

Chapter 1

Introduction

The Upper San Joaquin River Basin Storage Investigation (Investigation) is a feasibility study by the U.S. Department of the Interior, Bureau of Reclamation (Reclamation), and the California Department of Water Resources (DWR). The purpose of the Investigation is to determine the type and extent of Federal, State, and regional interests in a potential project(s) in the upper San Joaquin River watershed to expand water storage capacity; improve water supply reliability and flexibility of the water management system for agricultural, urban, and environmental uses; and enhance San Joaquin River water temperature and flow conditions to support anadromous fish restoration efforts.

The Investigation is one of five surface water storage studies recommended in the CALFED Bay-Delta Program (CALFED) Programmatic Environmental Impact Statement/Environmental Impact Report (PEIS/EIR) Record of Decision (ROD) of August 2000. Previous studies in support of the CALFED PEIS/EIR considered more than 50 surface water storage sites throughout California and recommended more detailed study of the five identified in the ROD (CALFED, 2000a). Reclamation and DWR are coordinating the Investigation with the California Bay-Delta Public Advisory Committee (BDPAC), which provides advice to the Secretary of the Interior (Secretary) regarding implementation of CALFED, and the California Bay-Delta Authority (CBDA), which provides general oversight and coordination of all CALFED activities.

Progress and results of the Investigation are being documented in a series of interim reports that will culminate in a Feasibility Report and an Environmental Impact Statement/Environmental Impact Report (EIS/EIR), consistent with the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (P&G) (WRC, 1983), Reclamation directives and standards, DWR guidance, and applicable environmental laws. This Plan Formulation Report (PFR) is the third interim planning report in the Investigation feasibility study process and builds on the results and findings of the previous two interim planning documents.

The first interim planning document, the Phase 1 Investigation Report, completed in October 2003 (Reclamation), identified and addressed 17 possible reservoir sites in the eastern San Joaquin Valley and selected 6 for continued study. Nearly all retained sites are located in the upper San Joaquin River basin. In February 2004, formal initiation of environmental compliance processes began, consistent with Federal and State of California (State) regulations, and will continue through completion of all study requirements.

The second interim planning document, the Initial Alternatives Information Report (IAIR), was completed in June 2005 (Reclamation). It evaluated the six reservoir sites retained from Phase 1, and other reservoir storage sites added in response to comments received during public scoping, and identified potential groundwater storage measures. Twenty-four reservoir measures (based on location and size), many with multiple alternative hydropower generation options, were evaluated in the IAIR. The evaluations considered construction cost, potential new water supply that could be developed, hydropower impacts, potential replacement power generation, and preliminary environmental impacts. In addition, several initial water operations scenarios that could address various planning objectives were identified and evaluated at a preliminary level of detail. The IAIR recommended continued study of four reservoir sites that, when combined with a set of operating rules, constitute initial alternatives.

Purpose, Scope, and Organization of this Plan Formulation Report

The primary purposes of this PFR are as follows:

- Describe the planning objectives for the Investigation
- Describe the formulation and refinement of alternative plans to address the planning objectives
- Present the results of initial alternative plan evaluations
- Compare accomplishments and potential effects of the alternative plans
- Define a set of alternative plans to be considered in detail in the Feasibility Report and EIS/EIR

This PFR is not a decision document; it is a report based on available information at this stage of the feasibility study process. Additional studies and documentation (e.g., Feasibility Report, EIS/EIR) will follow this PFR during the Investigation, with continued opportunities for public review and participation in compliance with National Environmental Policy Act (NEPA), California Environmental Quality Act (CEQA), and other pertinent laws and regulations.

The scope of the report includes the following topics:

- Description of the plan formulation process, including water resources problems and needs in the study area warranting Federal consideration; planning objectives and opportunities; and planning constraints, principles, and criteria used to help guide the feasibility study (Chapter 2).
- Description of existing and likely future water resources and related conditions in the study area (Chapter 3).

- Description of management measures, and from these measures, the formulation and evaluation of a set of initial alternatives to address the planning objectives and opportunities, and screening of initial alternatives and subsequent alternative plans for continued study. (Chapter 4).
- Description of features and evaluation of accomplishments, effects, costs, and benefits of alternative plans (Chapter 5).
- Comparison of alternative plans and conclusions regarding which alternatives merit further study (Chapter 6).
- Implementation considerations; compliance with applicable laws, policies, and plans; and identification of stakeholder and public involvement considerations (Chapter 7).
- Summary of findings for this PFR and future actions and schedule for the feasibility study (Chapter 8).
- Sources used to prepare this PFR (Chapter 9).

Study Authorization and Guidance

Federal and State authorizations for the feasibility study/Investigation and related guidance are described below.

Federal Authorization

Federal authorization for the Investigation was initially provided in Public Law 108-7, Division D, Title II, Section 215, the omnibus appropriations legislation for fiscal year 2003, enacted in February 2003. This act authorized the Secretary to conduct feasibility studies for several storage projects identified in the CALFED ROD (2000a), including the Investigation:

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.

Subsequent authorization for the Investigation was provided in Public Law 108-361, Title I, Section 103, Subsection (d)(1)(A)(ii), the Water Supply, Reliability, and Environmental Improvement Act, signed October 25, 2004:

Planning and feasibility studies for the following projects requiring further consideration –...(II) the Upper San Joaquin River storage in Fresno and Madera Counties.

Other provisions in the same act authorize Federal participation in groundwater management and storage projects and actions to improve water quality in the lower San Joaquin River at or near Vernalis. Reclamation is the Federal lead agency for the Investigation.

