

RECLAMATION

Managing Water in the West

Environmental Assessment

Long-Term Warren Act Contract between the El Dorado Irrigation District and the United States

Central California Area Office Folsom, CA



U.S. Department of the Interior
Bureau of Reclamation
Mid Pacific Region
Central California Area Office
Folsom, California

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Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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List of Acronyms and Abbreviations

AF	Acre Feet
AFRP	Anadromous Fish Restoration Program
AFY	Acre-Feet Per Year
APE	Area of Potential Effects
BA	Biological Assessment
BO	Biological Opinion
CDFW	California Department of Fish and Wildlife
Cfs	cubic feet per second
CVP	Central Valley Project
CWP	Coldwater Pool
Delta	Sacramento–San Joaquin River Delta
DPS	Distinct Population Segment
DWR	Department of Water Resources
EA	Environmental Assessment
EDCWA	El Dorado County Water Agency
EIS	Environmental Impact Statement
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
FERC	Federal Energy Regulatory Commission
ESA	Federal Endangered Species Act
FLRWPS	Folsom Lake Raw Water Pump Station
FONSI	Finding of No Significant Impact
ITA	Indian Trust Assets
LTO	Coordinated Long-term Operations of the Central Valley Project and State Water Project
LTWAC	Long-Term Warren Act Contract
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
M&I	Municipal and Industrial
Msl	mean sea level

NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
Non-Project	Not Part of the Central Valley Project
PG&E	Pacific Gas and Electric Company
Project 184	El Dorado Hydroelectric Project No. 184
RPAs	Reasonable and Prudent Alternatives
Reclamation	Bureau of Reclamation
SWP	State Water Project
SWRCB	State Water Resources Control Board
TCD	Temperature Control Device
USFWS	U.S. Fish and Wildlife Service
WA	Warren Act
WAPA	Western Area Power Administration
WUA	weighted usable area

Section 1 Introduction

In accordance with the National Environmental Policy Act of 1969 (NEPA), as amended, the Bureau of Reclamation (Reclamation) has prepared this Environmental Assessment (EA) to evaluate and disclose any potential environmental impacts associated with the implementation of a Long-term Warren Act contract (LTWAC) with the El Dorado Irrigation District (EID). Additionally, this document discloses and references the design refinements to a temperature control device (TCD) on EID's Folsom Lake Raw Water Pump Station (FLRWPS) (Figure 1-1), which was previously reviewed under NEPA (Reclamation 2002) and would be located on the south shore of Folsom Reservoir in El Dorado Hills. This proposed LTWAC between Reclamation and EID would allow for the conveyance of up to 17,000 acre-feet per year (AFY) of non-Project water from EID's El Dorado hydroelectric power generation project (Project 184) facilities into the Central Valley Project (CVP) facilities at Folsom Reservoir for diversion at EID's FLRWPS.

1.1 Background

EID was formed in 1925 and it exists and operates under the Irrigation District Law (Cal Water Code §§ 20500 et seq.). EID provides water, recycled water, and wastewater treatment services within approximately 220 square miles of central and western El Dorado County. EID provides water service to an extensive area generally bordered by Sacramento County to the west, the South Fork American River to the north, the Eldorado National Forest to the east, and the North Fork of the Cosumnes River to the south. The EID service area also includes a small area in Sacramento County, a portion of Coloma and Swansboro north of the South Fork American River, Project 184 lands, and the communities of Outingdale and Strawberry (Figure 1-1). However, the service area for the LTWAC will be limited to the same portion of the EID service area as the EID federal service area depicted on Figure 1-1, which is the farthest location that water from Folsom Reservoir can be pumped following treatment. Existing EID water supplies and sources needed to meet projected water demands, as well as efforts underway to meet those demands, are discussed below

El Dorado County, like other mountain counties in general, has limited water supply options. Publicly developed surface water is the predominant water source for the western slope of El Dorado County. Groundwater on the western slope and in the Sierra Nevada is limited by the fractured rock nature of the sub-surface geology; consequently, to date no opportunities for groundwater storage or conjunctive use projects within El Dorado County have been identified. Population growth in the mountain counties region exceeds the statewide average because of the movement of people to the foothills area. In El Dorado County, this is particularly evident in the western portion of EID's service area. In addition, there has been an increased interest in agricultural development on the

western slope of the Sierra Nevada foothills, with viticulture predominating recent agricultural development.

Reclamation completed a Water Needs Assessments for the CVP American River Division contractors, including EID, as part of the long-term contract renewal process (Reclamation, 2005). The needs assessment methodology confirmed that there is a demonstrated need for additional water supplies to serve EID's federal service area. To address the El Dorado County 2004 General Plan and EID future demand forecasts, EID is engaged in an array of initiatives associated with firming up existing water supplies and acquiring new water supplies as part of its long-term efforts at meeting projected future demands. EID has conducted extensive evaluations of its water supply options, and continues to refine and further evaluate alternatives as additional information becomes available. However, even with implementation of water conservation measures, there is still a need to secure additional water supplies to address projected future demands within the service area (EID, 2001).

On October 2, 1996, the State Water Resources Control Board (SWRCB) adopted Decision 1635 (D-1635), which authorized EID the redirection of stored Project 184 water for consumptive use purposes, and direct diversion of a total of 17,000 AFY at Folsom Reservoir.

On April 2, 1999, the Federal Energy Regulatory Commission (FERC) approved the transfer to EID of the federal license to operate Project 184, following the purchase of Project 184 from the Pacific Gas and Electric Company (PG&E). On September 16, 1999, the California Public Utilities Commission approved the transfer to EID of project facilities and related assets, including water rights. EID assumed ownership on October 15, 1999.

On August 16, 2001, the SWRCB issued Order WR 2001-22, which took final action on petitions for reconsideration of D-1635, and affirmed the decision as modified. This order upheld D-1635's grant of 17,000 AFY of consumptive use water rights to EID. On October 16, 2001, the SWRCB adopted Water Rights Permit 21112, in conformance with Order WR 2001-22, by which EID secured this water right. Water Rights Permit 21112 allows EID to divert and use Project 184 water for consumptive use purposes as it relates to the Proposed Action. EID currently operates Project 184 in the amount of 17,000 AFY for power generation purposes, and to satisfy release requirements and monthly lake level targets contained within the FERC license.

In 2014, Reclamation prepared an EA describing the impacts of entering into a Five-year Temporary Warren Act (WA) contract between Reclamation and EID for the diversion of 8,500 AFY from Folsom Reservoir through EID's FLRWPS. Reclamation determined that entering into a Five-year Temporary WA contract with EID would not have a significant impact on the quality of the human environment, and therefore, a Finding of No Significant Impact (FONSI) was signed in 2014; this contract expires in 2019. The diversion amount was limited to

8,500 AFY due to potential impacts to cold water pool (CWP) management for volumes exceeding that amount without implementation of a (TCD).

To facilitate the diversion of Project 184 water from Folsom Reservoir through EIDs FLRWPS, Reclamation proposes to enter into a LTWAC with EID for the diversion of up to 17,000 AFY to be conveyed through Folsom Reservoir. Although EID is authorized to divert up to 17,000 AFY of Project 184 water for consumptive use purposes under Water Rights Permit 21112, EID must limit diversions to 8,500 AFY until CWP management of Folsom Reservoir is improved. Prior to EID diverting the remaining 8,500 AFY, EID has proposed to construct a TCD on its FLRWPS intake.

The construction and operation of a TCD was included in the 2009 National Marine Fisheries Service (NMFS) Biological and Conference Opinion (BO) on the Long-Term Operations of the CVP and State Water Project (LTO) and Related Documents as one of several structural improvements actions in the Reasonable and Prudent Alternative (RPA) for the American River Division operations. Similarly, the installation and operation of a TCD, or equivalent financial contribution is also a pre-condition to EID diverting any quantity of water exceeding 8,500 AFY as identified in NMFS' 2014 Endangered Species Act (ESA) consultation on Reclamation's issuance of a LTWAC to EID.

Construction of the TCD was evaluated in an EA and a FONSI was signed in 2002 by Reclamation. While design refinements have occurred with the TCD, the footprint and capacity evaluated in the 2002 EA are consistent with the current design.

1.2 Authority

The WA (43 U.S.C. §523) of 1911 provides authorization to the Secretary of the Interior to enter into WA contracts with water purveyors to carry non-Project water (i.e., water not part of the CVP) through federal facilities. These contracts provide for the impounding, storage, and conveyance of non-Project water for domestic, municipal, fish and wildlife, industrial, and other beneficial uses using any CVP facilities identified in the law, including Folsom Reservoir.

1.3 Need for the Proposal

The proposed LTWAC is needed to allow EID to convey up to 17,000 AFY of non-Project water through Folsom Reservoir for withdrawal, treatment, and use within the western portion of EIDs service area (Figure 1-1). Long-term water supplies necessary to meet EIDs buildout water needs have been identified in several planning documents, including: (1) EIDs *Water Supply Master Plan* (EID, 2001); (2) *El Dorado County General Plan* (EDC, 2004); (3) EID's *2007 Water Resources and Service Reliability Report* (EID, 2007); and (4) El Dorado County

Water Agency's (EDCWA) 2008 *Water Resources Development and Management Plan* (WRDMP).

