Policies and Develop Strategy to Maintain Plan Consistency, Minimize Effects, or Compensate for Construction-Related Effects on Local Plans* Before an NTMA [or LTMA] is implemented, the project proponent will identify applicable local conservation plans in the area and evaluate the plans to determine whether the NTMA [or LTMA] is within the permit area. As feasible, the project proponent will consider developing a strategy to maintain plan consistency and will consult and/or coordinate with the appropriate entity or plan administrator to develop and implement measures to avoid, minimize, and where necessary, compensate for effects on local plans. In some instances, the NTMA [or LTMA] may be a covered activity under the plan.	LTS	
Impact BIO-T-6 (NTMA & LTMA): *Effects of Reservoir Operational Criteria Changes on Sensitive Natural Communities and Habitats, Special-Status Plants and Wildlife, Wildlife Movement, and Local Plans and Policies*	LTS		N/A	LTS	
Impact BIO-T-7 (NTMA & LTMA): *Effects of the Vegetation Management Strategy on Sensitive Natural Communities and Habitats, Special-Status Plants and Wildlife, and Wildlife Movement*	PS		Mitigation Measure BIO-T-7a (NTMA & LTMA): *Implement Applicable Elements of Mitigation Measures BIO-T-1a (NTMA), BIO-T-3a (NTMA), BIO-T-3b (NTMA), and BIO-T-3c (NTMA) to Minimize Impacts during Vegetation Removal* Mitigation Measure BIO-T-7b (NTMA & LTMA): *Implement Mitigation Measure BIO-A-2b (NTMA), "Ensure Full Compensation for Losses of Riparian Habitat Functions and Values Caused by Implementing the Vegetation Management Strategy Along Levees"*	PSU	
Impact BIO-T-8 (NTMA & LTMA): *Effects of Other Management Activities on Sensitive Natural Communities and Habitats, Special-Status Plants and Wildlife, Wildlife Movement, and Local Plans and Policies*	B		N/A	B	
3.7 Climate Change and Greenhouse Gas Emissions					
Impact CLM-1 (NTMA & LTMA): *Net Construction-Related and Operational Greenhouse Gas Emissions*	LTS		Mitigation Measure CLM-1a (NTMA & LTMA): *Implement Greenhouse Gas–Reducing Construction BMPs* DWR has developed preconstruction, construction, and final design BMPs for reduction of GHG emissions. These preconstruction and final design and construction BMPs are designed to ensure that individual projects are evaluated and their unique characteristics taken into consideration when determining if specific equipment, procedures, and or material requirements are feasible and efficacious for reducing GHG emissions from the project. As applicable and appropriate, the following BMPs would be applied: • *BMP 1.* Evaluate project characteristics, including location, project work flow, site locations, and equipment performance requirements, to determine whether specifications of the use of equipment with repowered engines, electric drive trains, or other high-efficiency technologies are appropriate and feasible for the project or specific elements of the project. • *BMP 2.* Evaluate the feasibility and efficacy of performing on-site material hauling with trucks equipped with on-road engines. • *BMP 3.* Ensure that all feasible avenues have been explored for providing an electrical server drop to the construction site for temporary construction power. When generators must be used, use alternative fuels, such as propane or solar, to power generators to the maximum extent feasible. • *BMP 4.* Evaluate the feasibility and efficacy of producing concrete on-site and specify that batch plants be set up on-site or as close to the site as possible. • *BMP 5.* Evaluate the performance requirements for concrete used on the project, and specify concrete mix designs that minimize GHG emissions from cement production and curing while preserving all required performance characteristics. • *BMP 6.* Minimize idling time by requiring that equipment be shut off after 5 minutes when not in use (as required by the State airborne toxics control measure, Title 13, Section 2485 of the California Code of Regulations). Provide clear signage that posts this requirement for workers at the entrances to the site and provide a plan for the enforcement of this requirement. • *BMP 7.* Maintain all construction equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition. Maintenance schedules shall be detailed in an air quality control plan prior to commencement of construction.	LTS	N/A/TS

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
			• *BMP 8.* Implement a tire inflation program on jobsite to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives on-site and every 2 weeks for equipment that remains on-site. Check vehicles used for hauling materials off-site weekly for correct tire inflation. Procedures for the tire inflation program shall be documented in an air quality management plan prior to commencement of construction. • *BMP 9.* Develop a project-specific rideshare program to encourage carpools, shuttle vans, transit passes, and/or secure bicycle parking for construction worker commutes. • *BMP 10.* Reduce electricity use in temporary construction offices by using high-efficiency lighting and requiring that heating and cooling units be Energy Star compliant. Require that all contractors develop and implement procedures for turning off computers, lights, air conditioners, heaters, and other equipment each day at close of business. • *BMP 11.* For deliveries to project sites where the haul distance exceeds 100 miles and a heavy-duty class 7 or class 8 semi-truck or 53-foot or longer box-type trailer is used for hauling, a SmartWay certified truck will be used to the maximum extent feasible. • *BMP 12.* Minimize the amount of cement in concrete by specifying higher levels of cementitious material alternatives, larger aggregate, longer final set times, or lower maximum strength where appropriate and while preserving all required performance characteristics. • *BMP 13.* Develop a project-specific construction debris recycling and diversion program to achieve a documented 50 percent diversion of construction waste. Mitigation Measure CLM-1b (NTMA & LTMA): *Implement Greenhouse Gas–Reducing Operational Practices* Incremental operational GHG emissions would likely be reduced in the near term relative to existing conditions through the replacement of older equipment, buildings, and vehicles. Even so, although Impact CLM-1 (NTMA [or LTMA]) would be less than significant, the project proponent will implement the measures listed below—where needed, feasible, and appropriate—to minimize operational GHG emissions for replacement and new CVFPP facilities associated with NTMAs [or LTMAs]. Not all mitigation measures listed below may be applicable to each management action. Rather, these mitigation measures serve as an overlying mitigation framework to be utilized for specific management actions. The applicability of mitigation measures would vary based on the lead agency, location, timing, and nature of each management action. • Implement all current standards and/or requirements as part of any DWR sustainability plan or guidelines. • Use renewable energy generated on site (i.e., solar, wind, hydroelectric). • Use alternative fuels for maintenance vehicles and equipment. • Use energy-efficient equipment for operation and maintenance of proposed facilities (e.g., pumps, hydraulic equipment, maintenance equipment). Equipment and operation of equipment will conform to U.S. Department of Energy best practices, Consortium for Energy Efficiency initiatives and guidance, and National Electrical Manufacturers Association standards where possible. • Require proposed buildings to exceed California Building Standards Code Title 24 energy efficiency standards by 20 percent or more.		
3.8 Cultural and Historic Resources					
Impact CUL-1 (NTMA & LTMA): *Potential Damage to or Destruction of Known Archaeological Resources from Ground Disturbance or Other Construction-Related Activities*	PS		Mitigation Measure CUL-1a (NTMA & LTMA): *Conduct Cultural Resource Studies and Avoid Effects on Known Archaeological Resources* To minimize potential adverse effects on prehistoric and historic-era archaeological resources, the project proponent will conduct cultural resource studies before project approval (where feasible and appropriate) to identify the presence of such resources at all project sites. Where field surveys cannot be completed before project approval, such as in locations where access permission has not been received, field surveys will be completed before ground disturbance begins. These archaeological studies and surveys will be conducted by professionals who meet the Secretary of the Interior's standards for archaeology professionals. Should resources eligible for listing in the NRHP and CRHR be identified within the study area, effects on those resources resulting from any NTMA [or LTMA] will be avoided, if feasible. Methods of avoidance may include redesigning or relocating the project, such as moving an access road around an archaeological site instead of through it. Where avoidance is not feasible, see Mitigation Measure CUL-1b (NTMA [& LTMA]) below.	LTS	