State of California Authorization

DWR is the State lead agency for the Investigation. Section 227 of the California Water Code authorizes DWR to participate in water resources investigations:

The department may investigate any natural situation available for reservoirs or reservoir systems for gathering and distributing flood or other water not under beneficial use in any stream, stream system, lake, or other body of water. The department may ascertain the feasibility of projects for such reservoirs or reservoir systems, the supply of water that may thereby be made available, and the extent and character of the areas that may be thereby irrigated. The department may estimate the cost of such projects.

Guidance in the CALFED Record of Decision

The principal objective of CALFED is 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 CALFED ROD recommended numerous projects and actions to increase water supply reliability, improve ecosystem health, increase water quality, and improve Sacramento-San Joaquin Delta (Delta) levee stability (CALFED, 2000a).

Several program elements were defined that, in combination, would help attain the overall goals of CALFED. The Storage Program element includes five investigations of potential increased surface storage capabilities at various locations in the Central Valley, including the upper San Joaquin River basin, as well as efforts to increase groundwater storage through conjunctive management. For the upper San Joaquin River basin, the CALFED ROD states the following:

... 250-700 [thousand acre-feet (TAF)] of additional storage in the upper San Joaquin watershed... would be designed to contribute to restoration of and improve water quality for the San Joaquin River and facilitate conjunctive water management and water exchanges that improve the quality of water deliveries to urban communities. Additional storage could come from enlargement of Millerton Lake at Friant Dam or a functionally equivalent storage program in the region.

Study Area

The upper San Joaquin River basin comprises the San Joaquin River and tributary lands upstream from its confluence with the Merced River to its source high in the Sierra Nevada Mountains. The characteristics of the San Joaquin River vary greatly throughout this range. Friant Dam, located on the San Joaquin River about 20 miles northeast of Fresno, diverts much of the water from the San Joaquin River to the eastern portions of the San Joaquin and Tulare Lake hydrologic regions (Figure 1-1), from Chowchilla in the north to Bakersfield in the south.

The study area comprises features and areas that would be affected by changes in water management to support Investigation objectives and opportunities. The study area has been refined as the Investigation has progressed. Through previous phases, and this plan formulation phase, geographic areas were added and deleted from consideration as the potential effects of alternatives were better understood, and management measures were added and deleted.

The primary study area, shown in Figure 1-2, encompasses the San Joaquin River watershed upstream from Friant Dam to Kerckhoff Dam, including Millerton Lake, and the areas that would be directly affected by construction-related activities, including the footprint of reservoir alternatives and related facilities upstream from Friant Dam.

The extended study area presented in this document encompasses locations of potential project features and areas potentially affected by alternative implementation and/or operation (Figure 1-3). These locations and areas include the following:

- San Joaquin River watershed upstream from Friant Dam
- San Joaquin River downstream from Friant Dam, including the Delta
- Lands with San Joaquin River water rights
- Friant Division of the Central Valley Project (CVP), including underlying groundwater basins in the eastern San Joaquin Valley
- South-of-Delta (SOD) water service areas of the CVP and State Water Project (SWP)