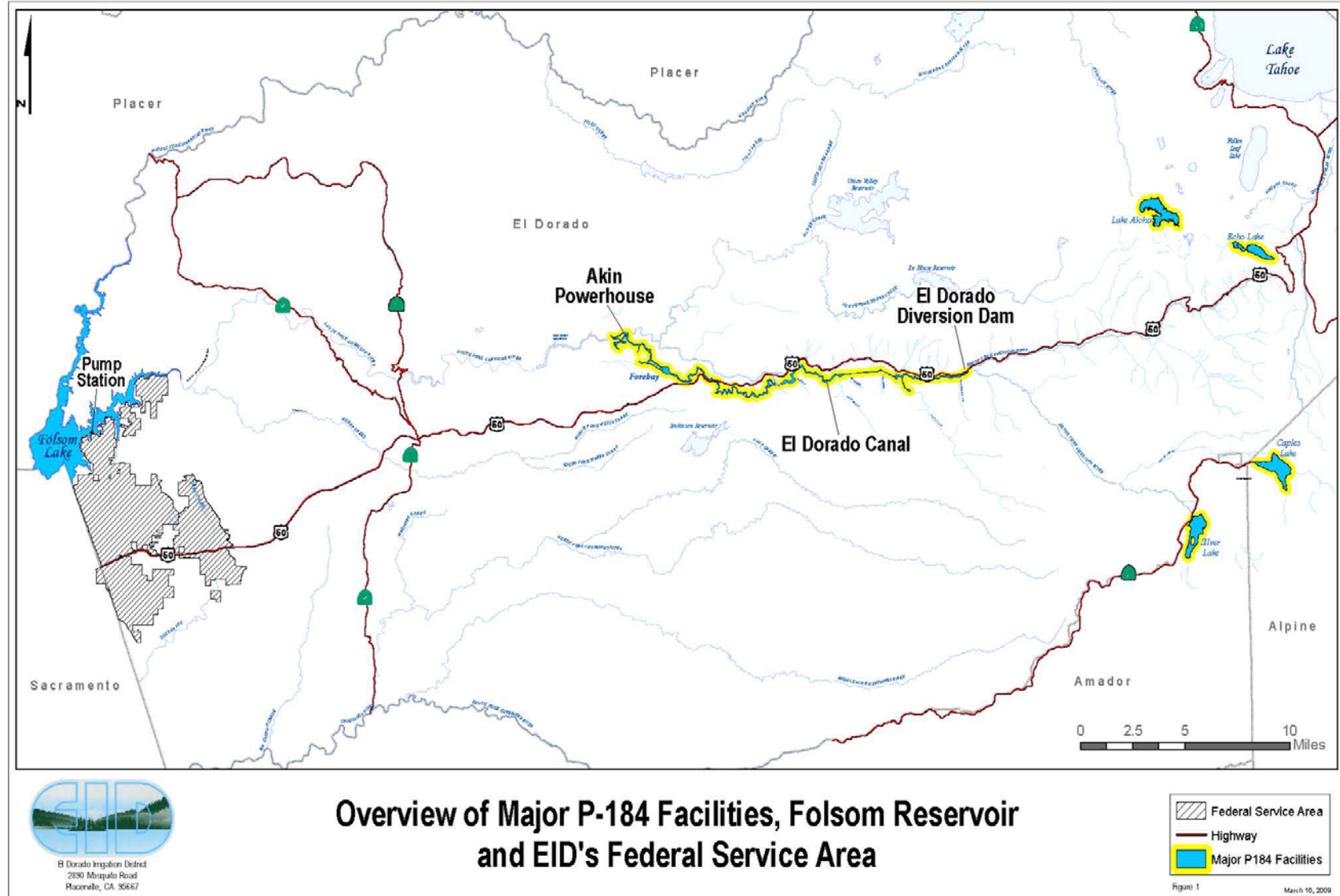


Figure 1- 1 Overview of Major Project 184 Facilities, Folsom Reservoir and EID's Federal Service Area

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Section 2 Alternatives Including the Proposed Action

This EA considers two possible actions: the No Action Alternative and the Proposed Action. The No Action Alternative reflects future conditions without the Proposed Action and serves as a basis of comparison for determining potential effects to the human environment.

2.1 No Action Alternative

Under the No Action Alternative, Reclamation would not enter into a LTWAC with EID. Therefore, EID would not be able to divert up to 17,000 AFY of Project 184 water from Folsom Reservoir. The water identified in the Proposed Action would continue to enter Folsom Reservoir. EID would not be able to divert the water from Folsom Reservoir, and as a result, this water would not be available for M&I uses within the western portion of EID's service area.

This document recognizes that EID currently has a Five-year Temporary WA contract in-place with Reclamation for the diversion of up to 8,500 AFY from their FLRWPS on Folsom Reservoir. However, for the purposes of this EA, the No Action Alternative considers the long-term conditions after the 5-year WA contract expires. Thus the No Action Alternative condition is no diversions of previously authorized WA contract water by EID.

2.2 Proposed Action

Reclamation proposes to enter into a LTWAC with EID to convey up to 17,000 AFY of non-Project water through Folsom Reservoir for municipal and industrial (M&I) uses in the western portion of El Dorado County.

2.2.1 Long-term Warren Act Contract

A draft LTWAC underwent negotiations between Reclamation and EID and a draft version of the contract was made available for a 60-day public comment period after the final contract negotiation session. The contract was made available to the public between April 13, 2016 and June 13, 2016; no comments were received on the draft contract. Some provisions included in the draft contract are as follows:

1. Term of the contract is through the year 2030.
2. Point-of-delivery of non-Project water to EID is the Folsom Lake Raw Water Pump Station on the south shore of Folsom Reservoir or any replacement thereof.

3. Amount of non-Project water conveyed to EID through Project facilities including conveyance losses shall not exceed the quantity of non-Project water previously delivered to Folsom Reservoir by EID.
4. Non-Project water shall be used for M&I purposes only.
5. Non-Project water introduced into Folsom Reservoir by EID and remaining there for 30 days or more will be deemed to be unused water, available to the United States for CVP purposes.
6. Non-Project water conveyed to EID will be measured and recorded with equipment furnished, installed, operated, and maintained by EID, and the accuracy of such equipment will be subject to inspection by Reclamation.
7. EID shall limit diversions under the proposed LTWAC to 8,500 AFY until the proposed TCD is installed on EID's FLRWPS and is operational.
8. EID shall compensate Reclamation for lost hydroelectric generation incurred by Reclamation due to diversion by EID of Permit 21112 water.

The proposed quantity of water for the LTWAC will be provided by the outflow of non-Project water from bypassed flows at the Kyburz diversion dam and releases from the El Dorado Powerhouse. The water rights for the non-Project water include EID's direct diversion rights for waters of the South Fork American River at the Kyburz diversion dam, and rights for diversion to storage at Caples Lake in Alpine County, Silver Lake in Amador County, and Lake Aloha in El Dorado County, California. The sources of non-project water will be made available by the operation of existing facilities of the FERC Project No. 184 (SWRCB Permit 21112). Direct diversion water rights from the South Fork American River are available from November 1 through July 31. Direct diversions are not available August 1 through October 31 pursuant to the conditions of SWRCB Permit 21112; therefore, water diverted to storage will be released from Caples Lake, Silver Lake, and Lake Aloha for downstream uses during August through October annually. EID utilizes gages to measure the volume of water introduced to and diverted from Folsom Reservoir to ensure compliance with minimum streamflows as required by the SWRCB Permit 21112.

The installation and operation of a TCD, or equivalent financial contribution is a pre-condition to EID diverting any quantity of water exceeding 8,500 AFY as identified in NMFS' 2009 BO and 2014 Endangered Species Act (ESA) consultation on Reclamation's issuance of a LTWAC to EID. EID proposes to construct and operate a TCD for Project 184 diversions exceeding 8,500 AFY to improve CWP management in Folsom Reservoir (NMFS 2009, 2014).

2.2.2 Project Operations

Water Sources

The sources of non-Project water include flows from the South Fork American River at the Kyburz diversion dam and releases of water diverted to storage in

Caples Lake, Silver Lake, and Lake Aloha as granted in Water Rights Permit 21112 by the SWRCB. Although Echo Lake is a major facility of Project 184, it is not included as a source in either Permit 21112 or the proposed LTWAC. The water rights included in Permit 21112 are made available by the operation of existing facilities of FERC Project 184. The total quantity of water to be taken under the Proposed Action at Folsom Reservoir by diversion and rediversion is limited to 17,000 AFY.

Project 184 Operation

Project 184 is located on the South Fork of the American River and its tributaries in El Dorado, Alpine, and Amador Counties, California, and occupies EID lands, private lands, and federally owned lands administered by the Eldorado National Forest and the Lake Tahoe Basin Management Unit (Figure 1-1). Water is stored in four upstream reservoirs and released into the South Fork American River, either directly, via its tributaries, or via a conduit. Stored releases and natural flows are diverted into the 22.3-mile El Dorado Canal via the El Dorado Diversion Dam located on the South Fork American River downstream of the mouth of the Silver Fork American River. Flows in the canal are augmented seasonally by the diversion of various minor tributaries of the South Fork American River (including Alder Creek, Mill Creek, Bull Creek, Ogilby Creek, Esmeralda Creek, and No Name Creek) (Figure 1-1).

Project 184 will continue to operate for consumptive use water supply and power generation purposes pursuant to all regulatory requirements. Under the Proposed Action EID does not propose any changes to the schedule or volume of water delivered to Folsom Reservoir (i.e., operation of Project No. 184 continue to operate pursuant to release requirements and monthly lake level targets contained with the FERC license).

Water Measurement Reporting

The Proposed Action includes measurement (i.e. stream gages) and monthly reporting at eleven locations to measure volumes of water introduced and diverted from Folsom Reservoir. These gages are intended to track diversions, ensure compliance with minimum instream flow requirements, and demonstrate actual volumes of water introduced in Folsom Reservoir, including conveyance losses. The gaging station locations are located at the South Fork of the American River below Kyburz (El Dorado) Diversion Dam, El Dorado Powerhouse, Caples Creek (Caples Lake outlet), Silver Fork American River (Silver Lake outlet and leakage – two gages), Pyramid Creek (Lake Aloha outlet), Echo Conduit (Echo Lake outlet to South Fork American River, El Dorado Canal at Kyburz, El Dorado Forebay Outlet to EID's Main Ditch, Hazel Tunnel to Jenkinson Lake, and FLRWPS.

