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Introduction

The Los Vaqueros Reservoir Expansion Investigation (Investigation) is a feasibility study that provides an evaluation of alternatives to develop environmental water supplies and improve the reliability and quality of San Francisco Bay Area (Bay Area) water supplies, primarily through the expansion of Los Vaqueros Reservoir in Contra Costa County, California. This Feasibility Report for the Investigation presents potential plans to accomplish the project objectives and makes recommendations for further action.

Expansion of Los Vaqueros Reservoir, owned and operated by Contra Costa Water District (CCWD), is being conducted in two phases. A *Final Environmental Impact Statement (EIS)/Environmental Impact Report (EIR)* was completed in 2010 (2010 Final EIS/EIR) by Reclamation and CCWD and served as the basis for Phase 1 construction, which was completed in 2012. A draft *Supplement to the Final EIS/EIR* (Supplement) was released to the public in July of 2017 to reflect changes since the 2010 Final EIS/EIR, including refined alternatives being considered for a Phase 2 expansion.



Photo by Stephen Joseph

Los Vaqueros Reservoir

This chapter summarizes the purpose and scope for the Investigation; pertinent Federal, State of California, and local authorization and legislation; project location and study area; background; related studies, projects, and programs; and report organization.

Background

Los Vaqueros Reservoir is an offstream storage facility located in the coastal foothills west of the Sacramento-San Joaquin Delta (Delta) in the eastern Bay Area. CCWD, owner and operator of the reservoir, provides water for 500,000 customers throughout central and eastern Contra Costa County as one of the largest urban water districts in California (CCWD 2017). CCWD completed construction of the Los Vaqueros Project in 1997 with an original storage capacity of 100 thousand-acre-feet (TAF). An initial expansion, Phase 1, to 160 TAF was completed in 2012. The primary purpose of both phases of the project is to address seasonal water quality degradation associated with CCWD's Delta water supplies. CCWD stores water in Los Vaqueros Reservoir that is diverted from the Delta when water quality is favorable, for later release and blending when Delta water quality is degraded. The 160 TAF reservoir also provides important emergency water supply storage and, as secondary benefits, recreation and flood management.

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Desire to develop water resources for beneficial uses and to protect and improve ecosystem conditions throughout the California has affected the demand for water statewide. The hub of California's water supply system is the Delta, the largest estuary on the west coast and home to a diverse array of fish and wildlife. This overlap of estuarine ecosystem and water supply system has given rise to increasing conflicts between management of Delta water resources to meet urban and agricultural demands, and sustaining or improving Delta ecosystem functions. Water management operations, loss of habitat in the Delta and its watershed, and numerous other factors have contributed to the decline and listing of several Delta fish under the Federal Endangered Species Act (Federal ESA) and/or California Endangered Species Act (CESA). Resulting regulatory actions taken to protect these species have constrained water supply management operations and exports in the Delta, as evidenced by pumping curtailments at south Delta export facilities in recent years.

Furthermore, the decline of the Delta ecosystem is strongly tied to conditions in its tributary watersheds, including tributary streams and wetlands. A century ago, the Central Valley of California contained over 4 million acres of natural wetlands, but since then, over 90 percent of the Central Valley wetlands have disappeared. Today, thousands of acres of wetlands have been protected through Federal, state, and local collaborative efforts, supporting millions of wintering waterfowl and serving as critical stopovers for migratory birds along the Pacific Flyway. However, these refuges often lack adequate and reliable water supplies to meet habitat needs.

Various environmental programs and regulatory actions have been established to support Delta fisheries protection, habitat management, and related environmental objectives in California. These actions have resulted in dedicating a larger portion of existing water supplies to environmental demands, increasing demands on California's water infrastructure. However, a portion of the water supplies needed to fully meet environmental demands currently has a low priority in California's water system, increasing both the cost for environmental water management programs to implement actions and the difficulty in managing these water assets in the future. There is a resulting need to provide reliable, long-term water supplies and improve operational flexibility for environmental water management programs.

Water agencies in the Bay Area rely on a variety of local and imported water sources, including a significant volume of supplies from the Delta, to meet demands. Despite aggressive conservation, recycling, and other water programs, many agencies continue to encounter substantial reductions in the quantity and/or quality of available water supplies. Recent regulatory actions, such as pumping curtailments, have limited the management flexibility of Delta water diversions. In response, water agencies dependent on the Delta have experienced a dramatic reduction in the reliability of delivered water supplies to water users. There is a need to better manage Delta water resources for municipal and industrial (M&I) users in the Bay Area, particularly during dry and critically dry years.

Providing high quality, low salinity water to CCWD customers is one of the primary operational goals established by CCWD for the existing Los Vaqueros Reservoir. In addition, increasingly stringent water treatment regulations are driving the need for either continual water treatment upgrades or source water quality improvements for water agencies supplying water diverted from the Delta.

Purpose and Scope

The primary purpose of this Feasibility Report is to describe the formulation and evaluation of alternatives for a Phase 2 expansion to address identified water resources problems and opportunities in the study area, including developing water supplies and facilitating water transfers to support environmental water management programs and improve the reliability and quality of water delivered to the Bay Area. The scope of this report includes the following topics:

- Description of existing and future water resources and related problems and needs in the study area warranting Federal consideration and identification of planning objectives to address these problems and needs.
- Summary of the plan formulation process, including planning constraints, principles, and criteria used to help guide the study.
- Formulation, evaluation, and comparison of alternative plans considered.
- Recommendation of a preferred plan for implementation.
- Conclusions and recommendations for future action.

Study Overview and Status

The Investigation is one of five surface water storage studies recommended in the CALFED Bay-Delta Program (CALFED) *Programmatic Environmental Impact Statement/Report* (PEIS/R) and *Programmatic Record of Decision* (ROD) from August 2000. Preliminary studies in support of the CALFED PEIS/R considered more than 50 surface water storage sites throughout California and recommended more detailed study of five sites identified in the CALFED Programmatic ROD (CALFED 2000a, 2000b, 2000c), including expanding Los Vaqueros Reservoir.

The planning phase of the Investigation began in January 2001. At that time, the U.S. Department of the Interior, Bureau of Reclamation (Reclamation), the California Department of Water Resources (DWR), and CCWD began appraisal-level studies of the potential to expand Los Vaqueros Reservoir to address regional water quality and supply reliability needs. Most of this early work focused on determining whether an expanded reservoir could meet California state and Federal program goals (i.e., CALFED goals) and the CCWD Board of Directors (CCWD Board) Principles. The *Project Concept Report* prepared by CCWD in 2002 was the first report to present preliminary information on initial alternatives and benefits of the expansion project (CCWD 2002).

The appraisal-level studies indicated that expanding the reservoir was technically feasible and could provide water quality and supply reliability benefits to agencies in the region, as well as provide environmental water management benefits. Subsequently, Reclamation was directed in the *Omnibus Appropriations Act of 2003* (Public Law 108-7) to conduct a feasibility-level investigation of the potential expansion of Los Vaqueros Reservoir. In 2004, voters in CCWD's service area were asked to vote on whether CCWD should consider expanding the reservoir. The advisory ballot measure won approval, and as a result, the proposed expansion project was

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further developed and refined through preparation of environmental documentation in accordance with the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA).

After the *Initial Economic Evaluation for Plan Formulation Report* was published by Reclamation in 2006 and the Draft EIS/EIR was published by Reclamation and CCWD in 2009, a two-step approach was implemented for expanding Los Vaqueros Reservoir. This approach included an interim expansion of Los Vaqueros Reservoir from 100 TAF to 160 TAF by CCWD (Phase 1), followed by a later expansion up to 275 TAF by Reclamation and other potential partners (Phase 2). The two-step approach allowed CCWD to complete the interim expansion to meet their immediate and urgent water supply needs. The initial Phase 1 expansion was completed as a local action by CCWD without financial assistance from the Federal Government, and the feasibility-level investigation was placed on hold. To implement the Phase 1 expansion, the CCWD Board certified the Final EIS/EIR (Reclamation and CCWD 2010), which described the phased implementation of the expansion, and approved an expansion from 100 TAF to 160 TAF on March 31, 2010. Reclamation issued a ROD in February 2011 to enter into an Integrated Operations Agreement with CCWD based on the 2010 Final EIS/EIR. Construction on the initial expansion began in early 2011 and was completed in 2012.

Reclamation and CCWD initiated Phase 2 of the Investigation in 2015 to evaluate the feasibility of further expanding Los Vaqueros Reservoir to develop water supplies and facilitate water transfers to improve environmental water management and regional water supply reliability. The current feasibility investigation includes updates/refinements to the project plans and studies previously performed to consider changes to existing conditions that have occurred since the 2010 Final EIS/EIR was released, as well as account for changes anticipated to take place within the coming years. These changes include:

- CCWD's initial expansion of Los Vaqueros Reservoir to 160 TAF, including actual operation/performance of the expanded reservoir and its integration with Central Valley Project (CVP) operations.
- Other local infrastructure changes.
- Potential new project participants.
- Likely future changes, such as changes to water management constraints resulting from potential regulatory actions in the Delta and large programs such as California WaterFix.

These changes alter the Investigation alternatives and project description as analyzed in the 2010 Final EIS/EIR. Reclamation and CCWD determined that the Supplement was needed to evaluate these changes and ensure that the changes do not result in impacts not previously contemplated. The draft Supplement was released for public review in July 2017. This Feasibility Report documents the potential technical, economic, environmental, and financial feasibility of the alternatives evaluated in the draft Supplement.

Study Authorization and Guidance

Reclamation is the lead Federal agency conducting the Investigation. CCWD, as owner of the existing reservoir, is the cost share partner and lead agency for California state and local requirements. The following subsections describe Federal, California state, and local authorization and legislation relevant to this project.

Federal Authorities

The Secretary of the Interior was authorized to undertake feasibility studies for enlarging Los Vaqueros Reservoir in February 2003 through Public Law 108-7:

The Secretary of the Interior, in carrying out CALFED-related activities, may undertake feasibility studies for Sites Reservoir, Los Vaqueros Reservoir Enlargement, and Upper San Joaquin Storage projects. These storage studies should be pursued along with ongoing environmental and other projects in a balanced manner.

In October 2004, the *Water Supply, Reliability, and Environmental Improvement Act* (Public Law 108-361) authorized Federal agencies to participate in implementing CALFED. Public Law 108-361 specifically authorizes the Secretary of the Interior to execute planning and feasibility studies for enlarging Los Vaqueros Reservoir:

The Secretary of the Interior is authorized to carry out the activities described in paragraphs (1) through (10) of subsection (d), to the extent authorized under the reclamation laws, the Central Valley Project Improvement Act (title XXXIV of Public Law 102-575; 106 Stat. 4706), the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.), the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.), and other applicable law.