Figure 1-1. San Joaquin and Tulare Lake Hydrologic Regions

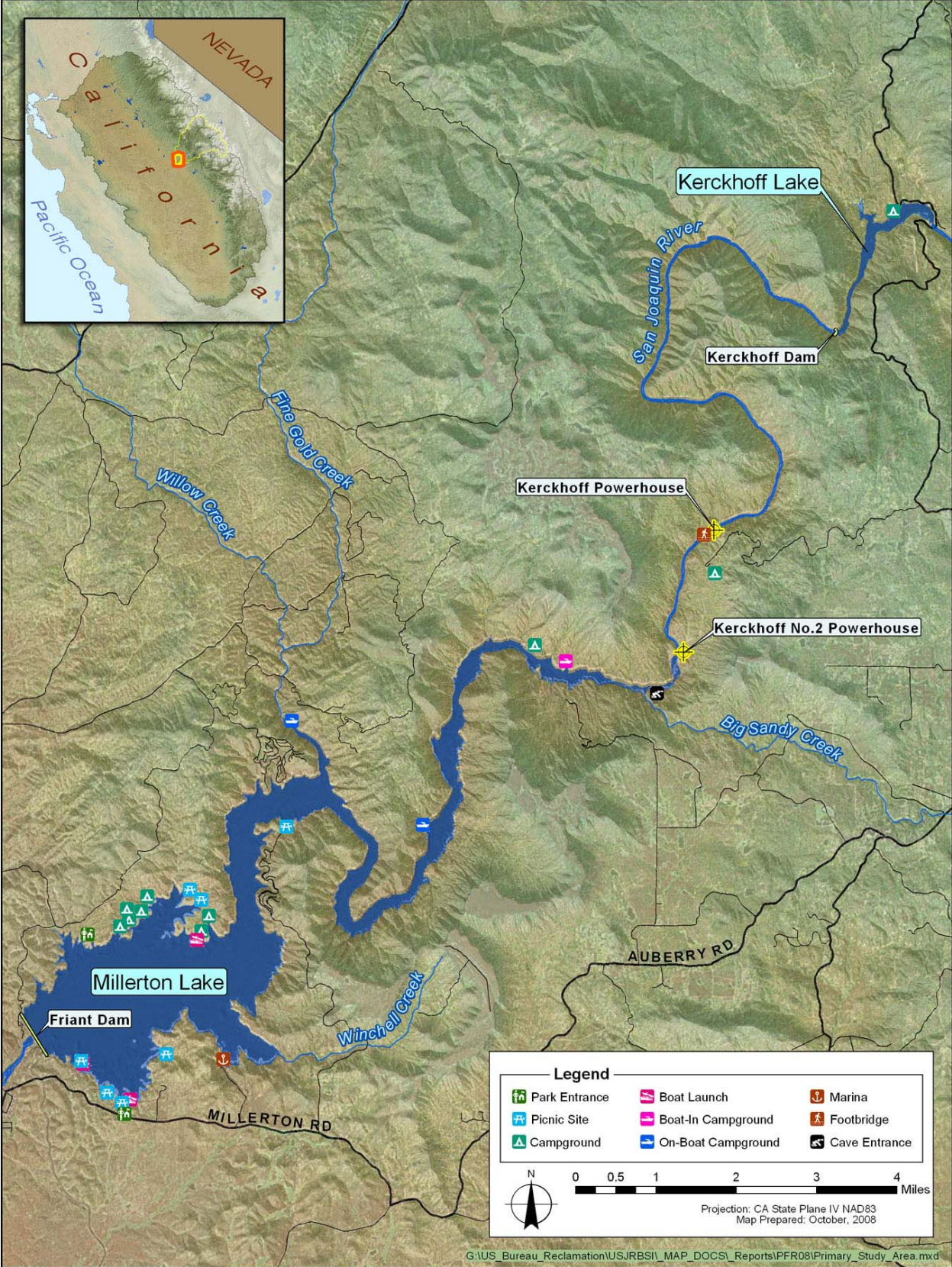


Figure 1-2. Primary Study Area

Upper San Joaquin River Basin Storage Investigation
Plan Formulation Report

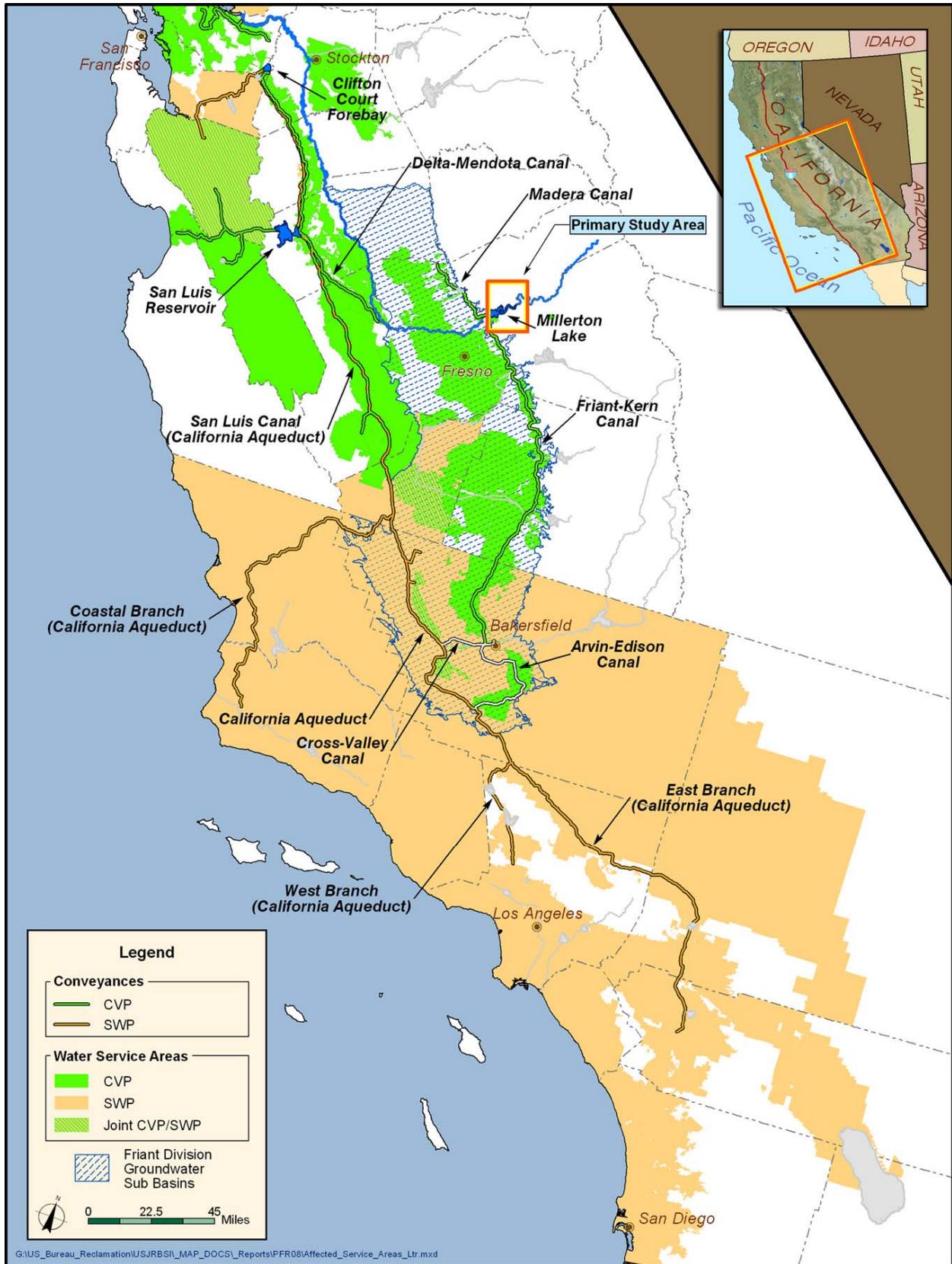


Figure 1-3. Extended Study Area

Related Studies, Projects, Programs, and Plans

Following is a summary of studies, projects, programs, and plans conducted by various Federal and State agencies and numerous local working groups and private organizations in the study area that are directly or indirectly relevant to the Investigation.