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
			Mitigation Measure CUL-1b (NTMA & LTMA): *Conduct Additional Evaluations and Recover Sufficient Data to Compensate for Damage to or Destruction of Known Archaeological Sites* If a substantial adverse change to an archaeological resource that has been determined as eligible for listing in the NRHP or the CRHR cannot be avoided, the project proponent will deploy a qualified archaeologist to conduct additional research and other tasks. These tasks will include preparing a research design; conducting additional archival and historical research, when appropriate; conducting an archaeological excavation; analyzing artifacts, features, and other attributes of the resource; and preparing a technical report documenting the methods and results of the investigation in accordance with the California Office of Historic Preservation's Guidelines for Archaeological Research Design (1991). The purpose of this work will be to recover a sufficient quantity of data to compensate for damage to or destruction of the resource. The procedures to be employed in this data recovery program will be determined in consultation with responsible agencies and interested parties, such as Native American tribes, as appropriate. The approved measures must be implemented before construction activities occur at the archaeological site. An alternative method to mitigate impacts on archaeological sites considered eligible for listing in the NRHP and CRHR is to have the primary construction contractor for the project proponent cap the site with soil, gravels, rock, or appropriate vegetation to protect the deposit. For example, sites subject to inundation and water-level fluctuations may be protected from erosion by application of a layer of gravel/rock or soil, or both. A layer of soil (i.e., sterile fill) may also be placed over a site where construction of a building is planned, such that all construction activities will occur in the fill material. For sites located in areas subject to looting, vegetation such as blackberry brambles or wild rose may be planted over the site as a useful deterrent, but only in areas where operations and maintenance of facilities would not be impaired by the deterrent vegetation. If capping an archaeological site proves necessary, the project proponent will provide the materials and labor, regularly monitor and evaluate the efficacy of the mitigation, and refresh the protection, when necessary.		
Impact CUL-2 (NTMA & LTMA): *Potential Damage to or Destruction of Previously Undiscovered Buried Archaeological Resources from Ground Disturbance or Other Construction-Related Activities*	PS		Mitigation Measure CUL-2 (NTMA & LTMA): *If Cultural Resources Are Discovered, Immediately Halt Construction and Implement an Accidental-Discovery Plan* Should cultural resources such as structural features, unusual amounts of bone or shell, artifacts, human remains, or architectural remains be encountered during construction activities, work will be suspended immediately at the location of the find and within a 50-foot radius. A qualified archaeologist will conduct a field investigation of the specific site and recommend mitigation necessary to protect or recover any cultural resource determined by the archaeologist to represent a historical resource or unique archaeological resource. Based on the archaeologist's recommendations, the project proponent will develop measures in consultation with responsible agencies and, as appropriate, interested parties such as Native American tribes. The approved mitigation must be implemented before construction activities resume at the archaeological site. All of the steps identified above will be detailed in an accidental-discovery plan developed before construction so that all parties are aware of the process that must be implemented should buried archaeological resources be uncovered during construction. Construction monitoring by a qualified archaeologist in areas determined particularly sensitive for buried archaeological remains will be implemented by project proponents when warranted, as recommended by the archaeological professional. Reasons for providing an archaeological monitor may include but are not limited to the previous identification of buried cultural deposits in the project vicinity or the previous recordation of an archaeological site that could not be recently identified on the ground surface. Furthermore, some landforms, such as mounded areas in floodplains adjacent to water courses, are likely to be sensitive for buried resources. Large-scale projects involving a great deal of ground disturbance (e.g., lengthy levee construction) could benefit from geoarchaeological studies to determine those areas most likely to contain buried cultural deposits. Discoveries of human remains will be treated as described in Mitigation Measure CUL-5c (NTMA [& LTMA]), below.		LTS
Impact CUL-3 (NTMA & LTMA): *Potential Damage or Disturbance to or Change in Significance of Built-Environment Resources*	PS		Mitigation Measure CUL-3a (NTMA & LTMA): *Conduct Cultural Resources Studies and Avoid Effects on Built-Environment Resources* In areas potentially containing historic resources, the project proponent will ensure that architectural history studies and surveys will be conducted by professionals who meet the Secretary of the Interior's professional standards, to identify the presence of built-environment resources within a particular project location. Should buildings or structures that are eligible for listing in the NRHP or CRHR be identified within the study area, impacts on those resources resulting from any NTMA [or LTMA] will be avoided, if feasible. Project relocation and redesign are appropriate avoidance measures. For example, should constructing a new levee require removal of a historic farmhouse, realigning the levee away from the structure would avoid a significant adverse change to the structure. If avoidance is not feasible, see Mitigation Measure CUL-3b (NTMA [& LTMA]) below.		LTS

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
			Mitigation Measure CUL-3b (NTMA & LTMA): *Follow the Secretary of the Interior's Standards for the Treatment of Historic Properties* In some cases, completely avoiding an element of the built environment that qualifies as a historical resource or historic property may not be feasible, and the feature must be altered as part of project implementation. In such a scenario, any program-related alterations to historic-era buildings or structures, including relocations, will conform to the Secretary of the Interior's Standards for the Treatment of Historic Properties and Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings (1995). The project proponent will develop and implement any plans necessary to mitigate alterations to historic properties in accordance with these standards. The plans will be submitted to the SHPO for approval before project implementation. If these standards cannot be met, see Mitigation Measure CUL-3c (NTMA) below.		
	PS		**Mitigation Measure CUL-3c (NTMA & NTMA):** *Record Built-Environment Resources to Historic American Buildings Survey and Historic American Engineering Record Standards* In some cases, avoiding or relocating a building or structure considered eligible for the NRHP or CRHR may not be feasible, and that resource must be demolished. These situations are expected to be rare occurrences. However, in such a scenario, the project proponent will retain a qualified architectural historian to document the affected historical built-environment resource according to Historic American Buildings Survey (HABS) or Historic American Engineering Record (HAER) standards, as appropriate. HABS and HAER documentation packages will be entered into the Library of Congress, as well as the appropriate Information Center of the California Historical Resources Information System.	PSU	
Impact CUL-4 (NTMA & LTMA): *Potential Damage or Disturbance to Traditional Cultural Properties during Ground Disturbance or Other Construction-Related Activities*	PS		**Mitigation Measure CUL-4a (NTMA & LTMA):** *Conduct Cultural Resources Studies and Avoid Effects on TCPs* In areas potentially containing traditional cultural properties, an ethnographer or archaeologist who meets the Secretary of the Interior's standards as a professional cultural resource specialist will consult with appropriate populations (Native Americans or otherwise) before approval of any project and identify the presence of any TCPs at the project location. Native American TCPs may be identified by an ethnographer who has worked intensively with community members (often, but not always, elders) possessed of considerable knowledge about places important to the community. Should TCPs be identified in the project area, they will be avoided by project redesign or relocation, if feasible. As an example, the proposed location of a water-monitoring device may be moved to another, still appropriate, place along a stream bed to avoid a section of the creek bank that is a TCP for medicinal plants, thereby avoiding a substantial adverse change to the resource. If avoidance is not feasible, see Mitigation Measure CUL-4b (NTMA [& LTMA]) below.	LTS	
			Mitigation Measure CUL-4b (NTMA & LTMA): *Consult with Native American Communities and Implement Appropriate Measures to Mitigate Effects on TCPs* Effects to TCPs are expected to be rare occurrences. However, where an identified TCP cannot be fully avoided by a proposed project, the project proponent will engage in early, meaningful consultation with Native American communities to identify ways to mitigate impacts on TCPs. For example, if TCP locations that presently support plant species cultivated and harvested by Native American communities for traditional medicines and foods, or for uses such as basketry, are slated for destruction to make way for planned construction, the project proponent may work with the Native American community associated with the TCP to identify other nearby locations that can support these same plants. The project proponent can then take steps to enhance existing plant populations at those locations or provide materials and labor to cultivate new plants, with assistance from the Native American community. Working with local Native American communities to develop interpretive programs is another measure to mitigate impacts on TCPs. Programs may include developing signage, constructing visitor centers describing locations that have sacred or other special meaning to Native Americans, developing and implementing management plans for important cultural resources, or establishing conservation easements to protect culturally important places.	PSU	