Paragraph (1)(A)(i) of the bill further defines authorized activities related to water storage:

Planning and feasibility studies for projects to be pursued with project-specific study for enlargement of ...the Los Vaqueros Reservoir in Contra Costa County.

Public Law 108-361, Title I, Section 103, Subsection (a)(1) also states the following:

The Record of Decision is approved as a general framework for addressing the Calfed Bay-Delta Program, including its components relating to water storage, ecosystem restoration, water supply reliability (including new firm yield), conveyance, water use efficiency, water quality, water transfers, watersheds, the Environmental Water Account, levee stability, governance, and science.

At the conclusion of the Investigation, the Secretary of the Interior may submit the Feasibility Report to Congress with a recommendation to construct with Federal funding, according to Public Law 108-361, Title I, Section 103, Subsection (d)(1)(B)(i):

If on completion of the feasibility study for a project described in clause (i) or (ii) of subparagraph (A), the Secretary, in consultation with the Governor, determines

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that the project should be constructed in whole or in part with Federal funds, the Secretary shall submit the feasibility study to Congress.

Congress subsequently provided additional guidance in Section 208 of the *Consolidated Appropriations Act, 2014* (Public Law 113-76), which authorizes Reclamation to participate in water storage projects.

Congress subsequently provided the following additional guidance in Section 205 of the *Consolidated Appropriations Act, 2016* (Public Law 114-113):

SEC. 205. The Secretary of the Interior, acting through the Commissioner of Reclamation, shall—

...(2) complete the feasibility studies described in clauses (i)(II) and (ii)(I) of section 103(d)(1)(A) of Public Law 108–361 and submit such studies to the appropriate committees of the House of Representatives and the Senate not later than November 30, 2016;

...(4) provide a progress report on the status of the feasibility studies referred to in paragraphs (1) through (3) to the appropriate committees of the House of Representatives and the Senate not later than 90 days after the date of the enactment of this Act and each 180 days thereafter until December 31, 2017, as applicable. The report shall include timelines for study completion, draft environmental impact statements, final environmental impact statements, and Records of Decision.

The *Water Infrastructure Improvements for the Nation Act, 2015-2016*, further modified the deadline for completing feasibility documentation for consideration by Congress to 2019. According to Public Law 114-322, Title III, Subtitle J, Section 4007, Subsection (a)(2):

The term “State-led storage project” means any project in a Reclamation State that—

(A) involves a groundwater or surface water storage facility constructed, operated, and maintained by any State, department of a State, subdivision of a State, or public agency organized pursuant to State law; and

(B) provides a benefit in meeting any obligation under Federal law (including regulations).

Further guidance is provided in Title III, Subtitle J, Section 4007, Subsection (c)(1):

...the Secretary of the Interior may participate in a State-led storage project in an amount equal to not more than 25 percent of the total cost of the State-led storage project.

Under the act, the Secretary of the Interior may authorize construction of a state-led storage project if: 1) the participation has been requested by the Governor of the state; 2) the Secretary of

the Interior concurs that the project is technically and financially feasible and provides a Federal benefit; 3) sufficient non-Federal funding is available to complete the project; and 4) the state-led storage project sponsors are financially solvent. The act also states that at least a proportional share of the project benefits must be Federal benefits, including water supplies dedicated to specific purposes such as environmental enhancement and wildlife refuges.

Federal guidance on actions to benefit refuges is provided in Title III, Subtitle J, Section 4010, Subsection (c)(2):

(A) FEDERAL SHARE.—The Federal share of the cost of carrying out an activity described in this section shall be not more than 50 percent.

(B) NON-FEDERAL SHARE.—The non-Federal share of the cost of carrying out an activity described in this section—

- (i) shall be not less than 50 percent; and*
- (ii) may be provided in cash or in kind.*

Guidance in the CALFED Programmatic ROD

The principal objective of CALFED was to develop a comprehensive, long-term strategy to provide reliable water supplies to cities, agriculture, and the environment while restoring the overall health of the San Francisco Bay/Sacramento-San Joaquin Delta (Bay-Delta). The NEPA and CEQA lead agencies for the CALFED PEIS/R were Reclamation and DWR, respectively.

Several program elements were defined that, in combination, would help attain the overall goals of CALFED. The CALFED Programmatic ROD, signed by the Secretary of the Interior, recommended numerous projects and actions to increase water supply reliability, improve ecosystem health, increase water quality, and improve Delta levee stability (CALFED 2000a). Preliminary studies in support of the CALFED PEIS/R considered more than 50 surface water storage sites throughout California and recommended more detailed study of five sites in the Central Valley, including Los Vaqueros Reservoir. As part of the Storage Program element, the CALFED Programmatic ROD (CALFED 2000a) requested the Secretary of the Interior conduct feasibility studies of expanding Los Vaqueros Reservoir by up to 400,000 acre-feet with local partners as part of:

...a Bay Area water quality and water supply reliability initiative. As part of a Bay Area initiative, an expanded Los Vaqueros Reservoir would provide water quality and water supply reliability benefits to Bay Area water users.

Because the Investigation is an action contained within the CALFED Preferred Program Alternative, this Feasibility Report relies on alternatives development and screening included in the CALFED PEIS/R.

Local Authorities

The CCWD Board adopted a set of principles in April 2000 governing CCWD's participation in an expansion project. On June 25, 2003, the CCWD Board formally adopted the conditions approved by the voters to guide CCWD's participation in any expansion of Los Vaqueros Reservoir. On March 2, 2004, voters within CCWD's service area authorized the CCWD Board

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to participate with Federal and California state agencies in feasibility studies and environmental review of an expanded Los Vaqueros Reservoir.

Project Location and Study Area

Los Vaqueros Reservoir is located in the Kellogg Creek watershed of Contra Costa County, California, in the central and south Delta (Figure 1-1). The reservoir is located in the foothills west of the Delta in the eastern Bay Area. The primary study area for the Investigation includes the Los Vaqueros Reservoir watershed and associated facilities, central and south Delta, and service areas of potential local partner water agencies. The central and south Delta is roughly bound by the San Joaquin River on the north and the boundaries of the legal Delta to the south (as established in Section 12220 of the California Water Code).



Figure 1-1. Study Area

Prospective local partner water agencies include CCWD; Alameda County Water District (ACWD); Santa Clara Valley Water District (SCVWD); Alameda County Flood Control and Water Conservation District, Zone 7 (Zone 7); East Bay Municipal Utility District (EBMUD); Bay Area Water Supply and Conservation Agency (BAWSCA); Byron-Bethany Irrigation District (BBID); City of Brentwood (Brentwood); East Contra Costa Irrigation District (ECCID); San Francisco Public Utilities Commission (SFPUC); and San Luis & Delta-Mendota Water

Authority² (SLDMWA) (Figure 1-2). These are collectively referred to herein as Local Agency Partners.

Other potential partners include the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS), managing agencies of the south-of-Delta (SOD) wildlife areas and wildlife refuges (Refuges) that are designated in the Central Valley Project Improvement Act (CVPIA), and the Grassland Water District (GWD) which represents those privately owned/managed wetlands also included in these fourteen total Refuges under the CVPIA (Figure 1-3). Due to the potential influence on other programs and projects, an extended study area was identified for the Investigation. The extended study area includes the Refuges, operational areas of the CVP and State Water Project (SWP), and the service areas of other Bay Area water agencies that may be indirectly affected by project operations.

² The SLDMWA includes Banta-Carbona Irrigation District, Boardview Irrigation District, Byron-Bethany Irrigation District, Central California Irrigation District, the City of Tracy, Columbia Cana Company, Del Puerto Water District, Eagle Field Water District, Firebaugh Canal Water District, Fresno Slough Water District, Grassland Water District, Henry Miller Reclamation District #2131, James Irrigation District, Laguna Water District, Mercy Springs Water District, Oro Loma Water District, Pacheco Water District, Panoche Water District, Patterson Water District, Pleasant Valley Water District, Reclamation District #1606, San Benito County Water District, San Luis Water District, Santa Clara Valley Water District, Tranquility Water District, Turner Island Water District, West Side Irrigation District, West Stanislaus Irrigation District, and Westlands Water District.

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Key:
 ACWD = Alameda County Water District
 BAWSCA = Bay Area Water Supply and Conservation Agency
 BBID = Byron-Bethany Irrigation District
 Brentwood = City of Brentwood
 CCWD = Contra Costa Water District

EBMUD = East Bay Municipal Utility District
 ECCID = East Contra Costa Irrigation District
 SCVWD = Santa Clara Valley Water District
 SFPUC = San Francisco Public Utilities Commission
 Zone 7 = Alameda County Flood Control and Water Conservation District, Zone 7