Federal

Following are Federal studies, projects, programs, and plans relevant to the Investigation.

U.S. Department of the Interior – Bureau of Reclamation

As the owner and operator of various components of the CVP in the study area, including Friant Dam and Millerton Lake, Reclamation has many ongoing projects or continuing programs relevant to the Investigation.

Central Valley Project The CVP, the largest surface water storage and delivery system in California, supplies water to more than 250 long-term water contractors in the Central Valley, Santa Clara Valley, and San Francisco Bay Area (Bay Area). Annually, the CVP has the potential to supply about 6.2 million acre-feet (MAF) for agricultural uses, 0.5 MAF for urban uses, and 0.3 MAF for wildlife refuges. The CVP also provides flood damage reduction, navigation, power, recreation, and water quality benefits. As part of the Friant Division of the CVP, Friant Dam regulates an average annual inflow of about 1.8 MAF and delivers about 1.4 MAF of water annually on average to water users in the eastern San Joaquin Valley, approximately 20 percent of the potential annual CVP supply.

Prior Studies of Enlarging Friant Dam Several previous studies examined the potential to provide new water storage at Millerton Lake. In 1952, 10 years after completion of Friant Dam, Reclamation conducted a study to determine the feasibility of raising Friant Dam (Reclamation, 1952). The study included designs and costs for raising Friant Dam by 60 feet and constructing four earth saddle dams. Based on a comparison of costs to potential revenue from the sale of increased yield, the study concluded that the raise would be infeasible.

Reclamation revisited the potential cost for a 60-foot raise at a reconnaissance level in 1975, and developed a cost estimate for an approximate 140-foot raise in 1982 (Reclamation, 1982). In 1997, Reclamation again reconsidered the feasibility of raising Friant Dam to provide additional storage capacity in Millerton Lake. Raises of 60 feet and 140 feet were considered (Reclamation, 1997). Also, in 2000, a study conducted for the Friant Water Users Authority (FWUA) and Natural Resources Defense Council (NRDC) coalition considered a 20-foot raise of Friant Dam as one of many alternatives for increasing potential water supply to the San Joaquin River (FWUA and NRDC, 2002).

Central Valley Project Improvement Act The Central Valley Project Improvement Act (CVPIA) was signed into law in October 1992 as Title 34 of Public Law 102-575. The CVPIA addresses conflicts over water rates, irrigation land limitations, and environmental impacts of the CVP. One of the purposes of the CVPIA is to ensure equal priority and consideration for protection, restoration, and enhancement of fish, wildlife, and associated habitats of the Bay-Delta estuary and tributaries when evaluating the purpose of the CVP. The CVPIA also addresses the operational flexibility of the CVP and methods to expand the use of voluntary water transfers and improved water conservation. The CVPIA dedicates 1.2 MAF of water annually to the environment which, through operations flexibility, results in a reduction of 585 TAF previously available to CVP contractors.

Operations Criteria and Plan Biological Assessment In March 2004, Reclamation prepared a Long-Term Operations Criteria and Plan (OCAP) to address how the CVP would be operated in the future, as several proposed projects come online and as water demands increase. The 2004 document is a revision of the previous 1992 OCAP release, incorporating numerous new considerations and criteria that address conditions that have arisen since 1992 (Reclamation, 2004a). Given the numerous changed circumstances since the 2004/2005 OCAP consultations (e.g., delta smelt population decline, newly designated critical habitat for steelhead, spring-run Chinook salmon, and new listing of the Southern distinct population segment of North American green sturgeon), in 2006 Reclamation requested initiation of Section 7 Endangered Species Act (ESA) consultation with both the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS). It is expected that consultations will be complete by spring 2009.

San Luis Drainage Feature Reevaluation During June 2006, Reclamation filed the Final EIS for the San Luis Drainage Feature Reevaluation with the U.S. Environmental Protection Agency (EPA) and made the document available to the public. 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 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. Drainage service is defined as managing the regional shallow groundwater table by collecting and disposing of shallow groundwater from the root zone and/or reducing contributions of water to the shallow groundwater table through land retirement. 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, 2007a), 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.

Millerton Lake Resource Management Plan and General Plan In June 2008, Reclamation, in cooperation with the California Department of Parks and Recreation (DPR), completed a Millerton Lake Draft Resource Management Plan (RMP)/General Plan and associated Draft EIS/EIR. The RMP/General Plan is a long-term plan that will guide future actions in the Millerton Lake State Recreation Area and is based on a comprehensive inventory of environmental resources and facilities. The RMP establishes management objectives, guidelines, and actions to protect water quality and natural and cultural resources, while enhancing recreational uses in the Millerton Lake State Recreation Area (Reclamation, 2008a). Alternatives currently under consideration emphasize more passive recreation opportunities upstream from Fine Gold Creek, while emphasizing more intensive recreation activities downstream from Fine Gold Creek. The alternative selected in the Final EIS will serve as the framework for negotiating a management agreement with the managing partner, and will provide guidance for resource management and recreation on lands managed by the U.S. Department of the Interior, Bureau of Land Management (BLM), in the San Joaquin River Gorge Management Area (SJRGM). Relevant information developed in this planning effort regarding resources and recreational opportunities and impacts in the areas around and upstream from Millerton Lake will be used in the Investigation.