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
Impact CUL-5 (NTMA & LTMA): *Potential Damage or Disturbance to Human Remains, Including Those Interred Outside of Formal Cemeteries, during Ground Disturbance or Other Construction-Related Activities*	PS		Mitigation Measure CUL-5a (NTMA & LTMA): *Conduct Cultural Resources Studies and Avoid Effects on Human Remains* The project proponent will ensure that archaeological and historical studies and surveys will be conducted by professionals who meet the Secretary of the Interior's standards, to identify the presence of human remains within a particular project location. Should human remains be identified within the study area, impacts on those remains resulting from any NTMA [or LTMA] will be avoided, if feasible. Project relocation and redesign are appropriate avoidance measures. For example, should construction of a new maintenance facility be proposed at a place known to contain human remains, relocation of the facility would avoid disturbing the burials. However, if avoidance is not feasible, see Mitigation Measures CUL-5b (NTMA [& LTMA]) and/or CUL-5c (NTMA [& LTMA]) below, as applicable.	LTS	
			Mitigation Measure CUL-5b (NTMA & LTMA): *Relocate Known Cemeteries* The project proponent will consult with the entity (county, city, or private) that has jurisdiction over the cemetery, and with interested parties as appropriate, to identify a satisfactory place to relocate human remains that would provide protection from future disturbance. Similarly, if Native American burials are known to exist in an archaeological site, the project proponent will work with the appropriate tribe to identify a satisfactory location for reinterment of burials in a protected location.		
			Mitigation Measure CUL-5c (NTMA & LTMA): *Immediately Halt Construction If Human Remains Are Discovered and Implement a Burial Treatment Plan* Construction activities have the potential to result in unanticipated effects on buried human remains where there is no surface indication of their presence. Under these circumstances, the project proponent will adhere to the requirements described in Section 7050.5 of the California Health and Safety Code and PRC Section 5097.98: • If human remains are uncovered during ground-disturbing activities, potentially damaging excavation must halt in the area of the remains and the local county coroner must be notified. The coroner is required to examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands (Health and Safety Code, Section 7050.5(b)). • If the coroner determines that the remains are those of a Native American, he or she must contact the NAHC by phone within 24 hours of making that determination (Health and Safety Code, Section 7050(c)). • In turn, under the provisions of PRC Section 5097.98, NAHC will identify a Most Likely Descendant (MLD). The MLD designated by the NAHC will have at least 48 hours to inspect the site and propose treatment and disposition of the remains and any associated grave goods. For large projects (e.g., new levee construction) or projects where a high probability of encountering human remains exists, a burial treatment plan will be developed by the project proponent in consultation with local Native American tribes before construction. During this process, all parties will be made aware of the actions required should buried Native American human remains be uncovered during construction. The plan will detail all of the activities identified above and include treatment preferences identified by the MLD. Smaller, localized projects do not require a burial treatment plan. Examples of such projects are modifications of existing facilities and projects that do not involve ground disturbance (e.g., purchases of easements, structure modifications). However, should human remains be uncovered during these project activities, treatment of the remains will strictly follow the requirements in Section 7050.5 of the California Health and Safety Code and PRC Section 5097.98.		
3.9 Energy					
Impact ENRG-1 (NTMA & LTMA): *Inefficient, Wasteful, or Unnecessary Consumption of Energy during Construction-Related Activities*	LTS		N/A	LTS	
Impact ENRG-2 (NTMA & LTMA): *Inefficient, Wasteful, or Unnecessary Consumption of Energy during Operational and Maintenance-Related Activities*	LTS		N/A	LTS	
Impact ENRG-3 (NTMA & LTMA): *Reduced Generation of Renewable Energy as a Result of Altered Flow Releases at Hydropower Facilities Caused by Changes in Reservoir Operations*	LTS		N/A	LTS	

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
3.10 Geology, Soils, and Seismicity (Including Mineral and Paleontological Resources)					
Impact GEO-1 (NTMA & LTMA): *Exposure of People or Structures to Risks Related to Fault Rupture, Ground Shaking, Liquefaction, or Landslides*	B		N/A	B	
Impact GEO-2 (NTMA & LTMA): *Potential Localized Soil Erosion and Inadvertent Permanent Soil Loss as a Result of Construction or Operation and Maintenance Activities*	LTS		N/A	LTS	
Impact GEO-3 (NTMA & LTMA): *Potential risks of Damage to Infrastructure Associated with Expansive Soils*	LTS		N/A	LTS	
Impact GEO-4 (NTMA & LTMA): *Potential Use of Septic Tanks or Alternative Wastewater Disposal Systems in Areas with Unfavorable Soils*	NI		N/A	LTS	
Impact GEO-5 (NTMA & LTMA): *Potential Loss of Availability of a Known Mineral Resource of Value*	LTS		Mitigation Measure GEO-5 (LTMA): *Minimize Loss of Mineral Resources through Siting and Design* When designing bypasses or setback levees or purchasing easements, the project proponent will consider a range of locations and configurations to minimize the potential to eliminate access to locally valuable mineral resources.	LTS	PSU
Impact GEO-6 (NTMA & LTMA): *Possible Damage to or Destruction of Unique Paleontological Resources*	PS		Mitigation Measure GEO-6 (NTMA & LTMA): *Prepare a Paleontological Resources Assessment and, If Necessary, Conduct Construction Worker Personnel Education, Stop Work If Paleontological Resources Are Encountered during Earthmoving Activities, and Implement Recovery Plan* If an NTMA [or LTMA] involves excavation in native soil (e.g., not imported fill) that has the potential to contain fossils (e.g., greater than 11,000 years old), an assessment of the paleontological sensitivity of rock formations in the excavation area will be conducted. The project proponent will retain the services of a paleontologist to perform an evaluation that includes all of the following: • A determination of the specific rock formations present at the project site • A records search of the applicable paleontological resources database to identify past fossil finds in the area • A field visit (if necessary as determined by the paleontologist) • A determination as to the paleontological sensitivity of the rock formations in areas proposed for excavation using SVP (1995) guidelines Studies conducted for past projects in the same area that meet these criteria may be used to fulfill this requirement. No further mitigation will be required for excavation activities in rock formations that are determined to be of low paleontological sensitivity. Before earthmoving activities begin for any project phase in rock units that have moderate to high paleontological sensitivity, the project proponent will retain a qualified paleontologist or archaeologist to train all construction personnel involved in earthmoving activities, including the site superintendent, regarding the following: • The possibility of encountering fossils • The appearance and types of fossils likely to be seen during construction • The proper notification procedures to follow if fossils are encountered In addition, as determined by the paleontologist in consultation with the project proponent, full-time monitoring during earthmoving activities may be required in areas of high paleontological sensitivity. If a paleontological resource potentially qualifying as unique or significant (as defined above in "Thresholds of Significance") is discovered during earthmoving activities, the construction crew will immediately cease work in the vicinity of the find and notify the project proponent. The project proponent will retain a qualified paleontologist to evaluate the resource, and if it is confirmed to qualify as a unique or significant resource, a qualified paleontologist will prepare a recovery plan in accordance with SVP guidelines (1995). The recovery plan may include but will not be limited to further field surveys in the vicinity of the find, sampling and data recovery procedures, museum storage coordination for any specimen recovered, further monitoring of earthmoving activities, and a report of findings. The project proponent will ensure implementation of the recovery plan. Construction activities can resume at locations where unique or significant paleontological resource are discovered after the resource has been recovered and moved from the work site.	LTS	