EID will submit an annual schedule to Reclamation with forecasted diversion quantities for the water year. Each month, EID will provide a report to Reclamation that documents the following information for the previous month and updated forecasts for future months.

1. Gaging records documenting the total volume (AF) delivered to Folsom Reservoir calculated from average daily flow below the El Dorado Diversion Dam and through the El Dorado Powerhouse minus conveyance losses
2. Gaging records documenting the total volume (AF) delivered to Folsom Reservoir as natural flow or water released from storage in Caples or Silver Lake or Lake Aloha, and subtracting any water diverted at El Dorado Forebay into EID's Main Ditch for treatment at Reservoir 1 Water Treatment Plant, water released from Echo Conduit into the South Fork American River, and water diverted through Hazel Creek Tunnel into Jenkinson Lake. These three latter quantities are subtracted because they are not part of Permit 21112.
3. Gaging records documenting the total volume (AF) diverted from Folsom Reservoir at the FLRWPS

For the purposes of water accounting, direct diversion rights from the South Fork American River from unimpaired flows will be utilized first. When direct diversion rights are not available due to reduced unimpaired runoff or not authorized by Permit 21112, then water diverted to storage will be released from Lake Aloha, Caples Lake, and Silver Lake. The approximate volume from each water source will be included during each monthly reporting.

As noted above, Echo Lake is not a source of water for the Proposed Action. However, as a component of Project 184 operations, releases from Echo Lake are used for consumptive use, power generation, and minimum instream flow requirements. Any Echo Lake releases through either the El Dorado Diversion Dam or El Dorado Powerhouse will not be available for rediversion from Folsom Reservoir under the Proposed Action. Therefore, EID will report the total volume (AF) released from Echo Lake for instream flow or power generation each month. This total volume will be subtracted from the total volume of water delivered to Folsom Reservoir as available supply under the Proposed Action.

2.2.3 Action Area

The Action Area consists of Folsom Reservoir downstream to the lower American River at the confluence of the Sacramento River, the EID LTWAC service area, including the FLRWPS (Figure 2-1). This Action Area was selected for the following reasons: (1) the total volume to be diverted (up to 17,000 AF) is small relative to Folsom Reservoir's average inflow (2.720 million acre-feet) and the flow of the lower American River; (2) the water to be diverted under the Proposed Action is real water from existing water supplies that is measured upon entering Folsom Reservoir as well as the FLRWPS; (3) potential changes to the coldwater pool volume in Folsom Reservoir provide a reasonable metric for evaluating potential effects to anadromous fishes downstream in the lower American River; and (4) construction-related effects would be limited to construction of the TCD

in the immediate vicinity of the FLRWPS with implementation of impact avoidance and minimization measures.

2.3 Other Environmental Documents

2.3.1 Temperature Control Device

In 2002, Reclamation prepared a Final EA and FONSI on the potential environmental impacts associated with design and construction of a TCD at EIDs FLRWPS. EID has since issued a new TCD design from that analyzed in the 2002 EA; however the location is unchanged.

The proposed intake structure with a TCD will include seven steel pipe casings placed on the embankment with submersible pumps lowered inside. The proposed TCD would extend from the shore and be supported by concrete footings near the existing EID FLRWPS. The proposed design would impact the shoreline less relative to the previous design, which was a steel structure buried in the bank of the reservoir (Reclamation 2002).

Most of the structure would be located below the high water elevation of Folsom Reservoir, allowing water to be removed from multiple elevations in the reservoir, at varying temperatures. Specifically, two intake valves and screens will be installed at three separate elevations – 410, 370, and 325 ft mean sea level (msl). The higher elevation intakes (i.e., at 410 and 370 msl) were identified based on an analysis of coldwater pool diversions (Appendix A). The intake at 325 ft msl is at a similar elevation as the existing intake. Screened intakes at the selected elevations of 410, 370 and 325 ft msl will provide the ability to select and blend water from the three elevations, and minimize the amount of water diverted from Folsom Reservoir's coldwater pool. Temperatures at each intake would be monitored, EID would operate the TCD such that diversion from the coldwater pool is avoided to the extent practicable (Reclamation 2002). Maintenance of the TCD would consist of periodic checks of all gates to ensure their proper functioning.

The maximum daily pumping capacity of the proposed intake structure would be 26 million gallons per day (MGD), which is the same capacity as the existing pumping facility. However, the annual amount of water diverted under this Proposed Action would be limited to the WA contract amount of 17,000 AF annually.

Because the new intake structure with a TCD will be supported by concrete footings and will not be buried into the bank of Folsom Reservoir as previously proposed, construction activities associated with the proposed TCD would result in less ground disturbance relative to the previous design. Installation of concrete footings to support the structure would result in permanent ground disturbance only in the vicinity of the footings. Construction activities and installation of the intake structure will be conducted using equipment staged on land or via barge. In

addition, any disturbed soils above water would be covered with riprap to prevent erosion and be re-vegetated with native grass species after construction.

An updated USFWS species list was requested in February 2016 (USFWS 2016) and reviewed for ESA-listed terrestrial resources known to occur in the vicinity of the project site. Several ESA-listed terrestrial species were identified, but none are known to exist within the action area. The USFWS (2016) species results are provided in Appendix G. In addition, a site visit was conducted in March 2016 by a Reclamation Natural Resources Specialist at the APE of the TCD site to determine if sensitive species or their designated critical habitat were present. The site visit did not result in the detection of any sensitive species or their designated critical habitat within the action area.

The 2002 EA evaluated the following environmental issues: hydrology, water quality, fisheries, botanical and wildlife resources, visual resources, recreation, cultural resources, traffic, air quality, noise, geology and soils, hazardous materials, population and housing effects, Indian Trust Assets, environmental justice and irreversible and irretrievable commitments of resources. The 2002 TCD EA (Section 4.0, Affected Environment and Environmental Consequences), describes the criteria that were used to determine the significance of environmental impacts. All mitigation measures identified in the 2002 TCD EA will be implemented upon construction of the proposed TCD.

Reclamation reviewed the 2002 TCD EA for the proposed TCD, and finds that the analysis adequately described the environmental impacts associated with construction of the TCD. That EA, and its associated analysis is hereby incorporated by reference (Reclamation, 2002). This document will be made available to the public on Reclamation's website along with this EA.

2.3.2 2016 Environmental Impact Statement on the Coordinated Long-term Operations of the CVP and SWP

The 2016 Environmental Impact Statement (EIS) on the Coordinated Long-Term Operations of the CVP and SWP was prepared by Reclamation to evaluate the potential long-term direct, indirect, and cumulative impacts on the environment that could result from the implementation of modification to the continued long-term operation of the CVP and SWP. Reclamation issued a Final EIS in November, 2016 and signed a Record of Decision on January 11, 2016. Reclamation's decision is to implement the No Action Alternative for long-term CVP and SWP operations, which contains all of the Reasonable and Prudent Alternatives (RPA) actions in the 2008 USFWS BO and 2009 NMFS BO on the Coordinated Operation of the CVP and SWP.

Specifically for the LTO EIS, the demands for EID and EDCWA contracts were included in Alternatives 3 and 5 to analyze system operations, water temperature impacts (Chapter 3, Description of Alternatives), and cumulative effects in regards to CVP water supplies (Chapter 5, Evaluation of Alternatives &

Cumulative Effects Analysis). Due to a modeling error, these contract values were not included in the original modeled alternatives, and therefore analyzed in a separate sensitivity analysis to determine potential effects of including EID's LTWAC and EDCWA's water service contract. These modeling results were included as a separate appendix (Appendix 5B) to the LTO EIS (Reclamation 2016).

The LTO EIS sensitivity analysis includes system operations and water temperature (HEC-5Q) model runs with inclusion of these demands at Folsom Reservoir. The sensitivity analysis conducted by Reclamation (2016) did not include the construction and operation of a TCD at EID's FLRWPS, which would have the objective of benefitting coldwater pool management in Folsom Reservoir. This appendix is included as Appendix E to this EA. This analysis compared with and without representation of the WA and water service contracts. The comparisons represent the changes solely due to inclusion of these diversions at the Folsom Reservoir. Based on modeling, delivery of water under these contracts did not result in changes to operations of the CVP and SWP system, and would not change the previous conclusions in the LTO EIS.

Reclamation reviewed the 2016 LTO EIS, modeling and modeling results and incorporates that document by reference to the extent practicable. This EA will provide additional analysis of the water supply & hydrology, water quality & temperature, hydropower, fisheries & aquatic resources, terrestrial & riparian resources, recreation, and cumulative effects that may result from the Proposed Action of entering into a LTWAC with EID.