Figure 1-2. Service Areas for Prospective Local Agency Partners

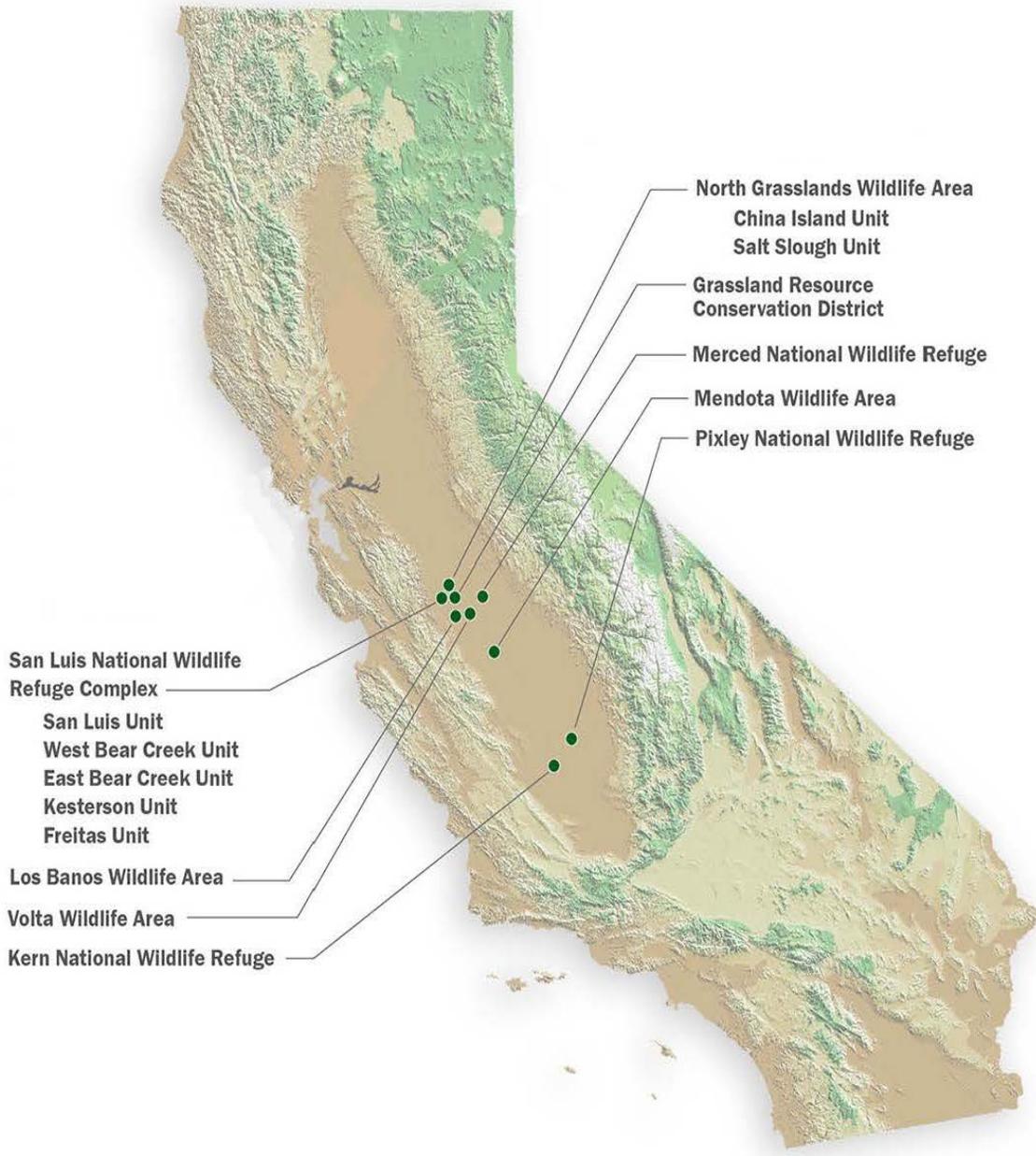


Figure 1-3. South of Delta Wildlife Refuges

Related Studies, Projects, and Programs

This section summarizes studies, projects, and programs of various Federal, California state, and local agencies or working groups that are directly or indirectly relevant to the Investigation.

Activities of Federal Agencies

The following sections provide detailed information about Federal projects and plans relevant to the Investigation.

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Department of the Interior – Bureau of Reclamation

As owner and operator of the CVP, Reclamation has a considerable effect on water and environmental resources in the study area. Reclamation has many ongoing projects or continuing programs and plans relevant to the Investigation, as described below.

Central Valley Project The largest surface water storage and delivery system in California, the CVP supplies water to more than 250 long-term water contractors in the Central Valley, Tulare Lake Basin, and the Bay Area (Reclamation 2013a). CVP service areas cover 29 of California’s 58 counties. Operated by Reclamation, the CVP consists of: 20 reservoirs capable of storing over 11 million acre-feet (MAF) of water; 11 power plants; 500 miles of major canals and aqueducts; and many tunnels, conduits, and power transmission lines (Reclamation 2013a). Annually, the CVP has the potential to supply about 7 MAF for agricultural, M&I, and wildlife uses (Reclamation 2008a). The CVP also provides flood protection, navigation, power, recreation, and water quality benefits.

Central Valley Project Improvement Act Enacted in 1992, the CVPIA addresses conflicts over water rates, irrigation land limitations, and environmental impacts of the CVP. A major component of the CVPIA, established in Section 3406(a), is to provide equal priority and consideration to protection, restoration, and enhancement of fish, wildlife, and associated habitats of the Delta estuary and tributaries affected by the CVP.

CVPIA Section 3406(a) includes “amendments to Central Valley Project Authorizations Act of August 26, 1937.” Specifically, these amendments include adding “fish and wildlife mitigation, protection, and restoration” as a priority equal to water supply, and added “fish and wildlife enhancement” as a priority equal to hydropower generation. CVPIA Section 3406(d) contains specific actions related to the Central Valley Refuges and Wildlife Habitat Areas. CVPIA Section 3406(d) states the following:

Central Valley Refuges and Wildlife Habitat Areas.--In support of the objectives of the Central Valley Habitat Joint Venture and in furtherance of the purposes of this title, the Secretary shall provide, either directly or through contractual agreements with other appropriate parties, firm water supplies of suitable quality to maintain and improve wetland habitat areas on units of the National Wildlife Refuge System in the Central Valley of California; on the Gray Lodge, Los Banos, Volta, North Grasslands, and Mendota state wildlife management areas; and on the Grasslands Resources Conservation District in the Central Valley of California.

(1) Upon enactment of this title, the quantity and delivery schedules of water measured at the boundaries of each wetland habitat area described in this paragraph shall be in accordance with Level 2 of the "Dependable Water Supply Needs" table for those habitat areas as set forth in the Refuge Water Supply Report and two-thirds of the water supply needed for full habitat development for those habitat areas identified in the San Joaquin Basin Action Plan/Kesterson Mitigation Action Plan Report prepared by the Bureau of Reclamation. Such water shall be provided through long-term contractual agreements with appropriate parties and shall be supplemented by the increment of water provided

for in paragraph (1) of this subsection; Provided, That the Secretary shall be obligated to provide such water whether or not such long-term contractual agreements are in effect. In implementing this paragraph, the Secretary shall endeavor to diversify sources of supply in order to minimize possible adverse effects upon Central Valley Project contractors.

(2) Not later than ten years after enactment of this title, the quantity and delivery schedules of water measured at the boundaries of each wetland habitat area described in this paragraph shall be in accordance with Level 4 of the "Dependable Water Supply Needs" table for those habitat areas as set forth in the Refuge Water Supply Report and the full water supply needed for full habitat development for those habitat areas identified in the San Joaquin Basin Action Plan/Kesterson Mitigation Action Plan Report prepared by the Bureau of Reclamation. The quantities of water required to supplement the quantities provided under paragraph (1) of this subsection shall be acquired by the Secretary in cooperation with the State of California and in consultation with the Central Valley Habitat Joint Venture and other interests in cumulating increments of not less than ten percent per annum through voluntary measures which include water conservation, conjunctive use, purchase, lease, donations, or similar activities, or a combination of such activities which do not require involuntary reallocations of project yield.

(3) All costs associated with implementation of paragraph (1) of this subsection shall be reimbursable pursuant to existing law. Incremental costs associated with implementation of paragraph (2) of this subsection shall be fully allocated in accordance with the following formula: 75 percent shall be deemed a nonreimbursable Federal expenditure; and 25 percent shall be allocated to the State of California for recovery through direct reimbursements or through equivalent in-kind contributions.

(4) The Secretary may temporarily reduce deliveries of the quantity of water dedicated under paragraph (1) of this subsection up to 25 percent of such total whenever reductions due to hydrologic circumstances are imposed upon agricultural deliveries of Central Valley Project water; Provided, That such reductions shall not exceed in percentage terms the reductions imposed on agricultural service contractors. For the purpose of shortage allocation, the priority or priorities applicable to the increment of water provided under paragraph (2) of this subsection shall be the priority or priorities which applied to the water in question prior to its transfer to the purpose of providing such increment.

(5) The Secretary is authorized and directed to construct or to acquire from non-Federal entities such water conveyance facilities, conveyance capacity, and wells as are necessary to implement the requirements of this subsection; Provided, That such authorization shall not extend to conveyance facilities in or around the Sacramento-San Joaquin Delta Estuary. Associated construction or acquisition

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costs shall be reimbursable pursuant to existing law in accordance with the cost allocations set forth in paragraph (3) of this subsection.

The CVPIA also addresses the operational flexibility of the CVP and methods to expand the use of voluntary water transfers, improved water conservation, and initiated CVP yield studies (described below). The CVPIA dedicates approximately 1.2 MAF of water annually to fish, wildlife, and habitat restoration. Of this water, 800,000 acre-feet was dedicated to environmental needs as Section 3406(b)(2) water, approximately 200,000 acre-feet was designated for wildlife refuges, and approximately 200,000 acre-feet was dedicated for increased Trinity River flows for fisheries restoration. Through operations flexibility, this results in a net reduction of 516,000 acre-feet per year on average, and 585,000 acre-feet in the dry years, previously available to CVP contractors (Reclamation 2008a).

In May 2005, Reclamation quantified the water delivery impacts of the CVPIA on the CVP and analyzed a wide range of storage and conveyance projects to offset these impacts documented in *A CVP Yield Feasibility Investigation Report: The Delivery Impact of CVPIA* (Reclamation 2005). Total delivery impacts of the CVPIA to agricultural and M&I contractors was determined to be 516,000 acre-feet on average and 585,000 acre-feet in dry years, with impacts to SOD contractors much greater than impacts to north-of-Delta contractors, and impacts to agricultural contractors much greater than impacts to M&I contractors. In the report, Reclamation analyzed 90 different combinations of increased conveyance, increased north-of-Delta storage, and increased SOD storage. Reclamation recommended continued participation in CALFED programs, participation in regional and watershed integrated resource management planning activities, and continued CVP and SWP integrated operations to help offset the delivery impacts of the CVPIA.

Water Supply and Yield Study In March 2008, Reclamation prepared the *Water Supply and Yield Study*, which describes existing California statewide water demand and available supplies, as well as projected future demand, available supplies, and willingness to pay for CALFED storage and conveyance projects (Reclamation 2008a). Using demands from DWR's *California Water Plan Update 2005* (DWR 2005) and assuming no inter-basin transfers, statewide supply-demand gaps were estimated to be 2.3 MAF in average water years and 4.2 MAF in dry water years. Without investment in storage and conveyance projects, statewide supply-demand gaps were projected to grow to 4.9 MAF in average water years and 6.1 MAF in dry water years by 2030. The *Water Supply and Yield Study* also determined that if CALFED storage and conveyance projects were constructed, the projected 2030 supply-demand gap would be reduced to 1.5 MAF in average water years and 2.2 MAF in dry water years.