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
3.11 Groundwater Resources					
Impact GRW-1 (NTMA & LTMA): *Potential Localized Degradation of Groundwater Quality Related to Construction, Operation, and Maintenance Activities*	LTS		N/A	LTS	
Impact GRW-2 (NTMA & LTMA): *Degradation of Groundwater Quality Resulting from Decreased Natural Recharge or Increased Pumping due to Reduced Water Supplies from Changes to Reservoir Operational Criteria*	LTS		N/A	LTS	
Impact GRW-3 (NTMA & LTMA): *Depletion of Groundwater Levels Resulting from Decreased Natural Recharge or Increased Pumping due to Reduced Water Supplies from Changes to Reservoir Operational Criteria*	LTS		N/A	LTS	
Impact GRW-4 (NTMA & LTMA): *Modification of Groundwater Flows Resulting in Decreased Natural Recharge to Regional or Local Groundwater Supplies or Reduced or Delayed Local Drainage*	LTS		N/A	LTS	
Impact GRW-5 (LTMA): *Degradation of Water Quality or Adverse Rise in Groundwater Elevation as a Result of Groundwater Banking*	N/A	PS	Mitigation Measure GRW-5a (LTMA): *Develop and Implement Groundwater Management Plans or Expand Existing Groundwater Management Plans, Including Defining Basin Management Objectives, Groundwater Monitoring Plans, and Conditions under Which Corrective Actions Are Taken* Formalized groundwater management plans will be developed or expanded by the project proponent to guide management of groundwater basins where managed groundwater recharge and/or groundwater banking projects are to occur. These plans will include quantifiable basin-management objectives and groundwater monitoring plans to allow for management of the basin in a manner that minimizes adverse effects on groundwater. The plans will identify conditions to be evaluated using groundwater monitoring data and will describe corrective actions that may be taken, such as modifications to groundwater banking operations. Mitigation Measure GRW-5b (LTMA): *Conduct Phase I Environmental Site Assessments* Phase I Environmental Site Assessments will be conducted by the project proponent at all sites before groundwater banking activities begin to prevent the degradation of water quality associated with recharging water in a potentially contaminated aquifer or exposing rising groundwater to contaminated soils.	N/A	LTS
3.12 Hazards and Hazardous Materials					
Impact HHM-1 (NTMA & LTMA): *Hazards from Routine Transport, Use, or Disposal and Reasonably Foreseeable Accidental Release of Hazardous Materials*	LTS		N/A	LTS	
Impact HHM-2 (NTMA & LTMA): *Accidental Release and Use of Hazardous Materials within One-Quarter Mile of an Existing or Proposed School*	PS		Mitigation Measure HHM-2 (NTMA & LTMA): *Conduct a Site-Specific Analysis to Determine the Proximity of School Sites, Notify and Consult with Affected Schools, and Implement Storm Water Pollution Prevention Plan and Best Management Practices as Required* The project proponent will determine whether the site of any existing or proposed school is located within one-quarter mile of each site-specific NTMA or LTMA that would require construction activities. If no school sites are located within this distance, no further mitigation is required. If existing or proposed schools are located within one-quarter mile, the project proponent will notify each affected school (or the school district in which the school is located) in writing, and will consult with appropriate school or district personnel about the types of activities that would occur and their estimated timing. The project proponent will provide examples of the types of hazardous materials that could be used during proposed activities. The written notification will be provided at least 30 days before the commencement of any construction activities within one-quarter mile of the school or at least 30 days before any future project-specific CEQA document is certified or adopted, whichever is earlier. The project proponent will also be required by law to design and implement spill prevention and cleanup measures (i.e., best management practices (BMPs)) as part of the storm water pollution prevention plan (SWPPP) prepared for each site-specific NTMA or LTMA (see Section 3.13, "Hydrology," for a discussion of relevant BMPs and the SWPPP process), which would help to reduce the potential for adverse impacts during project construction.	LTS	

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
Impact HHM-3 (NTMA & LTMA): *Exposure of People and the Environment to Existing Hazardous Materials, Including Sites on the Cortese List*	PS		Mitigation Measure HHM-3a (NTMA & LTMA): *Search for Contaminated Sites Potentially Affected by Site-Specific Projects and Avoid Contact with or Clean Up Contaminated Areas* Before construction begins on any site-specific project that involves earth-moving activities, a Phase I Environmental Site Assessment (ESA) will be completed. An existing Phase I ESA can be used to complete this requirement if it covers the project area and has been completed within 5 years of initiation of the project's environmental analysis, and land uses on the project site have not changed since completion of the Phase I ESA that would alter the potential for contamination to be present. The Phase I ESA will include a database search to determine whether site-specific work would take place within the boundary of any facilities included on the Cortese List or other recorded contaminated or potentially contaminated sites. If so, the project proponent will do one of the following: 1. Coordinate with the appropriate federal, State, or local agency to determine whether the contamination issue has been resolved by the responsible party. OR 2. Determine whether a qualified hazardous materials specialist has found, through soil and groundwater testing, that previously documented contamination would be sufficiently distant from project construction areas to ensure that the site's known hazardous materials would not be encountered or threaten the safety of construction workers, the public, or the environment. However, if evidence of existing contamination is found on the site, the nature of this contamination will be evaluated in the Phase I ESA and appropriate action will be recommended. Such action may involve further study through completion of a Phase II ESA. If the contamination is sufficient to exceed applicable regulatory thresholds, then the project proponent will ensure cleanup of the site, consistent with regulatory requirement. Cleanup of contaminated sites will be completed before construction is initiated in the contaminated location. In the case of projects that could put the contaminated site in contact with surface waters, cleanup will be completed before levees or other features are modified in a manner that would allow surface waters to reach the contaminated site. Mitigation Measure HHM-3b (NTMA & LTMA): *Locate Oil and Gas Wells and Transmission Lines Potentially Affected by Site-Specific Projects, and Coordinate with Owner/Operators to Avoid Disturbance* Before construction begins on any site-specific project, the project proponent will search appropriate State and local databases to determine whether any oil or natural gas wells or transmission pipelines are located within the specific project site. If any wells or pipelines are found, the project proponent will notify and coordinate with the owner/operators of the wells and pipelines to ensure that such facilities are properly flagged in the field and avoided during construction. Mitigation Measure HHM-3c (NTMA & LTMA): *Train Construction Workers on Hazardous Materials, Stop Work Near Contaminated Soils, and Determine and Implement an Avoidance or Cleanup Strategy* Before construction begins on any site-specific project, the project proponent will train construction workers on the potential to encounter hazardous materials and proper notification procedures. Such training will specify that work in the vicinity must cease and a qualified hazardous materials specialist must be consulted if stained or odorous soils; underground storage tanks; or abandoned or closed wells, mines, or septic systems are encountered. The project proponent will also notify the appropriate federal, State, and/or local agencies. A variety of steps may be taken at the discretion of the project proponent. Among those steps are the following: • Avoid the area containing the stained/odorous soils or infrastructure. • Perform a Phase I ESA to determine the nature, extent, and level of hazard to the public and construction workers if construction needs to occur in the exact location of the soils or infrastructure. • Clean up the area or coordinate with the owner of the affected parcel to perform cleanup activities. Should the project proponent elect to clean up activities on its own, all hazardous substances encountered will be removed and properly disposed of by a licensed contractor in accordance with federal and State regulations.	LTS	