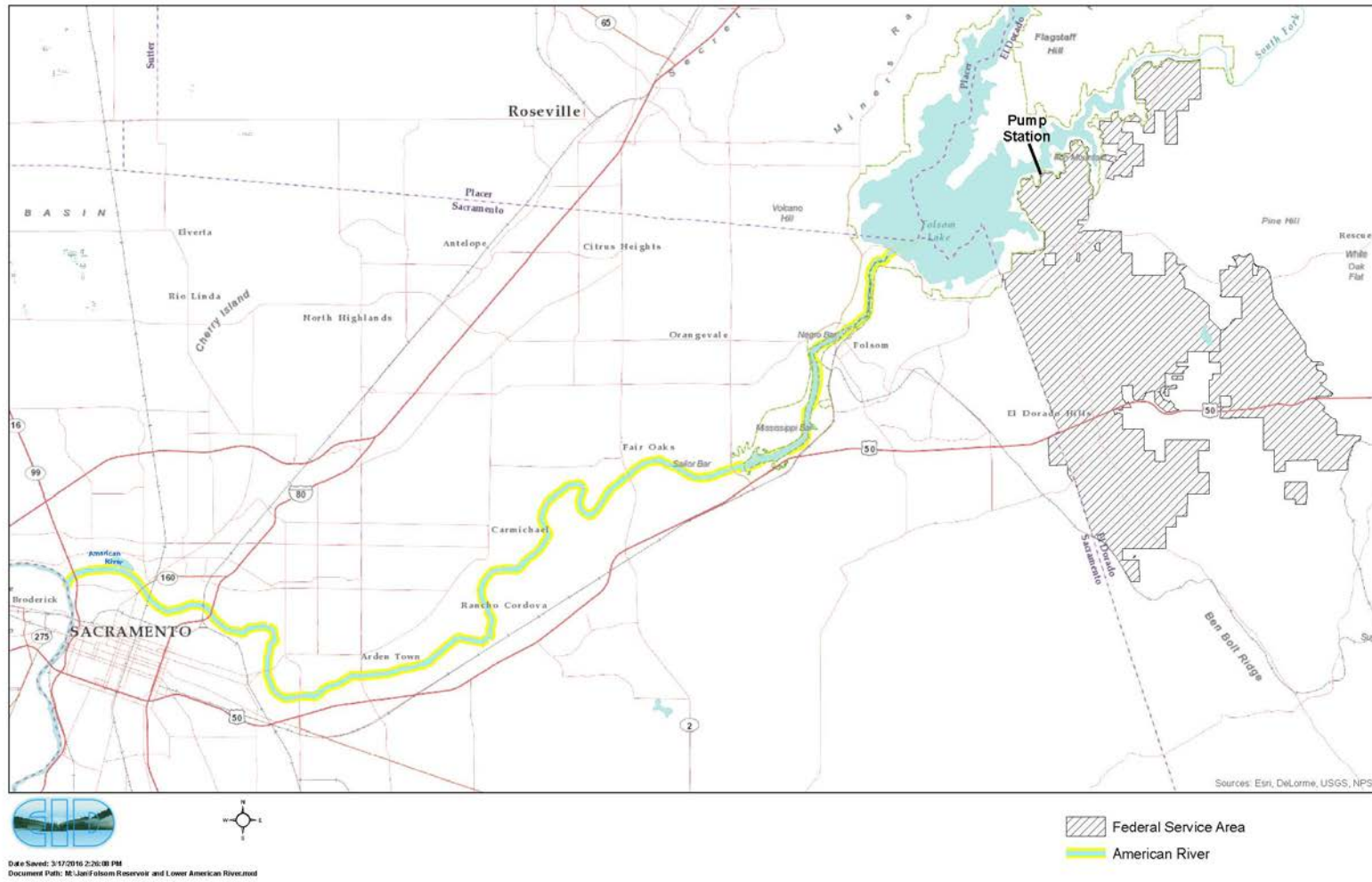


Figure 2-1 Federal Action Area

Long-Term Warren Act Contract
between the El Dorado Irrigation District
and the United States | 14

Section 3 Affected Environment and Environmental Consequences

This EA does not analyze resources for which it would be reasonable to assume that no impacts would occur from the implementation of the Proposed Action. Specifically, potential impacts would not occur to agricultural resources, mineral resources, land use, public services, public health and hazards, utilities, and service systems. A LTWAC and construction of a TCD would not result in impacts to these resources or services. In addition to the resources stated above, Reclamation considered and determined that the Proposed Action would not impact the following resources:

Indian Trust Assets (ITA)

Indian Trust Assets (ITAs) are legal interests in property or rights held in trust by the United States for Indian Tribes or individual Indians. Indian reservations, Rancherias, and Public Domain Allotments are common ITAs in California. The Proposed Action does not have a potential to affect

ITA's (See **Appendix B**, Indian Trust Assets Compliance Memo).

Indian Sacred Sites

Indian sacred sites do not occur in the vicinity of EID's FLRWPS. Therefore, ground disturbance activities associated with the Proposed Action would have no effect on Sacred Sites, nor would the action limit access to an Indian sacred site on federal land.

Environmental Justice

Executive Order 12898 requires each Federal agency to identify and address disproportionately high and adverse human health or environmental effects, including social and economic effects of its program, policies, and activities, on minority and low-income populations. Since the proposed action would not affect any populations, there would be no disproportionate adverse human health or environmental effects to minority or low-income populations.

Cultural Resources

By implementing the Proposed Action Alternative, all water will be delivered within existing water service area boundaries utilizing existing water conveyance. Although a segment of the Natomas Ditch is located within the APE, the segment is not a contributing element of the National Register of Historic Places eligible Natomas Ditch Historic District (See **Appendix C**, Cultural Resources Compliance Memo). Therefore, the Proposed Action would not affect cultural resources.

This EA provides analysis of the affected environment of the Proposed Action and No Action Alternatives in order to determine the potential impacts and cumulative effects to the following environmental resources.

3.1 Water Supply and Hydrology

The analysis of potential effects on water resources associated with the Proposed Action was based on whether a reduction in Folsom Reservoir storage or lower American River flows below Nimbus Dam would be of sufficient magnitude to affect the water supply availability to CVP contractors. This analysis was based on the conveyance and withdrawal of EID's entire 17,000 AFY of Project 184 water.

3.1.1 Affected Environment

Folsom Dam and Reservoir

Folsom Reservoir, a federal facility, is the principal reservoir on the American River, with a maximum storage capacity of 977,000 AF. Reclamation operates Folsom Dam and Reservoir for multiple authorized purposes including: to regulate rivers; improve flood control and navigation; to provide water for irrigation and domestic use; to generate power; and under later reauthorizations and legislation, additional project purposes were added including recreation, fish and wildlife enhancement, and water quality improvements.

Folsom Reservoir will be used to convey water under the proposed LTWAC. Federal facilities at Folsom Dam will not be used to deliver water under this LTWAC. EID operates its own facility, the FLRWPS, which is located on the south shore of Folsom Reservoir in El Dorado Hills. The Action Area of the proposed TCD includes the immediate vicinity of the FLRWPS as described in the TCD EA (Reclamation 2002), and is also within the Action Area as described in Section 2.2.4 of this EA. The APE for the TCD includes the immediate vicinity of the FLRWPS because construction and staging associated with the TCD would occur at the FLRWPS site.

Lake Natoma and Nimbus Dam

Lake Natoma, formed as a result of Nimbus Dam, serves as the Folsom Dam afterbay. Lake Natoma has a maximum storage capacity of 9,000 AF, and at its full capacity, consists of approximately 500 surface-acres of water. Lake Natoma is operated as a re-regulating reservoir that accommodates the diurnal flow fluctuations caused by the power peaking operations at Folsom Power Plant. Nimbus Dam, along with Folsom Dam, regulates water releases to the lower American River. In addition to its role as a regulating facility for Folsom Dam releases, Nimbus Dam is the diversion location for the Folsom South Canal.

Lower American River

The lower American River consists of the 23-mile stretch of river from Nimbus Dam to the confluence of the American and Sacramento rivers in the City of Sacramento. Average lower American River annual flows downstream of Folsom Dam at Fair Oaks are approximately 2,650,000 AF (Reclamation, 2004).

EID's Long-Term Warren Act Contract Service Area

EID was formed in October 1925 to provide public water service to the city of Placerville as well as other residential, commercial, and industrial customers, and to provide irrigation water to local agricultural customers. Currently EID serves a population of approximately 100,000 people. The current service area of EID encompasses approximately 220 square miles and is generally bounded by Sacramento County to the west, the South Fork American River to the north, the Eldorado National Forest to the east, and the North Fork Cosumnes River and Latrobe to the south. The elevation across the service area ranges from approximately 500 feet in the west to approximately 4,000 feet in the east.

The area affected by the Proposed Action is illustrated in Figure 1-1. This area encompasses the community of El Dorado Hills and a portion of Cameron Park, and is generally bounded on the north by Folsom Reservoir, on the east by an elevation equal to Cameron Park Drive, on the south by Deer Creek and an El Dorado Joint Union High School District school site, and on the west by the El Dorado County/Sacramento County line, except for a small portion of the service area that extends into Sacramento County.

3.1.2 Environmental Consequences

Hydrologic and water temperature modeling for this analysis was conducted in 2009 using CalSimII and the Reclamation Monthly Temperature model along with project-specific tools and worksheets. In March 2016 Reclamation conducted additional comparative modeling analysis with updated assumptions to verify no significant changes to the conclusions and/or the modeling comparison used for this document.

CalSim II is a reservoir-river basin planning model used to simulate CVP and SWP project operations based on a set of regulatory inputs over an 82-year historical hydrology period (1922-2003). CalSim II produces outputs for river flows and diversions, reservoir storage, Delta-channel flows and exports, Delta inflow and outflow, deliveries to project and non-project users, and controls on project operations. This output provides the basis for other temperature and biological analyses. The CalSim II model is most appropriately applied for comparing one alternative to another and drawing comparisons among the results. This is the method applied for the document.

The Reclamation monthly temperature model includes reservoir and stream temperature models that simulate monthly reservoir and stream temperatures used for evaluating the effects of CVP and SWP project operations on mean monthly water temperatures in the basin. The model is one-dimensional in the longitudinal direction and assumes fully mixed river cross sections. The river temperature calculations are based on regulating reservoir release temperatures, river flows, and climactic data.

No Action

Implementation of the No Action Alternative would not change current water supply and hydrology conditions in Folsom Reservoir and the lower American River. The water to be diverted under the Proposed Action, 17,000 AFY from the South Fork American River, would continue to flow into Folsom Reservoir.