San Luis Drainage Feature Reevaluation In June 2006, Reclamation filed the Final EIS for the San Luis Drainage Feature Reevaluation with the U.S. Environmental Protection Agency (EPA). Reclamation prepared the environmental document, pursuant to NEPA, to evaluate options for providing drainage service to the San Luis Unit of the CVP. The proposed Federal action is to plan and construct a drainage system for the San Luis Unit of the CVP and the general area (of which lands served by the San Luis Unit are a part) that achieves long-term, sustainable salt and water balance in the root zone of irrigated lands. This proposed action would meet the needs of the San Luis Unit for drainage service, fulfill the requirements of a February 2000 Court Order issued in litigation concerning drainage in the San Luis Unit, and be completed

under the authority of Public Law 86-488. A ROD was issued in March 2007 (Reclamation et al. 2007) identifying Reclamation's decision to select the In-Valley/Water Needs Land Retirement Alternative for implementation. The Feasibility Report was transmitted to Congress on July 8, 2008.

San Luis Reservoir Low Point Improvement Project and San Luis Reservoir Expansion

Reclamation and SCVWD initiated feasibility studies of water supply delivery reliability risks associated with algal blooms and low reservoir levels in San Luis Reservoir in 2001 with the San Luis Low Point Improvement Project appraisal study (SCVWD 2017). A feasibility study was authorized by Public Law 108-361. The *San Luis Low Point Improvement Project Initial Alternatives Information Report* identified raising B.F. Sisk Dam as one alternative to the low-point problem (Reclamation et al. 2008); however, the alternative was eliminated from the study because more cost-effective solutions seemed available at that time (Reclamation et al. 2011).

In response to studies that determined B.F. Sisk Dam posed a risk of seismic failure, Reclamation, in collaboration with DWR, also initiated a Safety of Dams Corrective Action Study in 2006 to determine a course of action to reduce the seismic risks at the dam. Alternatives currently being evaluated in the ongoing study included modifications to the dam and appurtenant facilities, which have been determined to be technically feasible to construct (Reclamation 2013b).

In December 2013, Reclamation completed the *San Luis Reservoir Expansion Draft Appraisal Report* (2013b) that recommended further studies in coordination with Reclamation's Dam Safety Office, DWR, SCVWD, SLDMWA, and other entities to ensure development of a feasible solution to CVP and SWP water delivery reliability risks. Recommendations in the report included restoring one or more San Luis Reservoir expansion alternatives to the San Luis Low Point Improvement Project feasibility studies to determine: (1) actions needed to correct identified dam safety risks; and (2) technical, environmental, economic, and financial feasibility of increasing SOD surface water storage capacity under a wide range of future conditions, including climate change and changes in Delta export and conveyance capacity. Feasibility studies and environmental review are ongoing.

San Joaquin River Salinity Management Plan and Grasslands Bypass Project Extension

Reclamation has initiated a Management Agency Agreement with the California Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) to meet Total Maximum Daily Load requirements on the San Joaquin River at Vernalis. This agreement outlines Reclamation commitments and reporting requirements for management of water quality to improve salt and boron conditions on the lower San Joaquin River. Reclamation currently focuses on three major groups of actions: providing flows to the system, reducing salt load to the river, and facilitating mitigation. The Total Maximum Daily Load could be implemented through a base load or through the Central Valley Water Board adoption of a stakeholder-developed Real Time Management Program. The first Total Maximum Daily Load compliance deadline for Reclamation and west side dischargers occurred in July of 2014.

Another Reclamation project that provides salt load benefits is the Grassland Bypass Project. Before the Grassland Bypass Project was implemented, drainage water from farms in the 97,000-acre Grassland Drainage Area was discharged into the San Joaquin River through Salt Slough

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and wildlife refuge wetland areas. This drainage water contains concentrations of selenium, salts, and other constituents that are above the applicable water quality standards (Reclamation 2010).

The Grasslands Bypass Project Extension (2010 through 2019) lengthens the San Luis Drain Use Agreement to allow time to (1) acquire funds and develop feasible drain water treatment technology to meet Central Valley Water Board objectives and waste discharge requirements by December 30, 2019; (2) continue the separation of unusable agricultural drainage water discharged from the Grasslands Drainage Area from wetland water supply conveyance channels for 2010 – 2019; (3) facilitate drainage management that maintains the viability of agriculture in the Grasslands Bypass Project Area; and (4) promote continuous improvement of water quality in the San Joaquin River.

Department of the Interior – Fish and Wildlife Service

The USFWS is directed to develop comprehensive conservation management plans to guide the management and resource use for each refuge of the National Wildlife Refuge System under requirements of the National Wildlife Refuge Improvement Act of 1997. Refuge planning policy also directs the process and development of comprehensive conservation management plans, which describe the desired future conditions and long-range guidance necessary for meeting refuge purposes. It also guides management decisions and sets forth strategies for achieving refuge goals and objectives within a 15-year time frame.

The San Luis, Merced, and San Joaquin River National Wildlife Refuges (NWR) are located along the San Joaquin River. The San Luis and Merced NWRs do not have approved comprehensive conservation management plans; however, planning was initiated for both NWRs in 2002 (USFWS 2001). An administrative draft of the San Luis and Merced NWR comprehensive conservation plan is currently in progress (USFWS 2017). A final comprehensive conservation management plan (USFWS 2006) was prepared for the San Joaquin River NWR.

Department of Commerce – National Marine Fisheries Service

The National Marine Fisheries Service (NMFS) is required under Federal ESA to assess factors affecting listed salmonid species in the Central Valley, identify recovery criteria, identify actions necessary to achieve these goals, and estimate the cost and time required to carry out the actions.

U.S. Environmental Protection Agency

The EPA develops standards and criteria for water quality and issues permits for discharges pursuant to the Federal Clean Water Act (CWA). In the San Joaquin River watershed and Delta, EPA delegates authority for these activities to the Central Valley Water Board. Under the *2012 San Francisco Bay Delta Action Plan* (EPA 2012), seven priority activities were identified to advance the protection and restoration of aquatic resources and ensure a reliable water supply in the Bay-Delta estuary watershed:

1. Strengthen water quality standards to protect estuarine habitat
2. Advance regional water quality monitoring and assessment
3. Accelerate water quality restoration through Total Maximum Daily Loads
4. Strengthen selenium water quality criteria

5. Prevent pesticide pollution
6. Restore aquatic habitats while managing methylmercury
7. Support the Bay-Delta Conservation Plan

Under CWA Section 404, the EPA developed regulations for U.S. Army Corps of Engineers (USACE) compliance and reviews permits issued by USACE to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. Section 404(c) of the CWA authorizes EPA to veto a USACE decision to issue a permit if a proposed action would have an unacceptable effect on municipal water supplies, shellfish beds and fishery areas, wildlife, or recreational areas.

Water Infrastructure Improvements for the Nation Act

The Water Infrastructure Improvements for the Nation (WIIN) Act is Federal legislation signed into law in 2016 to address the needs of the nation’s harbors, locks, dams, flood protection, and other water resources infrastructure critical to the economic growth, health, and competitiveness. Among other things, the WIIN Act authorizes appropriations for Federal funding for the final design and construction of water storage projects and extends the authorization for Federal feasibility studies for CALFED storage projects, including the Los Vaqueros Reservoir Expansion Project, through 2019.

Activities of the State of California

The following sections provide detailed information about the State of California’s projects and plans relevant to the Investigation.

California Water Action Plan

The California Water Action Plan is a roadmap outlining state priorities and providing policy guidance for achieving sustainable water management. The first plan was released by Governor Edmund G. Brown Jr. in 2014 and updated in 2016 to reflect the progress toward the goals and provide additional guidance. The California Water Action Plan outlines the California priorities to mitigate the effects of the drought, increase and sustain water conservation, rebalance water rules and enable voluntary transfers of water, expand water recycling, expand surface storage, improve groundwater management, and improve access to safe drinking water in disadvantaged communities.

Water Conservation Act of 2009

California enacted Senate Bill X7-7 as the Water Conservation Act of 2009, requiring all water suppliers to increase water use efficiency. For urban retail water agencies, the legislation set an overall goal of reducing per capita urban water use by 20 percent by December 31, 2020, colloquially referred to as “20 by 2020,” with an incremental goal of reducing per capita water use by at least 10 percent by December 31, 2015. Senate Bill X7-7 specified that urban retail water suppliers that do not meet the established water conservation requirements are not eligible for California state water grants or loans.

As described in CCWD’s 2015 Urban Water Management Plan, CCWD is in compliance with the water conservation requirements of Senate Bill X7-7. Due to the success of CCWD’s past and current water use efficiency efforts, the actual per capita water use in 2015 in both CCWD’s

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retail treated water service area and wholesale municipal service area met the interim 2015 target and demonstrated that CCWD is on track to meet the 2020 conservation target. The Local Agency Partners for Phase 2 Expansion are also all in compliance with Senate Bill X7-7, as described in each of their 2015 Urban Water Management Plans.

2014 Drought State of Emergency

Following a dry year in 2013 and continued dry hydrology into the beginning of the 2014 water year, California Governor Edmund G. Brown Jr. proclaimed a drought State of Emergency in January 2014, directing local water suppliers to immediately implement water shortage contingency plans and requesting a voluntary 20 percent urban water conservation. With the historically unprecedented drought continuing into the 2015 water year, in April 2015, the Governor issued an Executive Order mandating a 25 percent reduction in potable urban water usage. The State Water Resources Control Board set conservation targets for urban water agencies based on their 2013 average per capita water use and curtailed senior water rights holders, including those with both pre- and post-1914 rights, from diverting water. CVP and SWP contract allocations were low throughout the period, and Delta water quality objectives required by State Water Resources Control Board (State Water Board) Water Rights Decision 1641 (D-1641) for CVP and SWP operations were relaxed through a series of Temporary Urgency Change Petitions for much of the drought.

The recent drought highlighted the need for improved regional water supply reliability. Although the State of Emergency was lifted in April 2017, long-term water conservation measures intended to make conservation a way of life in California remain in effect. In 2016 California's governor issued Executive Order B-37-16 instructing various California state agencies to make recommendations for how to implement long-term improvements to water supply management, water use efficiency, and conservation. Implementation of these recommendations is ongoing, and could affect water use in the study area.

Sustainable Groundwater Management Act

A three-bill package, known as the Sustainable Groundwater Management Act (SGMA), was signed into law in 2014. The legislation, amended in 2015, allows local agencies to customize groundwater sustainability plans to their regional economic and environmental needs, and creates a framework for sustainable, local groundwater management.

SGMA provides for sustainable use of groundwater basins; enhances local management of groundwater consistent with rights to use or store groundwater; establishes minimum standards for effective, continuous management of groundwater; provides local groundwater agencies with the authority, technical, and financial assistance needed to maintain groundwater supplies; avoids or minimizes impacts for land subsidence; improves data collection and understanding of groundwater resources and management; increases groundwater storage and removes impediments to recharge; and empowers local agencies to manage groundwater basins, while minimizing the State of California's intervention.