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
Impact HHM-4 (NTMA & LTMA): *Creation of Safety Hazards, Including Bird Strike, in the Vicinity of a Public or Private Airstrip*	PS		Mitigation Measure HHM-4 (NTMA & LTMA): *Prepare Site-Specific Impact Assessments and, If Necessary, Coordinate with Affected Airport(s) to Prepare and Implement Wildlife Hazard Management Plan(s)* Future CEQA documents related to the proposed program will include analyses of bird strike hazards in those situations where NTMAs or LTMAs would increase the amount of bird habitat or the amount of inundated floodplain within the following distances: • 5,000 feet from airports serving piston-powered aircraft • 10,000 feet from airports serving turbine-powered aircraft • 5 statute miles from airports where the wildlife attractant may cause hazardous wildlife movement into or across the approach or departure airspace Each analysis will consider the size of the airport, the species of birds likely to be present near the proposed improvements, the proximity to any known migratory bird corridors (e.g., the Pacific Flyway), and the number of previously documented bird-strike incidents at the airport (if any). The analysis will determine whether the project-related increase in bird habitat would be substantial compared to existing bird habitat that is already present in the airport vicinity. If the results of the site-specific analysis determine that the impact would be significant, the project proponent will consult and coordinate with the affected airport operator to determine whether a wildlife hazard management plan is required. If required, the project proponent will coordinate with the affected airport to prepare and implement such a plan pursuant to 14 CFR Part 139. The wildlife hazard management plan will identify the hazardous wildlife attractants on or near the airport, the appropriate damage management techniques to minimize the wildlife hazard, and prioritize the management measures. The plan will be prepared in consultation with a wildlife biologist. Bird control techniques may include but are not limited to maintaining grass at a height of less than 8 inches, preventing growth of large emergent plants (e.g., cattails), installing barriers between water features and nearby vegetated areas, installing signs prohibiting feeding of birds, removing nesting materials, and hazing birds to discourage them from using water features.	LTS	
Impact HHM-5 (NTMA & LTMA): *Exposure to Substantial Hazard from Wildland Fires*	LTS		N/A	LTS	
Impact HHM-6 (NTMA & LTMA): *Increased Human Health Hazards Associated with Vector-Borne Diseases*	PS		Mitigation Measure HHM-6 (NTMA & LTMA): *Implement Workplace Precautions against Vector-Borne Diseases and Coordinate with and Support Local Vector Control District Programs* The project proponent will implement the following workplace precautions against vector-borne diseases at the construction sites of future site-specific projects: • Conduct construction worker personnel training that covers the potential hazards and risks associated with exposure to and protection from vector-borne diseases such as West Nile virus. Instruct personnel in the use of proper construction apparel and warn them against handling any dead animals (particularly birds) with bare hands. • Inspect work areas and eliminate sources of standing water that could provide breeding habitat for mosquitoes. For example, eliminate uncovered, upright containers that could accumulate water, and fill or drain potholes or other areas where water is likely to accumulate. • Provide insect repellent for worker use at construction sites. As recommended by the Centers for Disease Control and Prevention (CDC), the insect repellent should contain active ingredients that have been registered with EPA for use as insect repellents on skin or clothing such as diethyl(meta)toluamide (DEET) or picaridin (KBR 3023) (CDC 2010). • Notify the appropriate city or county health department about dead birds found at any project site. In addition, the project proponent will coordinate with and support local vector control districts in implementing their vector control activities at the time of future site-specific projects, as appropriate and feasible. Support will include but will not be limited to the following actions: • Inform the appropriate vector control district about implementation of site-specific projects. Provide information requested to support vector control activities along waterways affected by those site-specific projects in a manner that could increase exposure to vector-borne diseases. • Implement applicable BMPs from the DPH publication entitled *Best Management Practices for Mosquito Control on California State Properties* (DPH 2008).	LTS	

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
3.13 Hydrology					
Impact HYD-1 (NTMA & LTMA): *Increased Erosion and Siltation from Modifying the Flood Conveyance System*	LTS		Mitigation Measure HYD-1 (LTMA): *Identify and Implement Measures to Minimize Downstream Erosion and Siltation* Before a project is approved and implemented, the project proponent will perform an analysis of the new facilities to determine whether the facility will experience or cause elsewhere an erosion or siltation problem. To the extent possible, the facility will be designed to avoid or minimize these effects. Where avoidance is not feasible, the project proponent will address any erosion or siltation impacts through bank protection measures on- or off-site depending on where the increase erosion or siltation may occur. Measures could include moving levee foundations landward away from the eroding bank, maintaining waterside vegetation, dredging to remove siltation, or installing rock revetments, riprap, or other engineered structures along the eroding banks to reduce further erosion and protect the foundation of the levee. These measures will be implemented or funded by the project proponent.	LTS	
Impact HYD-2 (NTMA & LTMA): *Increased Flooding from Modifying the Flood Conveyance System*	LTS		N/A	LTS	
Impact HYD-3 (NTMA & LTMA): *Placement of Housing within a 100-Year Flood Hazard Area*	B		N/A	LTS	
Impact HYD-4 (NTMA & LTMA): *Modification of the Flood Conveyance System in a Way that Would Redirect Flood Flows and Increase Flood Risk or Exposure of People or Structures to a Risk of Loss, Injury, or Death Involving Flooding*	LTS		N/A	LTS	
Impact HYD-5 (NTMA & LTMA): *Increased Risk of Inundation by Seiche*	LTS		N/A	LTS	
Impact HYD-6 (NTMA & LTMA): *Reduced Long-Term Water Supplies from Reservoir Operational Criteria Changes*	LTS		N/A	LTS	
3.14 Land Use and Planning					
Impact LU-1 (NTMA & LTMA): *Physical Division of an Established Community as a Result of Conveyance-Related Management Activities*	LTS		N/A	LTS	
Impact LU-2 (NTMA & LTMA): *Physical Division of an Established Community as a Result of Storage-Related Management Activities*	NI		N/A	NI	
Impact LU-3 (NTMA & LTMA): *Physical Division of an Established Community as a Result of Policies Associated with the Required Level of Flood Protection*	LTS		N/A	LTS	
Impact LU-4 (NTMA & LTMA): *Physical Division of an Established Community as a Result of Other NTMAs [& LTMAs]*	LTS		N/A	LTS	
Impact LU-5 (NTMA & LTMA): *Alterations of Land Uses or Patterns of Land Use as a Result of Conveyance-Related Management Activities that Could Cause a Substantial Adverse Physical Environmental Effect*	S		Mitigation Measure LU-5a (NTMA &LTMA): *Provide Financial Compensation for Property Loss and Relocation Assistance to Compensate for the Removal and Displacement of Residential Land Uses* The project proponent will provide financial compensation for property loss and relocation expenses to any person displaced because of the acquisition of real property, as required by the State of California Relocation Assistance Act (Chapter 16, Section 7260 et seq. of the California Government Code). Before an offer is made to each property owner, all real property to be acquired will be appraised to determine its fair market value. The project proponent will assist property owners in finding comparable replacement housing and will pay for actual, reasonable moving costs consistent with applicable State and federal law.	LTS (removal of residences)	SU