Proposed Action

Potential impacts to Folsom Reservoir and the lower American River, resulting from implementation of the Proposed Action were identified and evaluated relative to the No Action Alternative. The analysis of potential effects was based on identifying reductions in Folsom Reservoir storage or river flows below Nimbus Dam. Studies showing potential impacts resulting from implementation of the Proposed Action were modeled for the full 17,000 AF of Project 184 WA contract (**Appendix D**). Hydrologic and water temperature modeling was conducted in 2009 under the Proposed Action (diversion of 17,000 AFY of Project 184 water from Folsom Reservoir), relative to the No Action Alternative.

Folsom Reservoir CALSIM II hydrologic modeling for the Proposed Action (diversion of 17,000 AF) shows that implementation of the Proposed Action would have minor effects, both positive and negative, on storage in Folsom Reservoir (Table A-1 in Appendix D); these data include wet, above normal, below normal, dry, and critical years. Monthly Folsom Reservoir storage resulting from the Proposed Action can vary upwards and downwards from the No Action Alternative. Typically, a difference greater than $\pm 5,000$ AF in one month results in a corresponding difference in the following month(s) in the opposite direction. This balancing behavior is indicative of the model logic maintaining a balance between monthly operations.

The average expected difference in storage under the Proposed Action for all years simulated would be 2,000 AF. This quantity (less than 0.4 percent reduction in storage) would most likely not be identifiable in actual operations; and therefore, would not be observable in measurements of reservoir storage. As a result, there would be no significant impacts on Folsom Reservoir storage with the implementation of the Proposed Action.

Lower American River CALSIM II hydrologic modeling shows that implementation of the 17,000 AF LTWAC would have minor effects, both positive and negative, on monthly average flows in the lower American River (Table A-2 in Appendix D); these data include wet, above normal, below normal, dry, and critical years. The monthly average lower American River flows below Nimbus Dam resulting from the Proposed Action can vary upwards and downwards from the No Action Alternative. Typically, these changes are small in comparison to the magnitude of flows. Monthly average flow differences are typically ± 3 percent relative to the No Action Alternative, which in real-time operations is about the limit of measurement capability. The modeling results show a 14% decrease in July monthly averaged flows below Nimbus Dam; however this is followed by a 33% increase in August flows in the same year type. It is expected that these differences are only a modeling variation and

would not be expected in real time operations. Existing minimum instream flow requirements per the 2008 United States Fish and Wildlife Service (USFWS), 2009 NMFS BOs would remain in effect. As a result, there would no significant impact on flows in the lower American River with the implementation of the Proposed Action.

Separate Sensitivity Analysis in the LTO EIS As identified in Section 2.3.2, a separate sensitivity analysis was conducted to determine the potential effects of comparing the ‘with and without’ representation of EID’s LTWAC and EDCWA’s water service contracts. The comparisons represent the changes solely due to inclusion of these diversions at the Folsom Reservoir. Based on modeling, these contracts did not show sensitivity to the rest of the CVP and SWP system and would not change the previous conclusions in the LTO EIS. Specific findings are presented as follows.

Folsom Storage and surface water elevations would be similar in all months and all water year types with the inclusion of EID’s LTWAC and EDCWA’s water service contract demands. Folsom Reservoir storage and surface water elevations show a reduction of 1% to 2% with inclusion of these demands at Folsom Reservoir.

American River flows showed slight changes, including relatively minor reductions in the drier water years. Alternative 3 resulted in changes of higher magnitude than Alternative 5, with differences as high as 6% in August of critical years, representing a change of about 75 cubic feet per second (cfs) downstream of Nimbus Dam. Although these results show some differences with inclusion of the contracts, these results do not change any of the conclusions presented in the prior CALSIM II studies prepared for this LTWAC described previously.

These results presented in Appendix D and the LTO EIS sensitivity analysis (Reclamation 2016) confirm that inclusion of the LTWAC and increased diversions from Folsom Reservoir do not cause any significant changes in model results.

3.2 Water Quality & Temperature

3.2.1 Affected Environment

Folsom Reservoir and releases into the lower American River are used, among other things, for human water supplies and fisheries maintenance. The following beneficial uses have been defined by the Central Valley Regional Water Quality Control Board for Folsom Reservoir: municipal, domestic, and industrial water supply; irrigation; power; water contact and non-contact recreation; warm and cold freshwater habitat; warm freshwater spawning habitat; and wildlife habitat. Beneficial uses of the lower American River include all of those listed above, as well as recreational boating and rafting, warm and coldwater fish migration habitat, and coldwater spawning habitat.

Water quality in Folsom Reservoir is generally acceptable for existing beneficial uses. Water temperature, dissolved oxygen, conductivity, and toxic metals concentrations have generally been below recommended limits. Taste and odor problems, however, have occurred in municipal water supplies diverted from Folsom Reservoir in the past, which were attributed to blue-green algae blooms that occasionally occur in the reservoir as a result of elevated water temperatures, primarily during late summer (Reclamation 2002). The coldwater pool in Folsom Reservoir is critical for managing water temperatures in the lower American River to maintain and enhance salmon and steelhead production. With the exception of water temperature, water quality parameters for the lower American River have typically been well within acceptable limits to achieve water quality objectives and beneficial uses identified for this water body (Reclamation 2002).

3.2.2 Environmental Consequences

See Section 3.1.2 for the description of models used.

No Action

Implementation of the No Action Alternative would not change current water quality conditions in Folsom Reservoir and the lower American River. The Proposed Action, 17,000 AFY of diversions from the South Fork American River, would not occur and would continue to flow into Folsom Reservoir.

Proposed Action

The Proposed Action would allow up to 17,000 AFY to be withdrawn from primarily the upper levels of Folsom Reservoir, relative to the No Action Alternative. Although a higher volume of water would be withdrawn from Folsom Reservoir under the Proposed Action, it is expected that a lower volume of water from Folsom Reservoir's coldwater pool would be withdrawn. In an effort to analyze the largest potential effects to water temperature, modeling of the Proposed Action was conducted for the full 17,000 AFY, assuming all diversions occurred at the current diversion elevation, or the lowest possible TCD intake elevation. As a result, the modeling results represent the most conservative scenario and we anticipate that the addition of higher intakes will further reduce any temperature effects shown in the modeling. Modeling results that included the Proposed Action are summarized below.

Water temperature modeling was conducted for the Proposed Action and a No Action Alternative (Appendix D). Long-term average water temperatures at Watt Avenue in the lower American River are generally equivalent (i.e., less than 0.3°F) during all months of the year under the Proposed Action and No Action Alternative. Changes in average monthly water temperatures by water year type also are generally equivalent during all months, except for during August of critical water years when water temperature decreases by 0.5°F under the Proposed Action (Appendix D).

In addition to the water temperature modeling conducted for this EA (Appendix D), lower American River water temperatures below Nimbus Dam and at Watt Avenue were modeled as part of the LTO EIS prepared by Reclamation (Reclamation 2016). The model results with the inclusion of EID's LTWAC and EDCWA's water service contract demands resulted in generally similar or slightly improved (reduced) water temperatures during the summer and fall based on a sensitivity analysis (Appendix E).

The water temperature modeling conducted for this EA (Appendix D) showed that water temperatures in the lower American River would be generally similar under the Proposed Action relative to the No Action Alternative. However, because the water temperature modeling did not include operation of a TCD at EID's FLRWPS, it would be expected that water temperatures in the lower American River would be similar or improved (reduced) relative to the model results described above, because a lower volume of water from Folsom Reservoir's coldwater pool would be withdrawn. Therefore, the Proposed Action is not expected to significantly affect water temperature in Folsom Reservoir or in the lower American River, but may result in slight improvements to water temperature during the summer and fall months.

3.3 Hydropower

Hydroelectric facilities generate a significant portion of California's energy requirements. Water agencies and private electric utilities own and operate in-stream reservoirs that store and release water to generate hydroelectric power. Electric utilities produce power for their customers, while water agencies produce power for their own use and market the excess to electric utilities, government and public installations, and commercial customers.

CVP power is the source of electricity for CVP pumping facilities throughout the Central Valley, and for many of California's communities. The Western Area Power Administration (WAPA) sells excess CVP capacity and energy (supplementary to CVP internal needs) to municipal utilities, irrigation districts, and institutions and facilities such as wildlife refuges, schools, prisons, and military bases. The CVP sells power at rates designed to recover costs. For the CVP, these rates historically have been slightly below market rates. Revenue from WAPA power sales is an important funding source for the CVP Restoration Fund and for repaying project debt incurred during construction of the CVP.

The hydroelectric generation facilities of the CVP are operated by Reclamation. Reclamation manages and releases water in accordance with the various acts authorizing specific projects and in accordance with other laws and enabling legislation. Hydropower operations at each facility must comply with minimum and maximum flows and other constraints set by Reclamation, the USFWS, NMFS, or other regulatory agencies, acting in accordance with law or policy.

3.3.1 Affected Environment

Folsom Power Plant

The Folsom Power Plant is at the foot of Folsom Dam on the north side of the American River. The Folsom Power Plant has three generating units, with a combined capacity of 215 megawatts (Reclamation, 2001), and a total release capacity of approximately 8,600 cfs. By design, the facility is operated as a peaking facility. Peaking plants schedule the daily water release volume during the peak energy demand hours to maximize generation at the time of greatest need. During other hours of the day, the plant may release little or no water, generating little or no power. The Folsom Power Plant generates an average annual 620,000 megawatt hours. Both the power and power plant releases mentioned above are maximums that are based on a maximum reservoir elevation of 465 feet.

Folsom Dam is primarily a flood control facility and during a flood event it would be operated to minimize downstream flooding. Folsom Dam also has the ability to release (bypassing power generation) about 28,600 cfs through the River Outlet Works.

Nimbus Power Plant

The Nimbus Power Plant is on the right abutment of Nimbus Dam (Lake Natoma) on the north side of the American River. To avoid fluctuations in flows in the lower American River, Nimbus Dam and Lake Natoma serve as a regulating facility. While the water surface elevation fluctuates, releases to the lower American River remain constant. The Nimbus Power Plant consists of two generating units with a release capacity of approximately 5,100 cfs (Reclamation, 2001). Power generation from this facility is continuous throughout the day.