The primary groundwater basins within the CCWD service area are the Ygnacio, Clayton, Pittsburg Plain, and Tracy Groundwater Basins or Sub-Basins. CCWD does not manage groundwater, nor does it use groundwater from a medium of high priority designated basin (CCWD 2016). CCWD, in cooperation with other agencies in eastern Contra Costa County, is

working to ensure compliance with SGMA for the portion of the Tracy Sub-Basin within Contra Costa County. The Local Agency Partners are also all working to ensure compliance with SGMA in their own basins or sub-basins.

California Department of Water Resources

DWR is the owner and operator of the SWP and manages ongoing projects and continuing programs relevant to the Investigation.

State Water Project The SWP was authorized in 1959 and designated to re-adjust geographical imbalances between California’s water resources and water needs. The project extends from Plumas County in the north to Riverside County in the south. The SWP delivers water to service areas in the Feather River basin, Bay Area, San Joaquin Valley, Tulare basin, and Southern California.

SWP elements include 23 dams and reservoirs, six power plants, 17 pumping plants, and 533 miles of aqueduct. The principal storage feature of the SWP is Lake Oroville, with a gross pool capacity of 3.5 MAF. Located on the Feather River about 4 miles northeast of Oroville, Oroville Dam releases water that flows through the Feather and Sacramento rivers before reaching the Delta. The SWP shares storage space with the CVP in San Luis Reservoir.

Major SWP conveyance facilities in the Central Valley include the North Bay, South Bay, and California aqueducts. The North Bay Aqueduct diverts water from Barker Slough in the north Delta for agricultural and M&I uses in Napa and Solano counties. The South Bay and California aqueducts carry water from the Delta to the Bay Area and to Southern California, respectively. In the southern portion of the Delta, the Harvey O. Banks Delta Pumping Plant lifts water into the California Aqueduct from the Clifton Court Forebay.

DWR’s contracts with the 29 SWP water contractors define the terms and conditions governing water delivery. “Table A” is an exhibit in each water supply contract and shows the maximum supply of scheduled water that a contractor may request. The maximum Table A amount for deliveries to these 29 contractors is about 4.13 MAF per year. Of this amount, about 2.6 MAF is designated for Southern California, nearly 1.2 MAF for the San Joaquin Valley, and the remaining 373,000 acre-feet for the San Francisco Bay, central coast, and Feather River areas (as of December 31, 2002).

The Feather River Settlement Contractors are water users who hold riparian and senior appropriative rights on the Feather River. Table A allocations are described in their SWP contracts originally executed in the early 1960s.

State Water Project Delivery Capability Report 2015 In July 2015, DWR released the *State Water Project Delivery Capability Report 2015* (DWR 2015). This report estimated the current existing (2015) and future (2035) SWP delivery capability and the allocation of the estimated overall deliveries to each of the SWP contractors. This report was an update of the *State Water Project Delivery Reliability Report 2013*. The report incorporated regulatory requirements for State Water Project operations in and upstream of the Delta and made assumptions about water use in the upstream watersheds and by the SWP contractors. Estimates of future delivery capability also factored in potential impacts of climate change and sea level rise. Increasing

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variability in hydrological conditions and new regulations governing SWP and CVP exports from the Delta have served to reduce SWP water supply reliability.

California Water Plan DWR's *California Water Plan* provides a framework for water managers, legislators, and the public to consider options and make decisions regarding California's water future (DWR 2009). The plan, which is updated every five years, presents basic data and information on California's water resources, including water supply evaluations and assessments of agricultural, urban, and environmental water uses to quantify the gap between water supplies and uses. The plan also identifies and evaluates existing and proposed statewide demand management and water supply augmentation programs and projects to address California's water needs.

DWR's goals in preparing the plan are to meet requirements of the California Water Code; receive broad support among those participating in California's water planning; and be a useful document for the public, water planners throughout the State of California, legislators, and other decision-makers (DWR 2009). As a master plan, it guides the control, protection, conservation, development, management, and efficient use of California's water resources (California Water Code Section 10005(a)).

DWR completed the *California Water Plan Update 2013* in October 2014 (DWR 2014b), and the 2018 update is currently underway.

Integrated Regional Water Management Plans Integrated Regional Water Management Plans (IRWMP) are collaborative endeavors to manage diverse aspects of water resources using a regional approach. IRWMPs integrate planning for water supply, water quality, wastewater treatment, stormwater management, and flood control on a regional scale that involves multiple jurisdictions, watersheds, political regions, agencies, and stakeholders.

The San Francisco Bay Area IRWMP was first completed and adopted in 2006 and updated in 2013. It is a nine-county effort to coordinate and improve water supply reliability, protect water quality, manage flood protection, maintain public health standards, protect habitat and watershed resources, and enhance the overall health of the San Francisco Bay. This IRWMP includes all or portions of nine counties (Marin, Sonoma, Napa, Solano, Contra Costa, Alameda, Santa Clara, San Mateo, and San Francisco); numerous water, wastewater, flood protection, and land use agencies; and many non-governmental organizations and non-profit organizations.

The East Contra Costa County IRWMP covers 350 square miles from Mt. Diablo to the south and west, and the Delta waterways to the north and east. It consists of 13 agencies (including CCWD), of which almost all are entirely dependent on Delta water supply. The first IRWMP was completed in 1996; the latest update was completed in 2015 and included the Regional Capacity Study. The objectives of the IRWMP include: (1) ensuring reliable water supply during normal, dry, and emergency conditions, including droughts, achieving water quality goals, and meeting water quality regulations; (2) protecting, restoring, and enhancing the Delta ecosystem and other environmental resources, including upstream wetland and habitat restoration; (3) obtaining funding for water-related planning and project implementation; (4) improving stormwater and flood management; and (5) providing water-related outreach and equitable distribution of resources in the region.

Delta Risk Management Strategy Levees, many of which were constructed in the late 1800s, protect more than 700,000 acres in the Delta. Subsidence, the danger of a major earthquake or flood event, and the potential for sea level rise have caused concerns over the stability of Delta levees and their ability to protect low-lying lands and the Delta's important water resource functions. Assembly Bill 1200 (California Water Code Section 139.2 et seq.) directed DWR to evaluate potential impacts on water supplies derived from the Delta based on 50-, 100-, and 200-year projections for each of the following possible impacts: subsidence, earthquakes, floods, climate change and sea level rise, or a combination of the above.

Phase I of the strategy determined the nature and extent of these risks and evaluated their impacts on the economy and ecosystems in the area. Phase II identified and evaluated specific risk management strategies. Some of the strategies considered include improved levees, an armored pathway, and isolated water conveyance through the Delta. The *Final Phase I Report* was submitted in July 2008 and Phase II in June 2011 (DWR). Since its publication, the report has influenced various California state planning efforts in the Delta.

State Water Resources Control Board Programs

The mission of the State Water Board is to ensure the highest reasonable quality for waters of California, while allocating those waters to achieve the optimum balance of beneficial uses. The State Water Board administers post-1914 surface water rights, sets statewide policy to protect water quality, coordinates and supports the California's nine Regional Water Quality Control Boards (Regional Water Boards), and enforces laws and regulations protecting California waterways. Both the CVP and SWP operate pursuant to water right permits and licenses issued by the State Water Board for water storage, releases, and diversions.

Over time, the State Water Board has issued decisions that modify the terms and conditions of CVP and SWP water rights, either at the request of Reclamation and/or DWR or to assign responsibility to meet specified water quality requirements. In August 1978, the State Water Board adopted the *Water Quality Control Plan for the Delta and Suisun Marsh and Water Right Decision 1485* (D-1485), requiring Reclamation and DWR to operate the CVP and SWP to meet all of the 1978 Water Quality Control Plan objectives, except a portion of the southern Delta salinity objectives. In 1991, the State Water Board issued revised water quality objectives in the *Delta Water Quality Control Plan for Salinity*. In May 1995, the State Water Board adopted the *Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary* superseding both the 1978 and 1991 plans.

Beginning in 1996, the State Water Board engaged in proceedings to determine responsibility for meeting water quality standards in the Delta. Because the issues were so complex, the State Water Board divided the water right proceedings into eight phases. The State Water Board completed Phase 1 – Phase 7 of these proceedings in 1999, leading to issuance of D-1641 in December 1999. The State Water Board adopted D-1641 as part of the State Water Board's implementation of the 1995 Bay-Delta Water Quality Control Plan. D-1641 amended certain water rights, including temporarily amending certain terms and conditions of the CVP and SWP water rights by assigning responsibilities to the persons or entities holding those rights. This was implemented to help meet certain water quality and flow requirements outlined in the 1995 Bay-Delta Water Quality Control Plan, including new protections for Delta fisheries. The goal of Phase 8 was to allocate permanent responsibility for satisfying the flow-related water quality

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objectives of the 1995 Bay-Delta Water Quality Control Plan among water right holders in the watersheds of the Sacramento, Cosumnes, and Calaveras rivers.

Minimum in-stream flow objectives for the San Joaquin River at Vernalis were established under the 1995 Bay-Delta Plan, which was amended in 2006; however, the Vernalis in-stream flow requirements remained unchanged from the 1995 Bay-Delta Water Quality Control Plan.

The State Water Board is undertaking major revisions to the 1995 Bay-Delta Water Quality Control Plan. The effort is broken into two phases. The first phase covers the San Joaquin River and its tributaries. The second phase covers the Sacramento River and its tributaries, plus the Mokelumne River. In September 2016, the State Water Board released new flow objectives for the San Joaquin River and its Salmon-bearing tributaries – the Stanislaus, Tuolumne, and Merced Rivers. Additionally, a process of voluntary settlement discussions between the California Natural Resources Agency and stakeholder interests in the San Joaquin and Sacramento River systems are also underway.

Delta Stewardship Council

Pursuant to the 2009 Delta Reform Act and the formation of the Delta Stewardship Council, the Delta Stewardship Council prepared and adopted the final Delta Plan in 2013 (Delta Stewardship Council 2013). The Delta Plan requires that projects that are located in or have the potential to impact the Delta are required to demonstrate consistency with policies of the Delta Plan, in order to serve the coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem, in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place.

In 2015, the Delta Stewardship Council determined that an amendment was required to update conveyance, storage, and operations portions of the Delta Plan and adopted nineteen principles for water conveyance in the Delta, storage systems, and for operations of both to achieve the coequal goals (Delta Stewardship Council 2015). These principles provide the guidance for the amendment to the Delta Plan that is currently in progress; a final amendment is anticipated to be adopted by the Delta Stewardship Council in late 2017 or early 2018. In the principles, the Delta Stewardship Council concluded that new or expanded water storage projects are necessary. The draft amendment approved by the Delta Stewardship Council in June of 2017 is being used to prepare a program level EIR, anticipated to be released to the public in late 2017. The draft amendment includes a recommendation to pursue “new conveyance facilities or conveyance facility improvements that allow use of multiple Delta intakes associated with the Los Vaqueros Project” and to implement new or expanded surface water storage projects in the Bay Area and other regions of California.