U.S. Department of the Interior – U.S. Geological Survey National Water Quality Assessment Program

As part of the National Water Quality Assessment (NAWQA) program initiated by the U.S. Geological Survey (USGS) in 1991, the San Joaquin-Tulare basins study unit was a part of the first decadal cycle of investigations into the quality of water resources conducted to establish existing water quality conditions of streams and aquifers across the Nation. Long-term goals of the NAWQA program are to assess the status of, and trends in, the quality of freshwater streams and aquifers, and to provide a sound understanding of the natural and human factors that affect the quality of these resources. NAWQA again will intensively investigate the quality of water resources in the San Joaquin-Tulare basins, as part of the second 10-year cycle of the program. While long-term goals remain the same, the emphasis of these renewed investigations will shift from status of water quality to trends in water quality and understanding of natural and anthropogenic factors affecting water quality.

U.S. Department of Defense – U.S. Army Corps of Engineers Reservoir Regulation, Post-Flood Assessment, and Comprehensive Study

The U.S. Army Corps of Engineers (USACE) prescribed the operating space and developed the operating rules at Friant Dam and Millerton Lake for flood damage reduction. In addition to reservoir regulation rules, USACE has conducted various studies and implemented many projects and programs that affect the upper San Joaquin River and its tributaries. Several of the most recent efforts have included the March 1999 Post-Flood Assessment (USACE, 1999) and the Sacramento and San Joaquin River Basins Comprehensive Study (Comprehensive Study) (USACE and The Reclamation Board, 2002).

State

Following are DWR, DPR, State Water Resources Control Board (SWRCB), and Central Valley Regional Water Quality Control Board (RWQCB) studies, projects, programs, and plans relevant to the Investigation.

State of California Department of Water Resources

DWR projects, programs, and plans described below include the SWP, California Water Plan, and Conjunctive Water Management Program.

State Water Project The SWP delivers water to the Feather River Settlement Contractors and SWP Contract Entitlements in the Feather River basin, Bay Area, San Joaquin Valley, Tulare basin, and Southern California service areas. The SWP has contracted a total of 4.23 MAF for average annual delivery: about 2.5 MAF for the Southern California Transfer Area; nearly 1.36 MAF for the San Joaquin Valley; and the remaining 370,000 acre-feet for San Francisco Bay, the central coast, and Feather River areas.

California Water Plan The California Water Plan, through the DWR Bulletin 160 series, helps define California's agricultural, environmental, and urban water needs and identifies potential solutions to these needs. The 1998 Update used and expanded the analytical methods developed in previous versions and contains extensive quantitative information. The most recent plan, distributed in December 2005, identifies water resource issues and includes a strategic plan, goals, policy recommendations, and recommended actions to ensure sustainable water uses and reliable water supply. Bulletin 160-05 lacks substantial quantitative information, but rather "provides qualitative discussions and presents the analytical approach for use in future California Water Plan updates" (DWR, 2005). As a result, Bulletin 160-98 was used to provide the majority of quantitative California Water Plan data for this report.

The plan, which is updated every 5 years, identifies and evaluates existing and proposed statewide demand management and water supply augmentation programs and projects for meeting the challenges of sustainable water use in California through 2030. The next plan update is scheduled for late 2009.

Two key initiatives outline the ways the foundational actions will be achieved. The first is to implement integrated regional water management, which is a comprehensive systems approach for determining the appropriate mix of demand and supply management options that provide long-term, reliable water supply at the lowest reasonable cost and with highest possible benefits to customers, economic development, environmental quality, and other social objectives. The second initiative is to improve statewide water management systems. California depends on vast statewide water management systems to provide clean and reliable water supplies, protect lives and property from flood, withstand drought, and sustain environmental values. To improve the efficiency and flexibility of California water systems, water facilities must be maintained and improved.

The Investigation will contribute to both initiatives by evaluating opportunities that can enhance regional objectives and contribute to statewide system flexibility. Consistent with the Water Plan Update, DWR will consider how Investigation alternatives can contribute to broad regional water management issues and an Integrated Regional Water Management Plan.

Conjunctive Water Management Program DWR's Conjunctive Water Management Program is working with local water agencies and stakeholders throughout the State, including the San Joaquin Valley, to develop partnerships and provide assistance for planning and developing locally controlled and managed conjunctive use programs and projects. Project proposals to be pursued by these local agencies may be considered in the Investigation or in the future without-project conditions.

California Department of Parks and Recreation

DPR manages the Millerton Lake State Recreation Area (SRA), which includes Millerton Lake and adjacent lands, under an operating agreement with Reclamation for recreation, preservation of biological diversity, and protection of natural and cultural resources. The Millerton Lake SRA offers interpretive programs for wildlife viewing, tours of the historic Millerton County Courthouse, tours of a fish hatchery downstream from Friant Dam, and various campfire programs in addition to high-quality recreational opportunities. The SRA is one of the most popular recreation areas in the San Joaquin Valley.