3.3.2 Environmental Consequences

No Action

No change in hydrology or operations would occur under the No Action Alternative. Therefore, there would be no change in either hydropower or pumping energy requirements. Implementation of the No Action Alternative would result in no power supply impacts on CVP hydropower generation and capacity or pumping energy requirements.

Proposed Action

Potential power supply impacts include changes in CVP hydroelectric power generation and capacity, changes in pumping energy use by diverters that pump water from Folsom Reservoir, and changes to energy use within the WA contract service area. No other potential effects on power generation or demand are anticipated with implementation of the Proposed Action, with the exception of potential increases in the use of energy resources for pumping, conveyance, and treatment of the new water supply.

Folsom & Nimbus Power Plants Changes in CVP power at the Folsom Power Plant could occur as the result of either a change in water surface elevation (head), which affects electrical capacity or altered power plant (penstock) releases, which affect electrical generation. Changes to pumping energy use by Folsom Reservoir diverters also could result from changes in surface water elevation. Lowering the Reservoir's water surface would create an increase in pumping lift so that the amount of energy required to move the water also would increase.

This analysis assumes that impacts would be significant if hydropower generation were substantially reduced, pumping energy requirements for Folsom Reservoir diverters were substantially increased, or electrical energy use were substantially increased, with implementation of the Proposed Action.

CALSIM II studies previously completed for this study and those completed as part of the LTO EIS on the (Reclamation 2016) show that implementation of the Proposed Action would have minor effects, both positive and negative, on reservoir water surface elevation in Folsom Reservoir (Appendix D and Appendix E), including consideration of wet, above normal, below normal, dry, and critical water year types. Simulated changes in water surface elevation throughout a year in monthly Folsom Reservoir storage resulting from the Proposed Action can vary upwards and downwards relative to the No Action Alternative. Typically, the difference is ± 1 to 2 feet and reversed differences are observed in subsequent monthly operations.

With implementation of the Proposed Action, Folsom Reservoir water surface elevations would increase and decrease slightly. These changes and the associated minor increases and decreases in flows below Nimbus Dam would be unnoticeable in real-time operations. As a result, there would be no significant effect on hydropower generation at the Folsom or Nimbus power plants. Similarly, effects on pumping at the Folsom Pumping Plant also would not be significant.

An increase in energy requirement at the FLRWPS would be expected under the Proposed Action, because EID would be using these facilities to pump the increased diversion of 17,000 AFY. Because Folsom Reservoir elevations would change only slightly under the Proposed Action, the increase in energy requirement would be due entirely to the increased diversion by EID. EID would be financially responsible for the increased energy requirement.

No adverse impacts on CVP hydropower generation, pumping energy requirements, or area energy use as a result of the Proposed Action are anticipated.

3.4 Fisheries and Aquatic Resources

3.4.1 Affected Environment

The portion of the Action Area relevant to fisheries and aquatic resources consists of the American River from Folsom reservoir downstream to its confluence with the Sacramento River (lower American River). As described below, expected changes in habitat conditions in Folsom Reservoir are not expected to affect fisheries and aquatic resources within the Action Area.

Completion of Folsom and Nimbus dams in 1955 permanently blocked upstream fish passage past river mile 23 and reportedly eliminated over 70 percent of historical Chinook salmon spawning habitat and all historical steelhead spawning habitat.

Seasonal releases from Folsom reservoir's CWP typically dictate thermal conditions in the lower American River that support annual in-river production of salmonid species. Folsom Reservoir's CWP is not always large enough to maintain coldwater releases during both (or either) the warmest months (July through September) to provide maximum thermal benefits to rearing juvenile steelhead, and/or during October and November to benefit fall-run Chinook salmon immigration, spawning, and embryo incubation. Consequently, lower American River temperature management is annually prescribed (in accordance with the 2009 NMFS BO) based on current conditions in an attempt to provide thermal benefits to both fall-run Chinook salmon and steelhead, within the constraints of CWP availability and facility operations. Lake Natoma serves as a regulating afterbay for Folsom Reservoir, and despite its relatively small size (an operating range of 2,800 AF), Lake Natoma can substantially influence the temperature of water flowing from Folsom Reservoir to the lower American River. High residence times in Lake Natoma, particularly during summer months and when releases are low, have a warming effect on water released from Folsom Reservoir (Appendix F).

Although construction and operation of the Folsom Project has altered the flow and water temperature regimes in the lower American River, the river provides spawning and rearing habitat for many fish species. Forty-three fish species have been identified in the lower American River since completion of the Folsom Project, including both native and introduced, and resident and anadromous fishes. Several of these species are of primary management concern either due to their declining status or because of their importance as a recreational or commercial fishery. The action of EID's full contract amount of 17,000 AFY of water conveyed through Reclamation's facilities are included in the analysis of the 2009 NMFS BO under which the CVP is currently operating. Potential impacts to fisheries resources within the Proposed Action area that could result from the implementation of the Proposed Action were identified and evaluated in the 2009 NMFS BO. Further analysis was completed in 2011 on three potential diversion scenarios up to the full WA amount of 17,000 AFY that could be

diverted by EID through Reclamation facilities under Water Rights Permit 21112 (Appendix F).

Quantification of potential changes to flows and water temperatures in the lower American River, supported by additional analysis of potential changes in Folsom Reservoir coldwater pool volume, provides a reasonable basis for evaluating the range of potential effects to listed fish species and associated habitat downstream in the lower American River that could result from the Proposed Action.

For Folsom Reservoir and the lower American River temperature modeling, a temperature change of less than 0.3 °F is assumed to be insignificant as it is less than the lower limit of accuracy of temperature measurement. Modeling showed that the full 17,000 AFY would result in a measurable detection (0.3 °F or greater) to the CWP, which, under the current 2009 NMFS RPA, triggers the construction of a TCD at the EID diversion (Appendix A). A meaningful change in habitat is assumed to occur when the change in flow equals or exceeds approximately ten percent. The ten percent criterion is based on the assumption that changes in flow of less than ten percent are generally not within the accuracy of flow and habitat measurements and would not result in measurable changes to fish habitat area.

The lower American River within the Action Area encompasses waterways where several ESA-listed fish species may occur, including the threatened California Central Valley steelhead (*Oncorhynchus mykiss*) distinct population segment (DPS), threatened Central Valley spring-run Chinook salmon (*O. tshawytscha*) evolutionarily significant unit (ESU), and endangered Sacramento River winter-run Chinook salmon (*O. tshawytscha*) ESU. In addition, the Action Area is within designated Essential Fish Habitat (EFH) for Pacific salmon and designated critical habitat for the California Central Valley steelhead DPS and Central Valley spring-run Chinook salmon ESU.

The effects of the diversion of 17,000 AFY along with EDCWA's future water service contract (15,000 AFY) were analyzed in the LTO EIS (Reclamation 2016), including the associated 2009 NMFS BO RPA, as revised in 2011. Please refer to the analysis in the LTO sensitivity analysis (Appendix 5B) for additional information.

Special-Status Fish Species

Evaluating potential impacts on fishery resources within the Action Area requires an understanding of fish species' life histories and life stage-specific environmental requirements, specifically those occurring within the action area: Central Valley steelhead DPS, Central Valley spring-run Chinook salmon ESU and Sacramento River winter-run Chinook salmon.

Although delta smelt was identified in a USFWS (2016) species list for the Proposed Action, delta smelt does not occur within the Action Area, including the lower American River. In addition, designated critical habitat for delta smelt does

not occur within the Action Area (USFWS 2016). The action of EID's diversion of their full contract amount of 17,000 AFY from Folsom Reservoir was analyzed in the 2008 USFWS BO on the Coordinated Operation of the CVP and SWP (USFWS, 2008), therefore, delta smelt is not further addressed in this EA.

General information is provided in the 2009 NMFS BO regarding life histories of fish species of primary management concern occurring within the Action Area. Please refer to the analysis in Chapter 4 of the 2009 BO on the LTO of the CVP for additional information (NMFS, 2009).

3.4.2 Environmental Consequences

No Action

Under the No Action Alternative, no change in hydrology, water temperature or operations would occur. Therefore, there would be no anticipated adverse effects on fisheries. The Proposed Action, 17,000 AFY of diversions from the South Fork American River, would not occur and would continue to flow into Folsom Reservoir.

Proposed Action

Folsom Reservoir Folsom Reservoir and lower American River temperature modeling was conducted for the full contract amount of 17,000 AFY. In an effort to analyze the largest potential effects to water temperature and fisheries, modeling of the Proposed Action was conducted assuming all diversions occurred at the current diversion elevation, or the lowest possible TCD intake elevation. As a result, the modeling results represent the most conservative scenario and we anticipate that the addition of higher intakes will further reduce any temperature effects shown in the modeling.

For the purposes of this analysis, a temperature change of less than 0.3 °F is assumed to be insignificant as it is less than the lower limit of accuracy of temperature measurement. Modeling showed that the full 17,000 AFY would result in a measurable detection (0.3 °F or greater) to the CWP, which, under the current 2009 NMFS RPA, triggers the construction of a TCD at the EID diversion (Appendix A). A meaningful change in habitat is assumed to occur when the change in flow equals or exceeds approximately ten percent. The ten percent criterion is based on the assumption that changes in flow of less than ten percent are generally not within the accuracy of flow and habitat measurements and would not result in measurable changes to fish habitat area.

As described above under the Hydrology and Water Quality sections, simulated changes in flows and water temperatures in the lower American River would be insignificant, and are not expected to result in appreciable changes to fisheries habitat in the lower American River.