The Phase 2 expansion project would be an action covered by the Delta Plan. Detailed findings and a certification of consistency with the Delta Plan would be completed during the permitting phase of the Phase 2 expansion.

California Water Commission

On November 4, 2014, California voters approved Proposition 1, the *Water Quality, Supply, and Infrastructure Improvement Act of 2014*. Chapter 8 of Proposition 1 provides \$2.7 billion for

public benefits associated with water storage projects that improve the operation of California's water system, are cost effective, and provide a net improvement in ecosystem and water quality conditions, in accordance with provisions contained in Chapter 8 (California Water Code section 79750 (b)). As described in the 2009 *Comprehensive Water Package*, these public benefit categories include the following:

(1) Ecosystem improvements, including changing the timing of water diversions, improvement in flow conditions, temperature, or other benefits that contribute to restoration of aquatic ecosystems and native fish and wildlife, including those ecosystems and fish and wildlife in the Delta.

(2) Water quality improvements in the Delta, or in other river systems, that provide significant public trust resources, or that clean up and restore groundwater resources.

(3) Flood control benefits, including, but not limited to, increases in flood reservation space in existing reservoirs by exchange for existing or increased water storage capacity in response to the effects of changing hydrology and decreasing snow pack on California's water and flood management system.

(4) Emergency response, including, but not limited to, securing emergency water supplies and flows for dilution and salinity repulsion following a natural disaster or act of terrorism.

(5) Recreational purposes, including, but not limited to, those recreational pursuits generally associated with the outdoors.

Through a competitive public process, the California Water Commission will award funding through the Water Storage Investment Program. The California Water Commission is accepting application for funding from March 14, 2017 through August 14, 2017. Initial funding decisions are anticipated by June 2018. The Phase 2 expansion is eligible for funding through the Water Storage Investment Program and submitted a funding application in August 2017.

California Department of Fish and Wildlife

CDFW manages California's fish and wildlife resources, overseeing the restoration and recovery of species listed by the CESA as threatened and endangered. CDFW participates in conservation planning, environmental compliance and permitting, coordinated resources management planning, and restoration and recovery programs within the study area. CDFW manages the state-owned CVPIA Refuges, including State Wildlife Areas located south of the Delta.

Delta Conservation Framework CDFW is working with Federal, California, and local agencies, and Delta stakeholders to develop a 25-year, high-level conservation framework for the Delta, Yolo Bypass, and Suisun Marsh. The Delta Conservation Framework will serve as the long-term continuation of the California EcoRestore program (see description under Joint Activities of Federal and California State Agencies) focused on accelerating conservation actions by 2020. The Delta Conservation Framework is scheduled to be completed in 2017 to help guide Delta conservation efforts beyond 2040.

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Joint Activities of Federal and California State Agencies

This section discusses cooperative efforts between Federal and California state agencies that are relevant to the Investigation.

CALFED Bay-Delta Program

Following the 1994 Bay-Delta Accord, CALFED, a collaboration of numerous Federal, California state, and local agencies, established a program to address water quality, ecosystem quality, water supply reliability, and levee system integrity. Major CALFED programs include the following:

- Conveyance
- Water Transfer
- Environmental Water Account
- Water Use Efficiency
- Water Quality
- Levee System Integrity
- Ecosystem Restoration and Watershed Management
- Storage

The Preferred Program Alternative in the CALFED PEIS/R (CALFED 2000c) identified an enlargement of Los Vaqueros as one of five surface water storage projects to be investigated and “aggressively pursue[d]” by CALFED:

A 300 to 400 TAF enlargement of the existing Los Vaqueros Reservoir could provide unique opportunities for blending to improve Bay-Area drinking water quality and water supply reliability.

Following issuance of the CALFED Final PEIS/R in July 2000, the CALFED agencies issued the CALFED Programmatic ROD in August 2000 that identified 12 action plans. Specifically, plans were identified for the following programs:

- Governance
- Ecosystem Restoration
- Watersheds
- Water Supply Reliability
- Storage
- Conveyance
- Environmental Water Account
- Water Use Efficiency
- Water Quality

- Water Transfer
- Levees
- Science

The CALFED agencies then began implementing Stage 1 of the Programmatic ROD, including the first seven years of a 30-year program to establish a foundation for long-term actions.

The CALFED Programmatic ROD identified a project-specific study of expanding Los Vaqueros Reservoir by up to 400,000 acre-feet with local partners, including work to accomplish the following:

- Identify local partners and develop agreement with CCWD and other partners as needed for necessary studies.
- Secure authorization and funding for feasibility studies.
- Begin feasibility study and environmental review.
- Complete environmental review, documentation, and preliminary design on a selected alternative.
- Finalize agreements with project partners.
- Obtain necessary authorizations and funding (including local voter approval) and begin construction.

The CALFED Programmatic ROD also provided for tiering environmental review for actions included in the CALFED PEIS/R, as described previously in the chapter.

To provide historical background and context for development of the Investigation, the following is an excerpt from the CALFED Programmatic ROD:

Introduction: The CALFED Bay-Delta Program is an unprecedented effort to build a framework for managing California's most precious natural resource: water. California and the Federal government in partnership are launching the largest, most comprehensive water management program in the world. This is the most complex and extensive ecosystem restoration project ever proposed. It is also one of the most intensive water conservation efforts ever attempted. It is the most far-reaching effort to improve the drinking water quality of millions of Californians as well as an unprecedented commitment to watershed restoration. And it is the most significant investment in storage and conveyance in decades.

The CALFED Bay-Delta Program began in May 1995 to address the complex issues that surround the Bay-Delta. The CALFED Bay-Delta Program is a cooperative, interagency effort of 18 State and Federal agencies with management or regulatory responsibilities for the Bay-Delta. The CALFED Program is a collaborative effort including representatives of agricultural, urban,

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environmental, fishery, and business interests, Indian tribes and rural counties who have contributed to the process.

The San Francisco Bay/Sacramento-San Joaquin Delta (Bay-Delta) estuary is the largest estuary on the West Coast. It is a maze of tributaries, sloughs, and islands and a haven for plants and wildlife, supporting over 750 plant and animal species. The Bay-Delta includes over 738,000 acres in five counties. The Bay-Delta is critical to California's economy, supplying drinking water for two-thirds of Californians and irrigation water for over 7 million acres of the most highly productive agricultural land in the world.

The Bay-Delta is also the hub of California's two largest water distribution systems - the Central Valley Project (CVP) operated by the U.S. Bureau of Reclamation (Reclamation) and the State Water Project (SWP) operated by the California Department of Water Resources (DWR). Together, these water development projects divert about 20 to 70 percent of the natural flow in the system depending on the amount of runoff available in a given year. These diversions, along with the effects of increased population pressures throughout California, exotic species, water pollution, and numerous other factors have had a serious impact on the fish and wildlife resources in the Bay-Delta estuary.

The droughts of 1987-92 demonstrated just how vulnerable California is to water shortages. More recent conflicts between water quality, fish protection and water supply also demonstrate how little flexibility there is in the current system. With the State's population expected to grow from 34 million today to 59 million in 2040, the need to conserve, to build our capacity, and to manage our water system more efficiently is no longer just a goal, it is a reality.

Before CALFED, all agreed on the importance of the Bay-Delta estuary for both fish and wildlife habitat and as a reliable source of water, but few agreed on how to manage and protect this valuable resource. The CALFED Bay-Delta Program was established to develop a long-term comprehensive plan that will restore ecological health and improve water management for beneficial uses of the Bay-Delta system. Over the last five years, hundreds of individuals have spent thousands of hours discussing and debating options for a long-term restoration and management plan for the Bay-Delta estuary. The task is fourfold: 1) to restore the ecological health of a fragile and depleted Bay-Delta estuary; 2) improve the water supply reliability for the State's farms, and growing cities that draw water from the Delta and its tributaries, including 7 million acres of the world's most productive farmland; 3) protect the drinking water quality of the 22 million Californians who rely on the Delta for their supplies; and 4) protect the Delta levees that ensure its integrity as a conveyance and ecosystem. Through the Bay-Delta Advisory Council, State and Federal agencies have worked with stakeholders and the public to shape these options into this framework for a comprehensive plan.

The CALFED Program and the CALFED Agencies have approached many ecosystem and water management issues from a regional perspective: what makes the most sense for the affected region. The regions, which include their respective watersheds, are the Sacramento Valley, the San Francisco Bay Area, the Delta, Westside San Joaquin Valley, San Joaquin River/South San Joaquin Valley, and Southern California. Although each region raises unique ecosystem and water management issues, each region's issues affect the health and function of the Bay-Delta system as a whole. Those regional issues nevertheless need regional solutions that contribute to overcoming the challenges facing the Bay-Delta system. In crafting regional solutions, the CALFED Program has also identified and considered the other, independent actions taken by Federal, State, and local agencies operating outside the CALFED Program. In addition, CALFED has taken into account its obligations to comply with ongoing commitments, such as the commitments included in the State's area of origin laws.

Consistent with the stated purposes of CALFED Bay-Delta Program since its outset in 1995, it is not the intent of this program to address or solve all of the water supply problems in California. The CALFED program is directly or indirectly tied to a number of specific project proposals that would help toward meeting California's water needs for a wide variety of beneficial uses. CALFED is an important piece of a much larger picture that is the continuing responsibility of local, regional, State and Federal jurisdictions.

Bay-Delta Accord: Seeking solutions to the resource problems in the Bay-Delta, State and Federal agencies signed an agreement in June 1994 to (1) coordinate their actions to meet water quality standards to protect the Bay-Delta estuary; (2) coordinate the operation of the State Water Project (SWP); and the Central Valley Project (CVP) more closely with recent environmental mandates; and (3) develop a process to establish a long-term Bay-Delta solution to address four categories of problems: ecosystem quality, water quality, water supply reliability, and levee system vulnerability.

This agreement laid the foundation for the Bay-Delta Accord and CALFED. The Accord, formally called the Principles for Agreement on Bay-Delta Standards between the State of California and the Federal Government, detailed interim measures for both environmental protection and regulatory stability in the Bay-Delta. On December 15, 1994, the Accord was signed by State and Federal resource agencies, as well as by stakeholders representing many local water agencies and environmental organizations. Under the terms of a December 1999 extension, the Accord formally expires when this ROD is executed [August 28, 2000]. Thereafter, the provisions in the Accord are replaced in their entirety by the provisions and agreements in this ROD and associated documents.