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
			Mitigation Measure LU-5b (NTMA & LTMA): *Implement Mitigation Measure AG-1a (NTMA), "Preserve Agricultural Productivity of Important Farmland to the Extent Possible"* Mitigation Measure LU-5c (NTMA & LTMA): *Implement Mitigation Measure AG-1c (NTMA), "Establish Conservation Easements Where Potentially Significant Agricultural Land Use Impacts Still Occur after Implementation of Mitigation Measures AG-1a and AG-1b"*	SU (agricultural land use pattern changes)	
			Mitigation Measure LU-5d (NTMA & LTMA): *Implement Mitigation Measure REC-1 (NTMA), "Replace Displaced Recreational Facilities and Access"* Mitigation Measure LU-5e (NTMA & LTMA): *Implement Mitigation Measure REC-2 (NTMA), "Avoid Construction Activities and Staging near Recreational Facilities and Time Such Activities to Avoid the High-Use Recreation Season"* Mitigation Measure LU-5f (LTMA): *Implement Mitigation Measure REC-7 (LTMA), "Replace Displaced Recreational Facilities"*	LTS (recreational land use changes)	
Impact LU-6 (NTMA & LTMA): *Alterations of Land Uses or Patterns of Land Use as a Result of Storage-Related Management Activities that Could Cause an Adverse Physical Environmental Effect*	LTS		N/A	LTS	
Impact LU-7 (NTMA & LTMA): *Alterations of Land Uses or Patterns of Land Use as a Result of Policies Related to the Required Level of Flood Protection that Would Cause a Substantial Adverse Physical Environmental Effect*	TS		N/A	TS	
Impact LU-8 (NTMA & LTMA): *Alterations of Land Uses or Patterns of Land Use as a Result of Other NTMAs [& LTMAs] that Would Cause a Substantial Adverse Physical Environmental Effect*	S		Mitigation Measure LU-8 (NTMA & LTMA): *Implement Mitigation Measure LU-5b (NTMA)*	SU	

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
3.15 Noise					
Impact NOI-1 (NTMA & LTMA): *Exposure of Sensitive Receptors to Temporary and Short-Term Construction-Related Noise*	PS (construction noise)		Mitigation Measure NOI-1 (NTMA & LTMA): *Implement Noise-Reducing Construction Practices* Not all measures listed below may be applicable to each management action. Instead, these measures serve as an overlying mitigation framework to be used for specific management actions. The applicability of measures listed below would vary based on the lead agency, location, timing, and nature of each management action. The project proponent will implement the following measures during construction activities when noise-sensitive receptors are located nearby and could be subject to substantial construction noise in excess of applicable standards or substantially greater than existing conditions. • Equipment will be operated, stored, and/or maintained as far away as practical from sensitive noise receptors. • Construction equipment will be properly maintained per manufacturers' specifications and fitted with the best available noise suppression devices (e.g., mufflers, silencers, wraps). All impact tools will be shrouded or shielded, and all intake and exhaust ports on power equipment will be muffled or shielded. • Equipment that is quieter than standard equipment will be used in the vicinity of sensitive noise receptors. For example, electrically powered equipment will be used instead of internal combustion equipment where use of such equipment is a readily available substitute that accomplishes program tasks in the same manner as internal combustion equipment. • Construction equipment operating in the vicinity of sensitive noise receptors will not be left idling for extended periods between construction activities. • To the greatest extent feasible, construction activities will limit the use of "alarms" (e.g., backup indicators) on construction equipment in the vicinity of sensitive noise receptors. One mechanism to achieve this objective is by providing adequate turning movement distance such that construction and delivery vehicles can turn around without having to operate in reverse. • Construction equipment will be inspected before first use at a project site located near sensitive noise receptors and at least once during construction for compliance with noise reduction measures. • To the greatest extent feasible, construction outside of normal construction hours will be minimized or avoided completely when located in the vicinity of sensitive noise receptors. Except under extreme circumstances (as in the case of construction of a slurry cutoff wall, which must be in continuous operation), construction activities will be limited to normal construction hours or hours identified in applicable local noise regulations. • Where stationary construction equipment would result in exceedence of noise standards at a nearby sensitive receptor, temporary noise barriers will be installed where feasible between the stationary construction operation and the sensitive receptor. • Speed limits will be established and enforced for construction traffic.	LTS	
	LTS (construction traffic noise)		Mitigation Measure NOI-1b (LTMA): *Minimize Construction-Related Traffic Noise* Where the project-specific noise analysis conducted as part of CEQA review for a project indicates that noise from construction traffic could exceed applicable standards at a sensitive receptor, an additional individual traffic noise analysis will be prepared. The individual traffic noise analysis will be conducted as haul routes are determined to establish existing average noise conditions and model the noise contribution from project construction. The traffic noise analysis will take into account daily traffic volumes, fleet mixes (percentages of automobiles, medium-duty trucks, and heavy-duty trucks during daytime, evening, and nighttime hours), and vehicle speeds along designated haul-route roadways. If the individual traffic noise analysis also concludes that applicable noise standards are exceeded at a sensitive receptor, the analysis will identify additional measures to reduce noise levels at sensitive receptors and these measures will be implemented by the project proponent. Measures could include (but would not be limited to) using alternative traffic routes, splitting trips among multiple routes, or directing noisier vehicles to use less noisesensitive routes.		

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
Impact NOI-2 (NTMA & LTMA): *Exposure of Sensitive Receptors to, or Generation of, Excessive Groundborne Vibration*	PS		Mitigation Measure NOI-2 (NTMA & LTMA): *Implement Vibration-Reducing Construction Practices* Not all measures listed below may be applicable to each management action. Instead, these measures serve as an overlying mitigation framework to be used for specific management actions. The applicability of measures listed below would vary based on the lead agency, location, timing, and nature of each management action. The project proponent will implement the following measures before and during construction activities that occur within 300 feet of a receptor sensitive to vibration disturbance: • A disturbance coordinator will be designated, and this person's contact information will be posted in a location near the construction site that is clearly visible to the nearby receptors most likely to be disturbed. The disturbance coordinator will manage complaints and concerns resulting from activities that cause vibrations. The severity of the vibration concern will be assessed by the disturbance coordinator and, if necessary, evaluated by a qualified noise and vibration control consultant. • Vibration monitoring will be conducted before and during construction-generated vibration activities occurring within 100 feet of historic structures. Every attempt will be made to limit construction-generated vibration levels in accordance with Caltrans's recommendations during pile driving and other groundborne noise- and vibration-generating activities in the vicinity of historic structures. • If estimated or recorded vibration levels meet or exceed levels that could damage an adjacent historic feature, the adjacent historic features will be covered or temporarily shored, as necessary, to protect them from vibrations. • For pile driving required within 100 feet of residences or other occupied structures, alternative installation methods (e.g., pile cushioning, jetting, predrilling, cast-in-place systems, resonance-free vibratory pile drivers) will be used where feasible to reduce the number and amplitude of blows required to seat the pile. If the estimated vibration levels exceed levels that could damage the structures, they will be covered or temporarily shored, as necessary, to protect them from vibrations. • Pile-driving activities conducted within 300 feet of sensitive receptors will occur during daytime hours to avoid causing sleep disturbance during evening and nighttime hours.	LTS	