Quantification of potential changes to flows and water temperatures in the lower American River, supported by additional analysis of potential changes in Folsom

Reservoir CWP volume (Appendix F), provides a reasonable basis for evaluating the range of potential effects to listed fish species and associated habitat downstream in the lower American River that could result from the Proposed Action. Overall, the Proposed Action would not result in changes in flow, flow fluctuations, or water temperature increases of sufficient magnitude or duration to appreciably affect listed fish species or associated habitat. However, operation of a TCD is expected to result in less water being withdrawn from Folsom Reservoir's coldwater pool, potentially allowing for cooler water to be released into the lower American River during the summer and fall when compared to the No Action alternative. Additional discussion specific to fish species of primary management concern in the lower American River is provided in the following sections.

Steelhead

In the lower American River, steelhead immigration generally extends from November through March. The mean monthly water temperature during the steelhead adult immigration life stage is similar under the Proposed Action and the No Action Alternative (assuming all diversions at the current intake elevation) (Table A-6 in Appendix D).

The steelhead spawning and incubation life stage occurs from December through April. Peak steelhead spawning habitat availability occurs at about 1,800 cfs. Because flows during December through April are generally similar most of the time (Appendix D; Appendix E), it is not expected that steelhead spawning weighted usable area (WUA) would change. Mean monthly water temperatures during the steelhead spawning and incubation life stage are similar under the Proposed Action, relative to the No Action Alternative, and therefore this Proposed Action would not cause water temperatures to exceed the suitable range for this life stage.

Juvenile steelhead can rear year-round in the lower American River, with smolt emigration occurring from January through April. Flow fluctuations have the potential to affect juvenile steelhead rearing and emigration. However, the Proposed Action would result in an insignificant change in monthly reservoir storage and in flow magnitude and as such would not change the occurrence or magnitude of flow fluctuations. Water temperatures during the year-round juvenile steelhead rearing period would be similar under the Proposed Action, but may be slightly cooler during the summer and fall with the addition of higher diversion elevations (Appendix D; Appendix E).

Under the Proposed Action, changes in river flow or water temperature of sufficient magnitude or duration would not be expected to affect habitat availability or habitat suitability to a level that would cause harm to steelhead. However, operation of a TCD at EID's FLRWPS may allow for cooler water temperatures to be released into the lower American River during the summer and fall, potentially improving conditions for juvenile steelhead.

Fall-run Chinook Salmon

In the lower American River, fall-run Chinook salmon adult immigration generally occurs from September through December. Hydrologic and temperature modeling results (Appendix D; Appendix E) for the full 17,000 AFY (assuming all diversions at the current intake elevation) indicate water temperatures are not expected to change during the September through December period, but may decrease slightly during September and October with the addition of higher diversion elevations. Typically by mid-November ambient climatic conditions strongly influence downstream water temperatures.

The fall-run Chinook salmon spawning and incubation life stages occur from October through March. Depending upon the location and temperature, peak spawning habitat availability occurs between 1,000 and 3,000 cfs. Simulated changes in flow magnitude associated with the Proposed Action during the fall-run Chinook salmon spawning period suggests that only minor changes in spawning WUA would be expected, with no significant effect on peak spawning habitat availability (Appendix D; Appendix E). As previously discussed, water temperature conditions are not expected to change significantly during the warmer months of the spawning and incubation lifestage period (i.e., October and November), but may be slightly reduced during October (Appendix D; Appendix E).

Fall-run Chinook salmon juvenile rearing and emigration life stages occur from late-December through June. Flow fluctuations have the potential to affect juvenile fall-run Chinook salmon rearing and emigration. However, the Proposed Action would result in an insignificant change in monthly reservoir storage and in flow magnitude and as such would not change the occurrence or magnitude of flow fluctuations (Appendix D; Appendix E). Modeling results also show no significant change in mean monthly water temperatures during the juvenile fall-run Chinook salmon rearing period with implementation of the Proposed Action showing only a slight change in water temperature during the spring months (Appendix D; Appendix E).

Overall, the Proposed Action would not result in changes in flow, flow fluctuation, or water temperature increases of sufficient magnitude or duration to impact fall-run Chinook salmon. However, operation of a TCD at EID's FLRWPS may allow for cooler water temperatures to be released into the lower American River during the fall, potentially improving conditions for fall-run Chinook salmon adult immigration and spawning.

Spring-run Chinook Salmon

Juvenile spring-run Chinook salmon are occasionally observed rearing (i.e., non-natal rearing) in the lower 10 miles of the American River during winter to early-spring. Mean monthly flows in the lower American River during this period are greater than 3,000 cfs.

Flow fluctuations have the potential to affect spring-run Chinook salmon non-natal rearing. However, the Proposed Action would result in insignificant changes to reservoir storage and flow releases to the lower American River (Appendix D; Appendix E). Therefore, the Proposed Action would not change the occurrence or magnitude of flow fluctuations during the late winter to early spring. In addition, modeled water temperature (Appendix D; Appendix E) conditions indicate that water temperature during the juvenile non-natal rearing period (January through April) would be similar under the Proposed Action (i.e., mean monthly water temperature increases were less than the minimum measureable level of 0.3°F).

Overall, the Proposed Action would not affect the physical habitat conditions to a level that affects juvenile spring-run Chinook salmon rearing conditions or cause harm to spring-run Chinook salmon during the juvenile non-natal rearing period.

Winter-run Chinook Salmon

Winter-run Chinook salmon are rarely observed in the lower American River; however, non-natal juveniles may rear in the lower American River from early fall through winter.

Flow fluctuations have the potential to affect winter-run Chinook salmon non-natal rearing. However, the Proposed Action would result in insignificant changes to reservoir storage and flow releases to the lower American River (Appendix D; Appendix E). Therefore, the Proposed Action would not change the occurrence or magnitude of flow fluctuations during non-natal rearing periods. Changes in water temperature under the Proposed Action are similar to those previously described for spring-run Chinook salmon (Appendix D; Appendix E).

Overall, the Proposed Action would not result in changes in flow, flow fluctuations, or water temperature increases of sufficient magnitude or duration to appreciably affect non-natal juvenile winter-run Chinook salmon or their habitat.

3.5 Terrestrial and Riparian Resources

This section describes the existing conditions of terrestrial and riparian resources and consists of identification of communities and associated special-status plant and wildlife species with the potential to occur in the Action Area.

3.5.1 Affected Environment

Folsom Reservoir and Lake Natoma

Habitats associated with Folsom Reservoir include non-native grassland, blue oak-pine woodland, and mixed oak woodland. Oak-pine woodlands and non-native grasslands in the reservoir area support a variety of birds. A number of raptor species also utilize oak woodland habitats for nesting, foraging, and roosting. Many mammal species occur in the woodland. Amphibians and reptiles are found in oak woodlands. The primary vegetation around Lake Natoma

consists of cottonwoods, poison oak, and wild grape (*Vitis californica*). Wildlife communities found at Lake Natoma are similar to those found at Folsom Reservoir. Federal and State listed and proposed candidate species of the area include the valley elderberry longhorn beetle, California red-legged frog, mountain yellow-legged frog, pallid bat, northwestern pond turtle, giant garter snake, tricolored blackbird, bald eagle, California black rail, purple martin, Boggs Lake hedge-hyssop and Stanford's arrowhead.

Lower American River

The lower American River provides a diverse assemblage of vegetation communities, including freshwater marsh and emergent wetland, riparian scrub, riparian forest dominated by Fremont cottonwood and willows, and in the upper, drier areas farther away from the river, oak woodland and non-native grassland. More than 220 species of birds have been recorded along the lower American River and more than 60 species are known to nest in the riparian habitats (USFWS 1991). Additionally, more than 30 species of mammals reside along the river. The most common reptiles and amphibians that depend on the riparian habitats along the river include western toad (*Bufo boreas*), Pacific tree frog (*Hyla regilla*), bullfrog (*Rana catesbeiana*), western pond turtle (*Clemmys marmorata*), western fence lizard (*Sceloporus occidentalis*), common garter snake (*Thamnophis sirtalis*), and gopher snake (*Pituophis catenifer*).

EID's Long-Term Warren Act Contract Service Area

The service area is centered on the El Dorado Hills and Cameron Park region of El Dorado County, an area that has been subjected to a large amount of residential development. Much of the natural vegetation within the service area has been removed, reduced in extent, or disturbed by human activities.

Several different major habitat types can be found throughout the service area based on vegetation maps contained in the *El Dorado County General Plan Environmental Impact Report* (EDC, 2003). The major vegetation communities in the service area include annual grassland, chaparral, blue oak woodland, blue oak-foothill pine, and montane hardwood. Generally, all the habitats within the service area are highly fragmented and disturbed by humans. Small areas of riparian and wetland habitat are also present in the service area, although they are limited in extent and are uncommon. Areas with substantial habitat remaining occur in the northern portion of the service area at the Pine Hill Preserve.

Oak woodlands provide habitat for more than 100 species of birds, 60 species of mammals, 80 species of amphibians and reptiles, and 5,000 species of insects (Verner and Boss, 1980; Pavlik et al., 1991). Blue oak-foothill pine, another major habitat type in the service area, provides suitable breeding habitat for 29 species of amphibians and reptiles, 70 species of birds, and 22 species of mammals (Verner and Boss, 1980).

3.5.2 Environmental Consequences

No Action

No change in riparian or terrestrial resources would occur under the No Action Alternative. Therefore, there would be no adverse impacts on terrestrial and riparian resources within the Action Area.

Proposed Action

Folsom Reservoir & the Lower American River With implementation of the Proposed Action, Folsom Reservoir storage, when averaged by month for all water year types, would decrease less than 0.4 percent in July through September, and the remainder of the year would exhibit less of a change (Table A-1 in Appendix D). A change of less than 0.4 percent would most likely not be noticeable in the reservoir. Flows in the lower American River below Nimbus Dam would decrease less than 1.7 percent in February-May (Table A-5 in Appendix D), which are critical riparian vegetation seed dispersing months (Dixon, 2016). As a result, there would be negligible impacts on terrestrial and riparian resources at Folsom Reservoir, and along the American River with implementation of the Proposed Action.