In 2004, Public Law 108-361 directed the Secretary of Interior to use the CALFED Programmatic ROD as a “general framework for addressing the CALFED Bay-Delta Program” (Section 103 (a) (1)). Further, Public Law 108-361 authorized the Secretary of the Interior to carry out the activities described in paragraphs (1) through (10) of Subsection (d), which

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includes “planning and feasibility studies for projects to be pursued with project-specific study for enlargement of (II) the Los Vaqueros Reservoir in Contra Costa County” (Section 103 (d) (1) (A) (i)).

CALFED Storage Program Element As one of the primary CALFED program elements, the Water Storage Program addresses both surface water and groundwater storage opportunities and objectives. Results of initial evaluations to formulate this program were presented in the *Integrated Storage Investigation Report – Initial Surface Water Storage Screening* (CALFED 2000b), which assessed and screened numerous potential reservoir sites. Of the many surface water storage projects considered, five were included in the Preferred Program Alternative for consideration during early phases of CALFED implementation. CALFED identified DWR and Reclamation as joint lead California state and Federal agencies, respectively, for the site-specific planning and feasibility studies of the five potential surface storage projects; DWR was identified as the sole lead agency for addressing groundwater storage opportunities.

The five surface water storage projects are: (1) Shasta Lake Water Resources Investigation , (2) In-Delta Storage, (3) Los Vaqueros Expansion Investigation (the Investigation), (4) Sites Reservoir (also known as North-of-the-Delta Offstream Storage), and (5) Upper San Joaquin River Basin Storage Investigation. In 2010, DWR developed the *CALFED Surface Storage Investigations Progress Report* (DWR 2010) to provide an overview of the status of and new analyses conducted for the CALFED surface storage investigations. The study of In-Delta Storage was discontinued; the remaining investigations are described below.

Shasta Lake Water Resources Investigation The Shasta Lake Water Resources Investigation is a feasibility-level study conducted by Reclamation to examine the potential of raising Shasta Dam for the purposes of increasing the survival of anadromous fish populations in the Sacramento River and increasing CVP and SWP water supplies and supply reliability. The study considered several plans that include dam raises of up to 18.5 feet, with variations in operations to meet project objectives. A *Final Feasibility Report* with environmental documentation was released July 2015.

Sites Reservoir Initially headed by DWR and now locally led by the Sites Joint Project Authority, Sites Reservoir would be a 1.8 MAF offstream reservoir in the foothills west of the Sacramento River near Maxwell, California. This reservoir acts as north-of-Delta offstream storage. Sites Reservoir would be filled primarily through pumped diversions from the Sacramento River during high flow periods. A variety of benefits are being considered, including increased water supplies for various uses, operational flexibility for managing fisheries and water quality, and improved Sacramento River diversion management. An *Administrative Draft EIR* was released in May 2014 by DWR. Currently, Reclamation is working with the Sites Joint Project Authority to develop an additional alternative that is anticipated to be the locally preferred plan.

Upper San Joaquin River Basin Storage Investigation Led by Reclamation, in coordination with DWR, the purpose of the Upper San Joaquin River Basin Storage Investigation is to determine the type and extent of Federal interest in a potential project to expand water storage capacity in the upper San Joaquin River watershed to: (1) improve water supply reliability and flexibility of the water management system for agricultural, municipal and industrial, and

environmental uses; and (2) enhance water temperature and flow conditions in the San Joaquin River downstream from Friant Dam for salmon and other native fish. A *Draft Feasibility Report* and *Draft EIS* were released in 2014. A *Final Feasibility Report* and *Final EIS* are anticipated in late 2018.

Long-Term Operation of the Central Valley Project and State Water Project

In June 2004, Reclamation prepared the *2004 Operations Criteria and Plan* to provide a description of the facilities and operating environment of the CVP and SWP. Using operational information presented in the *2004 Operations Criteria and Plan*, Reclamation and DWR developed the *2004 Operations Criteria and Plan Biological Assessment (BA)*, prepared as part of the consultation process required by Section 7 of the Federal ESA.

Reclamation consulted with NMFS and the USFWS on the *2004 Operations Criteria and Plan*, and the two agencies issued the *2004 NMFS Biological Opinion [BO]* (NMFS 2004) and *2005 USFWS Biological Opinion* (USFWS 2005), respectively. In 2007, the District Court for the Eastern District of California (District Court), in *Natural Resources Defense Council (NRDC) v. Kempthorne*, found the 2005 USFWS BO to be unlawful and inadequate. In May 2008, in *Pacific Coast Federation of Fishermen's Associations v. Gutierrez*, the District Court found the 2004 NMFS BO to be unlawful and inadequate. The District Court remanded both BOs to the agencies.

In 2008, Reclamation provided the USFWS and NMFS the *Biological Assessment on the Continued Long-Term Operations of the CVP and SWP*. USFWS and NMFS released their BOs in 2008 and 2009, respectively.

In the 2008 USFWS BO, the USFWS concluded that the long-term operations of the CVP and SWP would jeopardize the continued existence of delta smelt and adversely modify its critical habitat. Consequently, the USFWS developed a Reasonable and Prudent Alternative to avoid jeopardy.

In the 2009 NMFS BO, NMFS similarly concluded that the long-term operations of the CVP and SWP would jeopardize the continued existence of listed salmonids, steelhead, green sturgeon, and killer whales; it also developed a Reasonable and Prudent Alternative to avoid jeopardy to the species. The Reasonable and Prudent Alternative included conditions for revised water operations, habitat restoration and enhancement actions, and fish passage actions. Actions were brought challenging the USFWS and NMFS BOs (2008 and 2009) under Federal ESA and the Administrative Procedure Act, concerning the effects of the CVP and SWP on endangered fish species.

2008 USFWS Biological Opinion Litigation On December 27, 2010, the District Court entered an "Amended Order on Cross-Motions for Summary Judgment" (Doc. 761), remanding the 2008 USFWS BO to the USFWS without vacatur. On May 4, 2011, the District Court issued an amended Final Judgment, ordering the USFWS to complete a final revised BO by December 1, 2013.

In August 2011, the District Court enjoined implementation of USFWS Reasonable and Prudent Alternative Component 3 (Action 4), the fall X2 requirements, which require a monthly average

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position of not greater than 74 kilometers in wet years or 81 kilometers in above normal water years eastward of the Golden Gate Bridge. That injunction is no longer in-effect.

The United States and NRDC appealed the District Court's decision invalidating the 2008 USFWS BO. NRDC also challenged the District Court's finding that Reclamation was required to prepare an EIS on its provisional acceptance of the Reasonable and Prudent Alternative included in the 2008 USFWS BO. Water user plaintiffs cross-appealed the District Court's opinion. On March 13, 2014, the Ninth Circuit Court of Appeals reversed that part of the District Court's opinion that questioned the validity of the 2008 USFWS BO, but affirmed the District Court's finding that Reclamation violated NEPA in failing to prepare an EIS on its provisional acceptance of the Reasonable and Prudent Alternative included in the 2008 USFWS BO.

2009 NMFS BO Litigation In September 2011, the District Court remanded the 2009 BO to NMFS, without vacatur, finding in favor of the Federal government on some counts and in favor of water contractor plaintiffs on other counts. The United States and NRDC appealed the District Court's decision. The Ninth Circuit upheld the 2009 NMFS BO on Federal ESA grounds, but found that Reclamation violated NEPA by failing to prepare an EIS on its acceptance and implementation of the 2009 NMFS BO.

NEPA Compliance To comply with the District Court's orders regarding NEPA, Reclamation initiated preparation of an EIS for the Coordinated Long-Term Operation of the CVP and SWP in 2011.

Reclamation released a Draft EIS for the *Coordinated Long-Term Operation of the CVP and SWP* on July 31, 2015. A *Notice of Availability of Final EIS* was posted in the Federal Register and the Final EIS released on November 23, 2015. A ROD was signed on January 11, 2016. In the ROD, Reclamation's decision to implement the No Action Alternative, which contains all of the Reasonable and Prudent Alternative actions in the 2008 USFWS BO and 2009 NMFS BO, was amended. As noted in the 2016 ROD, Reclamation and DWR may continue to explore additional opportunities to identify efficiencies with implementation of the 2008 USFWS BO and the 2009 NMFS BO. Reclamation, USFWS, and NMFS continue to work collaboratively to improve scientific understanding of the effects of CVP operations on endangered fisheries and to successfully implement the Reasonable and Prudent Alternative actions.

In August 2016, Reclamation and DWR requested reinitiation of consultation with USFWS and NMFS under Section 7 of the Federal ESA on the Coordinated Long-term Operation of the CVP and SWP, based on new information related to multiple years of drought and recent data demonstrating low delta smelt populations, and new information available and expected to become available as a result of ongoing work through collaborative science processes. The Collaborative Science and Adaptive Management Program and Collaborative Adaptive Management Team processes will also be used to provide input to the consultation, as will the Delta Science Program and its processes. The consultation is expected to update the system-wide operating criteria and to review the existing Reasonable and Prudent Alternatives included in the 2008 USFWS and 2009 NMFS BOs on the Coordinated Long-Term Operation of the CVP and SWP, to determine the continued substance and efficacy in meeting the requirements of Section 7 of the Federal ESA. This process will result in the preparation of new BAs and BOs.

Bay Delta Conservation Plan, California WaterFix, and California EcoRestore

The Bay Delta Conservation Plan has been under development since 2006 and was initially intended to serve as a habitat conservation plan and natural communities conservation plan under the Federal ESA and CESA, respectively, to provide 50-year permits of CVP and SWP operations in the Delta. The Bay Delta Conservation Plan included two major elements: new diversion facilities in the north Delta and new tunnel conveyance and ancillary facilities to improve water supply reliability for SOD water users, and large-scale ecosystem restoration projects to improve species conservation (Reclamation and DWR 2016). In 2015, the California DWR and Reclamation separated these two elements into California WaterFix for the new conveyance facilities and California EcoRestore for habitat restoration independent of the mitigation that would be needed for California WaterFix.

A Final EIR/EIS for California WaterFix was issued in December 2016 identifying Alternative 4A as the preferred program alternative. NMFS and USFWS released biological opinions for the proposed action and operation of California WaterFix in June 2017. DWR certified the Final EIR and signed a Notice of Determination in July 2017.