State Water Resources Control Board

SWRCB manages the Groundwater Ambient Monitoring and Assessment (GAMA) Program. The primary objective of GAMA is to comprehensively assess statewide groundwater quality and gain an understanding about contamination risk to specific groundwater resources. The Groundwater Quality Monitoring Act of 2001 resulted in a publicly accepted plan to monitor and assess the quality of all priority groundwater basins, which account for over 90 percent of all groundwater used in the State. The plan builds on the existing GAMA Program and prioritizes groundwater basins for assessment based on groundwater use. Groundwater basin assessments are in progress or scheduled across the State and represent areas in all 10 hydrogeologic provinces. Uniform and consistent study-design and data-collection protocols are being applied to the entire State to facilitate efficient statewide, comprehensive groundwater quality monitoring and assessment. Monitoring and assessments for priority groundwater basins are to be completed every 10 years, with trend monitoring every 3 years. SWRCB is collaborating with USGS and Lawrence Livermore National Laboratory to implement the GAMA Program.

Central Valley Regional Water Quality Control Board

Central Valley RWQCB projects, programs, and plans described below include the Conditional Waiver of Waste Discharge Requirements for Irrigated Lands and Impaired Water Bodies 303(d) List and total maximum daily load (TMDL).

Conditional Waiver of Waste Discharge Requirements for Irrigated Lands

Growers with irrigated lands who discharge waste that can degrade surface water quality must now select one of three options to obtain regulatory coverage under the Water Code: elect to join a Coalition Group approved by the Central Valley RWQCB, file for an Individual Discharger Conditional Waiver, or file a Report of Waste Discharge for the purpose of receiving Waste Discharge Requirements, if appropriate.

Impaired Water Bodies 303(d) List and Total Maximum Daily Loads

In 2006, the Federal EPA approved the Central Valley RWQCB's 303(d) list for portions of the San Joaquin River downstream from Friant Dam that do not meet, or are not expected to meet, water quality standards, or are considered impaired. The Clean Water Act (CWA) further requires development of a TMDL for each listing.

Federal-State

Programs and studies conducted jointly by Federal and State agencies are described below.

CALFED Bay-Delta Program

CALFED is a collaboration of 25 Federal, State, and local agencies that established a program after the Bay-Delta Accord to address water quality, ecosystem quality, water supply reliability, and levee system integrity. Major CALFED programs include the Conveyance, Water Transfer, Environmental Water Account, Water Use Efficiency, Water Quality, Levee System Integrity, Ecosystem Restoration and Watershed Management, and Storage programs.

Following issuance of a CALFED Bay-Delta Final PEIS/EIR in July 2000, the CALFED agencies issued a programmatic ROD in August 2000 that identified 12 action plans, including plans for Governance, Ecosystem Restoration, Watersheds, Water Supply Reliability, Storage, Conveyance, Environmental Water Account, Water Use Efficiency, Water Quality, Water Transfer, Levees, and Science programs (CALFED, 2000b). The CALFED agencies then began implementing Stage 1 of the ROD, including the first 7 years of a 30-year program, to establish a foundation for long-term actions. CALFED Stage 1 ended on December 31, 2007, and Stage 1 actions are continuing to be implemented. CALFED Stage 2 actions will be defined through the Delta Vision process as well as the through development of a Bay Delta Conservation Plan. The Investigation is being developed with consistent guidance provided in the CALFED ROD and other supporting documents.

CALFED Surface Water Storage Program Results of initial evaluations to formulate this program were presented in the Integrated Storage Investigation Report - Initial Surface Water Storage Screening (CALFED, 2000c), which assessed and screened numerous potential reservoir sites. Of many potential surface water storage projects considered, 12 were retained for more detailed evaluation. From these 12 retained sites, five were included in the Preferred

Program Alternative for consideration during Phase 1 of CALFED implementation. Reclamation and DWR committed to assume lead agency roles for investigation of these sites and to work with other CALFED agencies in pursuing their implementation. The five surface water storage projects include Enlarge Shasta Lake, In-Delta Storage, Los Vaqueros Reservoir Enlargement, Sites Reservoir (also known as North-of-the-Delta Offstream Storage (NODOS)), and Upper San Joaquin River Basin Storage.

Common Assumptions for CALFED Water Storage Projects A CALFED Common Assumptions work group has been established for the primary purpose of developing common baseline conditions against which the various water storage investigations can assess the feasibility of their projects. A major task of the Common Assumptions effort is to develop common analytical tools. To date, the work group has assembled a number of modeling tools under one package, termed the Common Model Package (CMP). The CMP includes CALSIM-II, Least Cost Planning Simulation Model (LCPSIM), Central Valley Production Model (CVPM), Delta Simulation Model (DSM2), Sacramento River Water Quality Model (SRWQM), Salmod, Long Term Gen (LTGen), and SWP-Power. CALSIM-II is a statewide water resources planning model, primarily reflecting the Central Valley and Delta operations of the CVP and SWP. The model is used to evaluate water supply facilities and demands; regulatory standards, including minimum flow requirements, water rights, contracts, and water quality standards; system operations; and likely foreseeable actions.

San Joaquin River Restoration Program

In 1988, a coalition of environmental groups, led by NRDC, filed a lawsuit challenging the renewal of long-term water service contracts between the United States and CVP Friant Division contractors. After more than 18 years of litigation of this lawsuit, known as *NRDC et al. v. Kirk Rodgers et al.*, a Stipulation of Settlement (Settlement) was reached. On September 13, 2006, the Settling Parties, including NRDC, FWUA, and the U.S. Departments of the Interior and Commerce, reached agreement on the terms and conditions of the Settlement, which was subsequently approved by the U.S. Eastern District Court of California on October 23, 2006.