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
Impact NOI-3 (NTMA & LTMA): *Exposure of Sensitive Receptors to Operational Noise*	PS		Mitigation Measure NOI-3 (NTMA & LTMA): *Implement Design Techniques to Reduce Operational Noise* The project proponent will implement the following measures during operation: • Stationary noise sources (e.g., water pumps) will be located as far away from sensitive receptors as feasible. • Design techniques to reduce noise (e.g., structure encasing, installation below grade) will be implemented for stationary noise sources (e.g., water pumps) in the vicinity of sensitive receptors. If noise modeling indicates that noise reduction techniques are sufficient to allow the stationary noise source to be located closer to sensitive noise receptors and still not violate applicable noise standards, then the facility may be located closer to the receptor.	LTS	
3.16 Population, Employment, and Housing					
Impact PEH-1 (NTMA & LTMA): *Inducement of Population Growth, Either Directly or Indirectly, through an Increase in Regional Economic Output Resulting from Construction or Operations Activities*	LTS		N/A	LTS	
Impact PEH-2 (NTMA & LTMA): *Displacement of Existing Housing or People through Changes in Land Use or Policy Changes*	LTS		N/A	LTS	
Impact PEH-3 (NTMA & LTMA): *Changes in Employment, Either Directly or Indirectly, through Changes in Land Use or Policy Changes*	LTS		N/A	LTS	
3.17 Public Services					
Impact PS-1 (NTMA & LTMA): *Physical Effects Resulting from the Need for New or Altered Law Enforcement or Fire Protection Facilities and Services*	LTS		N/A	LTS	
3.18 Recreation					
Impact REC-1 (NTMA & LTMA): *Substantial Permanent Displacement of or Decreased Access to Recreational Facilities Caused by Levee Reconstruction, Improvements, or Setbacks*	PS		Mitigation Measure REC-1 (NTMA & LTMA): *Replace Displaced Recreational Facilities and Access* Where recreational facilities or access must be displaced by levee reconstruction or improvements, facilities and access will be restored on site as part of the project design. If the facilities or access cannot be replaced at the project site, they will be replaced as close as possible to the original project site. Alternatively, existing facilities could be expanded to meet the demand for recreational opportunities lost with the removal of the facility at the project site, or to compensate for the loss of access resulting from project implementation. Where new facilities must be constructed or existing facilities are expanded, these actions will undergo necessary environmental review and mitigation will be implemented as appropriate. Please also see Impact Rec-6 (NTMA) below regarding environmental effects of new facilities.	LTS	
Impact REC-2 (NTMA & LTMA): *Temporary Decrease in Opportunities for Recreation or Access to Recreational Facilities during Construction of Conveyance or Storage Improvements*	LTS		Mitigation Measure REC-2 (NTMA & LTMA): *Minimize Construction Activities and Staging near Recreational Facilities and Time Such Activities to Avoid the High-Use Recreation Season* Where feasible, the project proponent will avoid placing construction staging areas or borrow areas near recreational facilities or popular use areas, and will avoid using key recreation access routes as access and haul routes for construction. Where avoiding facilities is not possible, construction will be scheduled to minimize temporary closure or access restrictions or other temporary adverse effects on recreation facilities. Numerous factors must be considered in the siting and timing of construction activities and selection of access and haul routes; for some projects, however, opportunities may exist to select from among several options those that would have the smallest effect on recreation Where feasible, the project proponent will schedule construction activities to avoid the high-use recreation season for the potentially affected areas. This frequently will not be possible for major repairs or upgrades because those major construction activities typically occur during the dry season (May through October). However, in some cases it may be possible to focus construction activity during the months when recreational activity would be least affected. In addition, the project proponent will avoid scheduling construction activities on weekend days, where feasible, to help minimize effects on recreational activities.	LTS	
Impact REC-3 (NTMA & LTMA): *Reduced Functionality of Recreational Facilities and Decreased Opportunities for Recreation at Reservoirs as a Result of Changes in Reservoir Operational Criteria*	LTS		N/A	LTS	

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
Impact REC-4 (NTMA & LTMA): *Boat Navigation Hazards and Passage Restrictions for Recreational Boat Traffic Resulting from Construction Activities Conducted from Barges in Waterways*	PS		Mitigation Measure REC-4 (NTMA & LTMA): *Maintain Safe Boat Passage and Provide Appropriate Safety Measures to Minimize Navigation Hazards Associated with Construction Equipment and Activity in Waterways* The project proponent will establish construction exclusion zones around barges and other equipment in waterways to keep boats from approaching too closely. The project proponent will follow all standard U.S. Coast Guard practices for navigation safety and communications, and will ensure that barges and other construction equipment are lit at night to avoid potential boat collisions. The objectives of this mitigation measure are to maintain safe boat passage in affected waterways to the maximum extent possible, and to minimize boat traffic delays, particularly in high-traffic areas. Stopping boat traffic may be necessary for brief periods (for example, while material or equipment is being transferred to or from a barge); however, the expectation is that with appropriate caution, boat traffic will be able to navigate past construction sites at most times. Boats may be required to reduce speeds in the vicinity of the barge for safe passage. The period of time when boat traffic must be restricted will be minimized to the extent feasible.	LTS	
Impact REC-5 (NTMA & LTMA): *Decrease in Quality of Terrestrial and Water-Based Recreation as a Result of Removal of Woody Vegetation from Levees*	LTS		N/A	LTS	
Impact REC-6 (NTMA & LTMA): *Environmental Effects Associated with Construction of Recreational Facilities and Access to Replace Facilities Displaced by Management Activities*	LTS		N/A	LTS	
Impact REC-7 (LTMA): *Substantial Displacement of or Decreased Access to Recreational Facilities Caused by Conveyance-Related and Other Management Activities*	N/A	PS	Mitigation Measure REC-7 (LTMA): *Replace Displaced Recreational Facilities* This mitigation measure would be similar to Measure REC-1 (NTMA) as described above, but mitigation would be required at a broader range of recreational facilities and sites, beyond those associated with levees. Specifically, mitigation would be required at reservoirs, within bypasses, and at areas outside the present flood control system (for example, where a new bypass is constructed).	N/A	LTS
3.19 Transportation and Traffic					
Impact TRN-1 (NTMA & LTMA): *Temporary Increases in Traffic from Construction Activities*	PS		Mitigation Measure TRN-1 (NTMA & LTMA): *Implement Measures to Reduce Construction Traffic* To minimize impacts on traffic circulation and roadway capacity, including emergency vehicle access, the project proponent will implement the following measures: • Require construction contractors to limit truck trips to less than 50 trips per hour on any affected roadway during the morning and afternoon or evening peak-hour periods, if feasible. • Before construction of major projects that could exceed this threshold, prepare a traffic management plan that identifies the number of truck trips, time of day for truck arrivals and departures, limits on the number of truck trips, and traffic circulation control measures. Control measures typically include advertising planned lane closures, installing warning signage, providing a flagperson to direct traffic flows when needed, and implementing methods to maintain continued access by emergency vehicles. During project construction, access to existing land uses will be maintained at all times where feasible, with detours used as necessary during road closures. • Submit the traffic management plan to the appropriate city or county public works, fire, police, and sheriff's departments for comments. • Implement the traffic management plan and feasible recommendations by the appropriate departments.	LTS	PSU
Impact TRN-2 (NTMA & LTMA): *Removal or Temporary Disruption of Current Transportation Infrastructure*	PS		Mitigation Measure TRN-2 (NTMA & LTMA): *Provide Detours for Closed or Disrupted Routes* If the effects of a project on roadways will be temporary, the project proponent will provide easily recognizable detour signs and prepare and implement a traffic management plan to minimize traffic impacts, in consultation with the local transportation agency. If management actions require removal of transportation infrastructure, efforts will be undertaken to make sure that a convenient transportation alternative option is available for travel. For effects on rail lines, the project proponent will work with the respective rail owner to maintain maximum use of the line.	LTS	PSU
Impact TRN-3 (NTMA & LTMA): *Increased Hazards due to Construction and Temporary Design Feature*	LTS		N/A	LTS	