An Agreement for Mitigation of Impacts to Contra Costa Water District from Construction and Operation of the Bay Delta Conservation Plan/California WaterFix between CCWD and DWR was executed on March 24, 2016, and remains in effect as long as California WaterFix is under consideration or in operation. The agreement states that if California WaterFix is approved, (1) DWR would ensure construction activities do not adversely affect CCWD facilities and operations, and (2) to protect against California WaterFix-caused water quality degradation at CCWD's Delta intakes, DWR would convey a portion of CCWD's existing water supply from an alternate high-quality source. This water could be conveyed, in coordination and under agreement with EBMUD and the Sacramento County Water Agency, from the Freeport Regional Water Authority's Freeport Intake on the Sacramento River through the EBMUD-CCWD Intertie to CCWD's service area, or it could be conveyed from the California WaterFix north Delta intakes through a new interconnection with CCWD's system. DWR would bear all costs of constructing the new interconnection facilities and conveying the water to CCWD. The amount of water to be conveyed to CCWD each year would be determined by actual California WaterFix operations based on criteria specified in the agreement.

California EcoRestore is a California Natural Resources Agency initiative implemented in coordination with California state and Federal agencies to advance the restoration of at least 30,000 acres of Delta habitat by 2020. The types of habitat targeted include tidal wetlands, floodplain, upland, riparian, fish passage improvements and others. It is comprised of many projects at various stages of planning, permitting and construction. Some proposed projects exist near the CCWD's existing facilities. Due to potential water quality impacts at CCWD's intakes due to cumulative effects from these projects, the design of nearby proposed projects are being revised.

San Joaquin River Restoration

The *San Joaquin River Restoration Settlement Act* (Settlement), included in Public Law 111-11 and signed into law on March 30, 2009, authorizes and directs the Secretary of the Interior to implement the Settlement, which ended an 18-year legal dispute over the operation of Friant Dam and resolved longstanding legal claims brought by a coalition of conservation and fishing

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groups led by the NRDC. The Settlement establishes two goals: (1) the Restoration Goal is to restore and maintain fish populations in "good condition" in the main stem of the San Joaquin River below Friant Dam to the confluence of the Merced River, including naturally reproducing and self-sustaining populations of salmon and other fish, and (2) the Water Management Goal is to reduce or avoid adverse water supply impacts to all of the Friant Division long-term contractors that may result from the Interim Flows and Restoration Flows provided for in the Settlement. Reclamation is the Federal lead agency for the San Joaquin River Restoration Program. DWR is the state lead agency. Along with Reclamation and DWR, NMFS, USFWS, and CDFW are implementing agencies.

Interim Flows for experimental purposes began in 2009, and Restoration Flows began January 1, 2014. The flows will increase gradually over the next several years up to the full flows specified in the Settlement, as channel capacity allows. After 2026, the District Court, in conjunction with the State Water Board, will consider any requests by the parties for changes to the Restoration Flows.

Activities of Regional and Local Entities/Agencies

This section describes ongoing local water management projects and plans relevant to the Investigation.

Contra Costa Canal Replacement Project

Pursued by CCWD, this project involves protecting water quality in the unlined portion of the Contra Costa Canal from nonpoint source degradation and improving the water quality. The project also improves flood control and public safety and ensures compatibility with adjacent land use. Historical land use adjacent to the canal was predominantly agricultural, but is rapidly changing. Future land uses will include residential and commercial development and extensive wetlands restoration projects, including the CALFED Dutch Slough Tidal Restoration Project.

The unlined portion of the Contra Costa Canal between the Rock Slough Fish Screen and Pumping Plant #1 will be modified by replacing the existing canal with a buried 10-foot diameter concrete pile within Reclamation's right-of-way or immediately adjacent to it. These modifications will effectively isolate the canal from groundwater and surface water runoff. Improvements in water quality will result in reduced formation of regulated disinfection byproducts in drinking water. The project will also improve water operations of the CVP and SWP, as the project area includes a water quality compliance location at Pumping Plant No. 1. Reducing local water quality degradation allows the Federal and California state water projects to use less water to meet existing water quality requirements.

The CEQA Mitigated Negative Declaration for the project was approved in November 2006 and NEPA Finding of No Significant Impact was completed in August 2007. Of this five-segment effort, Segments 1 and 2 of the project were completed in 2009 and 2015, respectively, and replaced roughly a mile and a half of earthen canal. Construction to replace another mile of canal in Segments 3 and 4 is planned for 2018. Funding for Segment 5, the final segment, has yet to be identified, although CEQA/NEPA and mitigation for the entire project has been completed.

Rock Slough Fish Screen Project

Reclamation and CCWD partnered in implementing the Rock Slough Fish Screen Project. Under this project, CCWD's last unscreened intake was screened to prevent Delta fish from entering the canal through the Rock Slough Intake. The Rock Slough Intake is a large untreated water intake to the Contra Costa Canal. The new screen is 320 feet wide, 14 feet deep, and has a capacity of 350 cubic feet per second (cfs). The new screen is designed to operate at the current Delta fish screen criteria, including a 0.2 feet per second approach velocity. Construction on the Rock Slough Fish Screen Project was completed in 2011.

Bay Area Regional Reliability Study

In 2014, the San Francisco Bay Area's largest public water agencies agreed to work together toward regional solutions to improve the water supply reliability for the more than 6 million residents and thousands of businesses and industries in the area. The objective of the Bay Area Regional Reliability (BARR) Partnership is to enable Bay Area agencies to work cooperatively to address regional water supply reliability concerns and drought preparedness on a mutually beneficial basis.

Together ACWD, BAWSCA, CCWD, EBMUD, Marin Municipal Water District, SFPUC, SCVWD, and Zone 7, secured a grant from Reclamation to develop a BARR Drought Contingency Plan. The plan will incorporate response actions to drought and other emergencies as well as more permanent mitigation actions, including such projects as interconnections, new supply sources, water transfers and exchanges, and other projects to advance a joint approach to regional reliability. The BARR Drought Contingency Plan will be finalized by the end of 2017.

In September 2017, the BARR were awarded a grant from Reclamation under the WaterSmart Water Marketing Strategy Program to develop a Bay Area Regional Water Market (Exchange/Transfer) Program to support the BARR agencies in building a framework for long-term, regional resilience and reducing the need for emergency response actions in times of drought and other water supply shortages. After execution of an agreement with Reclamation, the BARR agencies will begin program development and complete water exchanges and transfers within three years of the grant award (estimated timing of August 2020).

San Luis and Delta-Mendota Water Authority Long-Term Water Transfers

The Long-Term Water Transfers Draft and Final EIS/EIR, prepared by Reclamation and SLDMWA, evaluated the potential impacts of water transfer over a 10-year period, 2015 through 2024, to help address CVP water supply shortages during dry hydrologic years. Reclamation issued a ROD (Reclamation and SLDMWA 2015) and SLDMWA filed a Notice of Determination (SLDMWA 2015) on the Long-Term Water Transfers EIS/EIR in 2015 (Reclamation and SLDMWA 2015). The alternatives evaluated include transfers of CVP and non-CVP water or transfers from north-of-Delta to CVP contractors SOD and in the San Francisco Bay Area that require the use of CVP and SWP facilities. The SOD CVP contractors identified as potential buyers of transfer water include members of SLDMWA, including BBID and SCVWD, and other CVP water contractors in the San Francisco Bay Area (CCWD and EBMUD). A number of entities upstream from the Delta have expressed interest in transferring water to reduce the effects of CVP shortages to these agencies. Water would be made available for transfer through groundwater substitution, cropland idling, crop shifting, reservoir release, and conservation.

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Water Supply Management Program 2040

EBMUD's Water Supply Management Program 2040 estimates water supply needs within the district over a 30-year planning horizon and proposes a portfolio of policy initiatives and potential projects to ensure that those needs can be met in dry years. EBMUD adopted the Water Supply Management Program 2040 in 2012. There are opportunities to meet EBMUD demands through an enlarged Los Vaqueros Reservoir, consistent with the Water Supply Management Program 2040.

Association of California Water Agencies Integration Study

In 2016, the Association of California Water Agencies, with funding provided by CCWD, Metropolitan Water District of Southern California, Nevada Irrigation District, Friant Water Authority, Irvine Ranch Water District, and Sites Joint Powers Authority, undertook a technical study to evaluate the operations of the following proposed surface and groundwater storage projects in California: American River Conjunctive Management, Centennial Reservoir, Los Vaqueros Reservoir Expansion, Rosedale-Rio Bravo Water Storage District/Irvine Ranch Water District Surface and Groundwater Integration, San Luis Reservoir Expansion, Sites Reservoir, Temperance Flat Reservoir, and Tulare Lake Storage and Floodwater Protection. The objective of the study was to evaluate the potential benefits of integrated operations of the identified storage projects with current and proposed storage and conveyance infrastructure. The report, released in June 2017 (ACWA 2017), illustrated the potential to capture and store significantly more water in the Bay-Delta watershed. Integrating new storage projects into the system would increase flexibility and improve the timing and coordination of storage releases to improve the ability to meet the coequal goals of improving water supply and restoring the Delta ecosystem. Such integration also would provide enhanced opportunities for groundwater replenishment in furtherance of SGMA.

Organization of Feasibility Report

This report contains nine chapters that define and evaluate plans proposed for a Phase 2 expansion.

- **Chapter 1** provides background information about the Investigation, purpose and scope of the study, study authorization, background, and related studies, projects, and programs.
- **Chapter 2** describes identified problems and opportunities within the primary study area, within the context of existing and anticipated future water resources conditions.
- **Chapter 3** summarizes the detailed formulation process described in the Plan Formulation Appendix.
- **Chapter 4** presents the No Action Alternative and the alternative plans formulated for the Investigation.
- **Chapter 5** presents evaluation and comparison of the alternative plans.

- **Chapter 6** identifies a recommended plan and provides details about its implementation, including cost allocation, and its environmental, economic, and financial feasibility.
- **Chapter 7** summarizes public involvement and engagement, stakeholder outreach, environmental review, and agency coordination activities undertaken by Reclamation and CCWD.
- **Chapter 8** presents study findings, considerations, and recommendations for further action.
- **Chapter 9** provides a list of sources consulted in preparation of this report.

Appendices to the Feasibility Report include the following:

- Appendix A – Plan Formulation
- Appendix B – Modeling
- Appendix C – Engineering Designs and Costs
- Appendix D – Economic Analysis
- Appendix E – Real Estate
- Appendix F – Climate Change
- Appendix G – Cost Allocation

Environmental documentation was completed in the form of the 2010 Final EIS/EIR and in 2017 in the form of a draft Supplement, bound separately from this Feasibility Report.

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