Once authorized, The San Joaquin River Restoration Program (SJRRP) will implement the San Joaquin River litigation Settlement. The “Implementing Agencies” responsible for managing the SJRRP are the U.S Department of the Interior, through Reclamation and USFWS; U.S Department of Commerce through NMFS; and the State of California through DWR, the California Department of Fish and Game (DFG), and the California Environmental Protection Agency (CalEPA). Consistent with the Memorandum of Understanding between the Settling Parties and the State, which was signed at the same time as the Settlement, the State, through DFG, DWR, the Resources Agency, and CalEPA, will play a major, collaborative role in planning, designing, funding, and implementing the actions called for in the Settlement.

The SJRRP is a comprehensive long-term effort to restore flows in the San Joaquin River from Friant Dam to the confluence of the Merced River, ensure irrigation supplies to Friant water users, and restore a self-sustaining fishery in the river.

The Settlement has two primary goals:

- **Restoration Goal** – To restore and maintain fish populations in “good condition” in the mainstem 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.
- **Water Management Goal** – To reduce or avoid adverse water supply impacts on all of the Friant Division long-term contractors that may result from the Interim Flows and Restoration Flows provided for in the Settlement.

Reclamation and DWR have initiated environmental compliance documentation for the SJRRP. The Implementing Agencies have organized a Program Management Team (PMT) and several Technical Work Groups to develop a plan for implementing the Settlement through a joint NEPA and CEQA process, which includes preparation of a PEIS/EIR. Reclamation is the lead NEPA agency and DWR is the lead CEQA agency for the SJRRP.

The Settlement includes a schedule of implementing actions that support the Restoration Goal. These include channel modifications to provide sufficient flow capacity, gravel pit isolation, flow control structures, and fish passage facilities along the San Joaquin River and San Joaquin River Flood Control Project between Friant Dam and the confluence with the Merced River. According to the schedule provided in the Settlement, full Restoration Flows will begin by 2014, and all river facility construction required by the Settlement will be completed by 2016. A program of Interim Flows will commence no later than October 1, 2009, and continue until full Restoration Flows begin. At this time, Congressional action is pending to authorize Federal participation in the Settlement and to appropriate funds to support implementation goals.

Bay Delta Conservation Plan

The Bay Delta Conservation Plan (BDCP) is a Habitat Conservation Plan being prepared to help recover endangered and sensitive species and their habitats in the Delta in a way that also will provide for sufficient and reliable water supplies. The BDCP is intended to meet the requirements of Section 10 of the ESA; provide the basis for consultations between Reclamation, FWS and NMFS under Section 7 of the ESA; and meet the requirements of either Section 2835 or Section 2081 of the State Fish and Game Code.

An objective of the BDCP is to obtain long-term permits that will allow for the incidental take of threatened and endangered species resulting from covered activities and conservation measures associated with water operations of the SWP and CVP, including facility improvements and maintenance activities, operational activities related to water transfers, new Delta conveyance facilities, and habitat conservation measures included in the BDCP. Entities seeking incidental take coverage through the BDCP include Reclamation, DWR, Metropolitan Water District of Southern California, Kern County Water Agency, Santa Clara Valley Water District, Zone 7 Water Agency, San Luis Delta and Mendota Water Authority, Westlands Water District, and Mirant Delta.

The BDCP will likely include capital improvements for water supply conveyance, ecological restoration, monitoring, and adaptive management. The BDCP is in the early stages of planning. A Notice of Preparation (NOP) of a joint EIR/EIS was issued by DWR on March 17, 2008. A Notice of Intent (NOI) to prepare an EIR/EIS and conduct scoping meetings was issued by Reclamation, FWS, and NMFS on April 15, 2008. Effects of the BDCP process on the Investigation are currently uncertain, but completion of the Investigation Feasibility Report is not dependent upon completion of the BDCP EIS/EIR and associated planning documents.

Delta Vision

The Delta Vision process was initiated by the Governor of California through Executive Order S-17-06 establishing an independent Blue Ribbon Task Force responsible for the development of a durable vision for sustainable management of the Delta (Delta Vision, 2008). As part of the process, a seven-member Cabinet-level Delta Vision Committee was appointed to oversee the process, along with the appointment by the Committee of a 43-member Stakeholder Coordination Group and two Science Advisors. The work of the Task Force included two phases - the Vision, which was completed in December 2007, and the Strategic Plan, that is to be completed by October 2008.

The Vision consists of 12 integrated and linked recommendations that are meant to be implemented together over time. Key recommendations include significant increases in conservation and water system efficiency, new water conveyance and storage facilities, and new governance for the Delta region. The Vision also recommends seven near-term actions which include improving flood protection, ecosystem restoration, and water supply and reliability. As one of four feasibility studies under the CALFED Storage Program, the Investigation is consistent with the Vision recommendations. While all four of the potential CALFED storage projects are mentioned in the Vision as significant to the conveyance and storage link, decisions on whether and how to proceed with any of the alternative plans evaluated in this document are not tied to completion or implementation of the Delta Vision Strategic Plan. Those decisions are part of the CALFED Program evaluation once the four storage feasibility studies have been completed.

Local

Studies, projects, programs, and plans conducted by local agencies are described below.

San Joaquin River Exchange Contractors Water Authority Water Transfer Program

The San Joaquin River Exchange Contractors Authority completed an EIR to support a 10-year program, from 2005 to 2014, to allow the transfer of up to 130 TAF of substitute water from the Exchange Contractors to other water users. A maximum of 80 TAF of water would be developed from conservation measures, including tailwater recovery and groundwater pumping, and a maximum of 50 TAF would be developed from temporary land fallowing. Potential recipients of the water include CVP contractors, Reclamation – for delivery to the San Joaquin Valley wetland habitat areas (wildlife refuges), and Reclamation and/or DWR to support the Environmental Water Account.