The effects of the Proposed Action were included as part of the USFWS's 2009 BO on the execution of the Proposed Action, and the USFWS concurred with Reclamation's determination that the Proposed Action is not likely to adversely affect listed species within the Action Area; therefore, Reclamation has determined that the Proposed Action will not affect riparian resources within the Action Area.

3.6 Recreation

3.6.1 Affected Environment

Folsom Reservoir is a State Recreation Area that serves the greater Sacramento area for summer recreation in the form of camping, hiking, biking, boating, and other outdoor recreation activities. The California Department of Parks and Recreation manages the Folsom Reservoir State Recreation Area which includes Folsom Reservoir and the surrounding facilities. The Reservoir features approximately 75 miles of shoreline and 80 miles of trails which provide opportunities for hiking, horseback riding, nature studies, camping, and picnicking (Reclamation 2002). There are seven major recreation areas with facilities located around the lake. The Folsom Reservoir State Recreation Area, including Folsom Reservoir, is one of the most heavily used recreational facilities in the State Park system, with two to three million visitor days per year (Reclamation 2002). Season and reservoir levels have substantial effects on recreation usage with most recreation usage occurring during May through August and when reservoir levels are high (Reclamation 2002).

3.6.2 Environmental Consequences

No Action

No change in recreation would occur under the No Action Alternative. Therefore, there would be no adverse impacts on recreation within the Action Area.

Proposed Action

Folsom Reservoir With implementation of the Proposed Action, Folsom Reservoir storage, when averaged by month for all water year types, would decrease less than 0.4 percent in July through September; the remainder of the year would exhibit less of a change (Table A-1 in Appendix D). This change in reservoir storage would not lead to a measureable change in the water elevation in the reservoir; therefore, there will be no recreational effects on the lower American River, Lake Natoma or Folsom Reservoir with implementation of the Proposed Action (Reclamation 2002).

3.7 Cumulative Impacts

Cumulative impacts are defined in Council on Environmental Quality Regulations (40 CFR 1508.7 and 1508.25) as follows:

“Cumulative impact is the impact on the environment, which results from the incremental impact of the action when added to past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.”

The potential for the Proposed Action to result in cumulative impacts to the surrounding environment was analyzed by comparing the Proposed Action to other past, present and reasonably foreseeable actions, which are identified in Sections 3.7.1, 3.7.2 and 3.7.3. Reclamation can satisfy these contractual agreements in years when excess capacity is available in Folsom; however, these actions are superseded by other operational requirements on the lower American River.

Additionally, Reclamation has compared the Proposed Action to other past, present and reasonably foreseeable future actions from those analyzed in the 2016 LTO EIS (Reclamation, 2016), and has determined that the Cumulative Effects have been adequately addressed in the EIS. A detailed description of the LTO EIS cumulative effects for water supply is described in Table 5.117 (pp. 5-276-78) of the LTO EIS (Reclamation, 2016). When compared to past & present and future actions included in all alternatives (Alternatives 1-5) in year 2030 in the LTO EIS, the effects would remain the same under all alternatives.

The Proposed Action, when added to other past, present, and reasonably foreseeable future actions, would not result in additional cumulative effects to the

surrounding environment, CVP operations, Folsom Reservoir operations, water supply or hydropower.

3.7.1 Current WA Contracts and Water Rights Settlement Contracts through Folsom Reservoir

Below is a list of current WA contracts and water rights settlement contracts through Folsom Reservoir. Each contract is listed by Contractor, contract amount and contract term.

- EID - 4,560 AFY for up to 40 years
- EID - 7,550 AFY with no expiration
- City of Folsom - 22,000 AFY with no expiration
- Folsom State Prison - 4,000 AFY with no expiration
- Foresthill PUD - 2,800 AFY, Title Transfer of Reclamation's former Sugar Pine Unit
- Golden State Water Company - 10,000 AFY with no expiration
- PCWA - 100 AFY, for 5 years
- City of Roseville - 30,000 AFY for 25 Years
- Sacramento Municipal Utility District (SMUD) - 15,000 AFY for 2 years
- City of Sacramento - 245,000 AFY (Quantity varies from year to year) with no expiration
- Sacramento Suburban WD (SSWD) - 14,500 AFY for 5 Years
- San Juan WD (SJWD) - 25,00 AFY for 5 Years
- SJWD - 33,000 AFY with no expiration

Total Amount 218,960 (Not including City of Sacramento's 250 TAF)

3.7.2 Possible Future WA Contracts through Folsom Reservoir

Below is a list of future WA contracts through Folsom Reservoir. Each contract is listed by Contractor, contract amount and contract term.

- EID - 17,000 AFY for up to 40 Years
- EBMUD - up to 47,000 AFY for up to 40 Years
- SMUD - 15,000 AFY for up to 5 Years
- SSWD - 29,000 AFY, potential Long-term WA contract

Total Amount 108,000 AFY

3.7.3 Current Interim & Pending CVP Water Service Contracts on the American River

Below is a list of current interim and pending CVP water service contracts on the American River. Each contract is listed by Contractor, contract amount and contract term.

- EDCWA - 15,000 AFY for up to 40 Years
- City of Roseville - 32,000 AFY for 2 Years
- Sacramento County Water Agency (SCWA) - 30,000 AFY for 2 Years
- SMUD - 30,000 AFY for 2 Years

Total Amount 107,000 AFY

Section 4 Consultation and Coordination

4.1 Public Review Period

A Draft EA was made available for public comment beginning April 6, 2016 and ending May 3, 2016. The Draft EA and Appendices were made available on Reclamation's website. The Final EA reflects edits based on comments received during the public comment period; however, no comments were received on the Draft EA.

4.2 Agencies Consulted

Reclamation coordinated with the following agencies during preparation of the EA:

- El Dorado Irrigation District
- National Marine Fisheries Service
- United States Fish and Wildlife Service

4.3 Endangered Species Act (16 U.S.C. § 1531 et seq.)

Section 7 of the Endangered Species Act requires Federal agencies, in consultation with the Secretary of the Interior and/or Commerce, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of these species. Reclamation has initiated consultation on the Proposed Action with the NMFS and USFWS pursuant to Section 7 of the ESA. Below is a brief summary of the key steps taken during the consultation process with NMFS and the USFWS; both documents are incorporated by reference (NMFS 2014, USFWS 2009).

NMFS 2014 BO

- **December 15, 2011** – Reclamation requests ESA consultation with NMFS that the Proposed Action “*may affect, but is not likely to adversely affect,*” the federally listed as threatened California Central Valley steelhead DPS, threatened Central Valley spring-run Chinook salmon ESU, or the designated critical habitats for the California Central Valley steelhead DPS and Central Valley spring-run Chinook salmon ESU.
- **April 3, 2012** – NMFS issues Reclamation a letter requesting additional information before consultation could be initiated.

- **May 17, 2012** – NMFS receives Reclamation’s amended Biological Assessment (BA) and additional materials required to initiate consultation; NMFS concluded that the information provided was adequate to initiate Section 7 consultation.
- **May 22, 2014** – NMFS issues concurrence on Reclamation’s “*may affect, but is not likely to adversely affect*” determination

USFWS 2009 BO

- **July 31, 2009** – Reclamation submits a draft BA on the potential effects of three proposed actions including the Proposed Action of this EA. Reclamation requests consultation that the Proposed Action “*not likely to adversely affect,*” federally-listed species potentially occurring within the Action Area.
- **August 4, 2009** – The USFWS receives Reclamation’s BA on the Proposed Action
- **November 9, 2009** – The USFWS issues concurrence on Reclamation’s “*not likely to adversely affect*” determination.

The Proposed Action is consistent with: (1) CALFEDs 2000 Ecosystem Restoration Program Plan (ERPP) and Multi-Species Conservation Strategy (MSCS); (2) the programmatic determinations for the CALFED program, which include California Department of Fish and Wildlife’s (CDFW) Natural Community Conservation Planning Act (NCCPA) approval and the 2009 NMFS, 2008 USFWS and 2004/2005 BOs; (3) USFWSs 1997 Draft Anadromous Fish Restoration Program (AFRP), which identifies specific actions to protect anadromous salmonids; (4) CDFWs 1996 Steelhead Restoration and Management Plan for California, which identifies specific actions to protect steelhead; and (5) CDFWs Restoring Central Valley Streams, A Plan for Action (1993), which identifies specific actions to protect salmonids.

4.4 National Historic Preservation Act (16 U.S.C. § 470 et seq.)

The NHPA of 1966, as amended (16 U.S.C. 470 et seq.), requires that federal agencies give the Advisory Council on Historic Preservation an opportunity to comment on the effects of an undertaking on historic properties, properties that are eligible for inclusion in the National Register. The 36 CFR Part 800 regulations implement Section 106 of the NHPA.

Section 106 of the NHPA requires federal agencies to consider the effects of federal undertakings on historic properties, properties determined eligible for inclusion in the National Register. Compliance with Section 106 follows a series of steps that are designed to identify interested parties, determine the APE,

conduct cultural resource inventories, determine if historic properties are present within the APE, and assess effects on any identified historic properties.

On April 20, 2016, Reclamation determined that the Proposed Action is the type of undertaking that does not have the potential to cause effects to historic properties, should such properties be present, pursuant to the NHPA Section 106 regulations codified at 36 CFR § 800.3(a)(1). Reclamation has no further obligations under NHPA Section 106, pursuant to 36 CFR § 800.3(a)(1).

See Appendix C, Cultural Resources Compliance Memorandum, for a record of the NHPA Section 106 consultation.

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