EIR SECTION AND IMPACT(S)	LEVELS OF SIGNIFICANCE BEFORE MITIGATION[a]		MITIGATION MEASURE	LEVELS OF SIGNIFICANCE AFTER MITIGATION[b]	
	NTMAs	LTMAs		NTMAs	LTMAs
Impact TRN-4 (NTMA & LTMA): *Closure or Reduction in Capacity of an Emergency Response or Evacuation Route*	PS		Mitigation Measure TRN-4 (NTMA & LTMA): *Minimize Effects of Reduction or Closure of an Emergency Response or Evacuation Route* Before the start of construction, all emergency response agencies will be consulted to determine the impacts of the project on their emergency response and evacuation routes. If routes cannot be maintained, then the passage blockage will occur during periods of minimum demand, such as by working at night or maintaining emergency evacuation routes during periods of most likely use (flood season).	LTS	
Impact TRN-5 (NTMA & LTMA): *Conflict with Adopted Policies, Plans, or Programs regarding Public Transit, Bicycle, or Pedestrian Facilities*	LTS		N/A	LTS	
3.20 Utilities and Service Systems					
Impact UTL-1 (NTMA & LTMA): *Potential Disruption of Utility Service and Modification or Relocation of Utility Infrastructure from Project Construction Activities*	PS		Mitigation Measure UTL-1 (NTMA & LTMA): *Verify Utility Locations, Coordinate with Utility Providers, Prepare and Implement a Response Plan, and Conduct Worker Training with Respect to Accidental Utility Damage* Before construction begins, the project proponent and its primary contractors will coordinate with applicable regulatory agencies and utility providers to implement orderly relocation of utilities that need to be removed or relocated. The project proponent and its primary contractors will implement all of the following measures: • The appropriate agencies and affected landowners will be notified of any potential interruptions in service. • Before the start of construction, the locations of utilities will be verified through field surveys and the use of Underground Service Alert services. Any buried utility lines will be clearly marked in areas where construction activities would take place and on the construction specifications before any earth-moving activities begin. • Many of the Board's encroachment permits for utility facilities contain clauses requiring the owner to remove and/or relocate the facility at the owner's expense. If necessary, infrastructure will be removed, relocated to safer locations, or made flood resistant in coordination with all potential service providers known to have, or potentially having, utility infrastructure in the project area. • If necessary, infrastructure will be flood-proofed (e.g., raised on piers) in coordination with all transmission providers known to have infrastructure in the project area. • Before the start of construction, a response plan will be prepared to address the potential for accidental damage to a utility. The plan will identify chain-of-command rules for notifying authorities and appropriate actions and responsibilities to ensure the safety of the public and workers. The construction contractor will conduct worker education training on responding to situations when utility lines are accidentally damaged. The project proponent and its contractors will implement the response plan during construction activities. • Utility relocations will be staged to minimize interruptions in service.	LTS	
Impact UTL-2 (NTMA & LTMA): *Potential Disruption of Utility Service and Modification or Relocation of Utility Infrastructure from Project Operation*	B		N/A	B	
Impact UTL-3 (NTMA & LTMA): *Increased Generation of Solid Waste during Project Construction*	LTS		N/A	LTS	
3.21 Water Quality					
Impact SWQ-1 (NTMA & LTMA): *Temporary Construction-Related Effects on Water Quality that Would Not Cause Violations of Existing Water Quality Standards or Otherwise Substantially Degrade Water Quality*	LTS		N/A	LTS	
Impact SWQ-2 (NTMA & LTMA): *Modification of Reservoir Operations that Would Not Cause Violations of Existing Water Quality Standards or Otherwise Substantially Degrade Water Quality*	LTS		N/A	LTS	
Impact SWQ-3 (NTMA & LTMA): *Alteration of Floodplain Inundation Patterns that Could Result in Substantial Erosion and Adversely Affect Water Quality*	PS		Mitigation Measure SWQ-3 (NTMA & LTMA): *Conduct and Comply with Phase I Environmental Site Assessments* The project proponent will conduct a Phase I Environmental Site Assessment to determine the presence of any hazardous materials at all sites where new floodplain would be exposed to inundation. Project proponents of subsequent site-specific projects will implement all the recommended actions and measures identified in the Phase I Environmental Site Assessment. In addition, the project proponent will be required to comply with the federal and California endangered species acts and incorporate associated measures into the project design/planning features.	LTS	

Notes:

N/A Either impact mechanism, need for mitigation, and/or determination of significance after mitigation is not applicable

[a] Impact Significance before Mitigation

B Beneficial
NI No impact
LTS Less than significant
PS Potentially significant
S Significant
TS The impact is too speculative to make a significance determination

[b] Impact Significance after Mitigation

B The impact would be beneficial and no mitigation is required; therefore, the impact would remain beneficial.
LTS The impact would be less than significant and no mitigation is required; therefore, the impact would remain less than significant, whether or not mitigation has been provided to further reduce the impact.
SU Significant and unavoidable
PSU Potentially significant and unavoidable
TS The impact is too speculative to make a significance determination

Although some impacts are identified as significant and unavoidable or potentially significant and unavoidable in Table ES-1, these impact conclusions may or may not apply to any given project, as most projects would result in less-than-significant impacts after mitigation, but some projects may not, as described in Chapter 3.0 and summarized in Section 6.3 "Significant and Unavoidable Impacts."

CENTRAL VALLEY
FLOOD MANAGEMENT
PLANNING PROGRAM

FloodSAFE
CALIFORNIA

Executive Summary
Draft Program Environmental Impact Report

Appendix A – 2012 Central Valley Flood Protection Plan
Appendix B – 2012 Central Valley Flood Protection Plan: Management Actions Report
Appendix C – 2012 Central Valley Flood Protection Plan: Program Environmental Impact Report, Final Scoping Report
Appendix D – CALFED Bay-Delta Program Final Programmatic Environmental Impact Statement/Environmental Impact Report: Executive Summary
Appendix E – 2012 Central Valley Flood Protection Plan Conservation Framework
Appendix F – Climate Change – Key Scoping Plan Elements, Best Management Practices, and Thresholds
Appendix G – Glossary

Mary Ann Hadden
Staff Environmental Scientist
Division of Flood Management
Department of Water Resources
c/o MWH
3321 Power Inn Road, Suite 300
Sacramento, CA 95826
(916) 574-1431
DPEIRcomments@water.ca.gov

http://www.water.ca.gov/cvfmp/documents.cfm

Edmund G. Brown Jr.
Governor
State of California

John Laird
Secretary
The California Natural Resources Agency

Mark W. Cowin
Director
Department of Water Resources

Department of Water Resources
The California Natural Resources Agency
State of California