San Joaquin River Agreement and Vernalis Adaptive Management Program

The San Joaquin River Agreement (SJRA), adopted in 2000, is a water supply program to provide increased instream flows in the San Joaquin River. The water would provide protective measures for fall-run Chinook salmon in the San Joaquin River under the Vernalis Adaptive Management Program (VAMP). Parties to the SJRA include the following:

- **California Resources Agency Departments** – DWR and DFG.
- **U.S. Department of the Interior Agencies** – Reclamation and USFWS.
- **San Joaquin River Group Authority Agencies** – SJRGA and its member agencies, including the Modesto Irrigation District, Turlock Irrigation District, Merced Irrigation District, South San Joaquin Irrigation District, and Oakdale Irrigation District; the San Joaquin River Exchange Contractors Water Authority and its member agencies, including the Central California Irrigation District, San Luis Canal Company, Firebaugh Canal Water District, and Columbia Canal Company; FWUA on behalf of its member agencies; and the City and County of San Francisco.
- **CVP and SWP Contractors** – SWP Contractors, Kern County Water Agency, Tulare Lake Basin Water Storage District, Santa Clara Valley Water District, San Luis and Delta-Mendota Water Authority, Westlands Water District, and Metropolitan Water District of Southern California (MWDSC).
- **Environmental Interest Groups** – Natural Heritage Institute and the Bay Institute of San Francisco.

VAMP is an experimental study on the impact of flow, nonflow, and export rates on salmon fisheries in the lower San Joaquin River. The primary objective of VAMP is to implement a pulse flow for a 31-day period in the San Joaquin River at Vernalis during April and May to temporarily enhance the river's assimilative capacity for salt, thereby improving water quality for fish, such as spring-run Chinook salmon. Water will be used from 1999 to 2010 and flows will vary annually depending on hydrological and biological conditions. Water for achieving the VAMP 31-day pulse flow (April to May) is provided by the San Joaquin River Group Authority (SJRG) member agencies. Total water supply to support VAMP is capped at 110 TAF in any year. Reclamation and DWR compensate SJRG to ensure that water supplies are available for instream flows, as needed, up to prescribed limits.

Additional water in excess of 110 TAF can be acquired from willing sellers who are members of the SJRG. The additional water would be used for ramping around the pulse flow to assist in protecting salmon redds, controlling any water temperature, and improving water quality. Because the water released would increase instream flows in the lower San Joaquin River, it also would contribute to compliance with the 1995 SWRCB Bay-Delta Water Quality Control Plan (WQCP) Vernalis objectives (SWRCB, 1995) and with the San Joaquin River component of the Delta Smelt Biological Opinion (Reclamation and SJRG, 1999).

Big Creek Facilities Relicensing

Southern California Edison (SCE) owns and operates seven hydroelectric projects, collectively comprising the Big Creek System, in the eastern portion of the upper San Joaquin River basin upstream from Kerckhoff Lake. SCE is initiating a multiyear collaborative process for relicensing four of its seven Big Creek hydroelectric projects. The Federal Energy Regulatory Commission (FERC) provided approval to SCE on March 15, 2000, to use an Alternative Licensing Process (ALP) to relicense four of the seven projects (SCE, 2000). A settlement agreement, marking the culmination of the 7-year ALP to relicense the Big Creek Hydroelectric Facilities, was signed during April 2007 by SCE and more than 45 diverse stakeholders. The settlement agreement calls for extensive plans to mitigate project-related effects on aquatic, terrestrial, and cultural resources, and improve land and recreation management (SCE, 2007).

Friant Water Users Authority and Metropolitan Water District of Southern California Partnership Studies

FWUA and MWDSC have entered into a partnership, based on an approved set of principles, to investigate the potential of enhancing water supply and affordability in the eastern San Joaquin Valley while improving water quality for Southern California water users. The partnership is based on the desire by both parties to investigate joint water management projects that can be implemented for mutual benefit of the agencies, their members, and water users. Studies include potential enlargement of Mammoth Pool Reservoir and exchange opportunities between Friant Division and Delta water supplies.

The Mammoth Pool Enlargement Study entails (1) revisiting a former SCE proposal to enlarge Mammoth Pool by installing eight 25-foot-high radial gates across the natural rock spillway to raise the maximum lake level, and (2) constructing a 5-foot-high parapet on top of the existing dam to maintain freeboard under emergency storage conditions. Enlarging Mammoth Pool would create 30 TAF of additional water storage.

Additional studies by FWUA and MWDC considered operations to accomplish exchanges that would deliver high-quality water from the Friant Division to MWDC in exchange for water supplies delivered from the Delta. Information from these studies provided preliminary operational assumptions for the Investigation related to the integration of Friant Division facilities with other CVP and/or SWP facilities.

Madera County Integrated Regional Water Management Plan

The Madera County Integrated Regional Water Management Plan (IRWMP) is funded by Assembly Bill (AB) 303 and Proposition 50 Study Grants from DWR. The Madera County IRWMP documents the water management strategies of Madera County and its stakeholders to achieve the main objectives of water resource management optimization, evaluating and increasing water supplies, water quality protection and improvement, and flood management planning through 2030. The IRWMP will be used to update Madera County's General Plan and will assist in meeting the goals and objectives of its AB 3030 Groundwater Management Plan.