

RECLAMATION

Managing Water in the West

Draft Environmental Assessment (EA)

Sacramento Suburban Water District Long-Term Warren Act Contract

Central California Area Office Folsom, CA

June 2018



**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
AFPA	Anadromous Fisheries Program Act
AFRP	Anadromous Fish Restoration Program
APE	Area of Potential Affect
AROG	American River Operations Group
CalSim II	CalSim is the model used to simulate California State Water Project/Central Valley Project operations. CalSim-II is the latest version of CalSim available.
CAR	Coordination Act Report
CDFW	California Department of Fish and Wildlife
CDPR	California Department of Parks and Recreation
CESA	California ESA
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
COA	Coordinated Operations Agreement
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
CWA	Clean Water Act
D-1485	State Water Resources Board Decision 1485
DERA	Sacramento County Department of Environmental Review
DOE	Department of Energy
DPS	Distinct Population Segment
EA	Environmental Assessment
EFH	Essential Fish Habitat
ESU	evolutionarily significant unit
EWA	Environmental Water Account
FISH	Fisheries and In-stream Habitat
FMS	Flow Management Standard
FWCA	Fish and Wildlife Coordination Act
HCP	Habitat Conservation Plan
HME	Habitat Management Element
ITA	Indian Trust Assets
LRA	Local Redevelopment Authority
LTWAC	Long-term Warren Act contract
MFP	Middle Fork Project
MMRP	Monitoring, and Reporting Plan
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
NEPA	National Environmental Policy Act of 1969
NID	Nevada Irrigation District
NMFS	National Marine Fisheries Service
PCEs	Primary Constituent Elements
PCWA	Placer County Water Agency

RCMP	River Corridor Management Plan
RL/ECWD	Rio Linda/Elverta Community Water District
ROD	Record of Decision
RPA	reasonable and prudent alternative
RWQCB	Regional Water Quality Control Boards
SJWD	San Juan Water District
SSWD	Sacramento Suburban Water District
SWRCB	State Water Resources Control Board
USFWS	U.S. Fish and Wildlife Service
WMP	Water Master Plan

Section 1 Introduction

In accordance with the National Environmental Policy Act of 1969 (NEPA), as amended, the Bureau of Reclamation (Reclamation) prepared this Environmental Assessment (EA) to evaluate and disclose any potential environmental impacts associated with the implementation of the proposed action. The proposed action considered herein is a twenty-seven (27)-year Long-term Warren Act Contract (LTWAC) between Reclamation and Sacramento Suburban Water District (SSWD).

The proposed LTWAC would allow SSWD to convey up to 29,000 acre-feet (AF) per year (AF/yr) of non-CVP (Central Valley Project) water (water not developed as part of the CVP through Folsom Reservoir and divert that water at federal facilities at Folsom Dam. Water conveyed under the LTWAC would be purchased from the Placer County Water Agency's (PCWA's) Middle Fork Project (MFP). Water would be diverted only in "wet years" when projected March through November unimpaired inflow into Folsom Reservoir exceeds 1,600,000 AF. Water would be diverted at Folsom Dam and conveyed via an existing 84-inch conduit and North Fork Pipeline for treatment and distribution at the Sydney N. Peterson Water Treatment Plant (Peterson WTP) facilities, owned and operated by the San Juan Water District (SJWD). The water ultimately would be used within SSWD's service area in north Sacramento County for the purpose of groundwater stabilization in that region.

This EA is the continuation of a process begun in October 2006. In 2006, Reclamation completed and circulated a Draft Environmental Assessment and Biological Assessment (2006 DEA/BA) in support of the proposed LTWAC for SSWD. Reclamation received comments on the 2006 DEA/BA but a contract was never executed. Unlike the 2006 DEA/BA, this current document is an Environmental Assessment.

Much of the information and analysis presented herein was contained in the original 2006 DEA/BA. Additional information and analysis, however, is included to update the document and ensure adequate compliance with NEPA requirements. Where new information and analysis are presented, they are cited appropriately.

1.1 Background Information

1.1.1 The Warren Act

The Warren Act (43 U.S.C. §523) of 1911 (WA) authorized the Secretary of the Interior to enter into WA contracts with water purveyors to carry non-CVP water through federal facilities. Under section 305 of the States Emergency Drought Relief Act of 1991 (43 U.S.C. §2211 et seq.), "Excess Storage and Carrying Capacity," the Secretary is authorized to execute contracts with municipalities,

public water districts and agencies, other federal agencies, state agencies, and private entities pursuant to the WA. These contracts provide for the impounding, storage, and conveyance of non-CVP water for domestic, municipal, fish and wildlife, industrial, and other beneficial uses using any CVP facilities identified in the law, including Folsom Dam and Reservoir.

1.1.2 Sacramento Suburban Water District

The SSWD was organized on February 1, 2002 through the consolidation of two water districts: Northridge Water District (NWD) and Arcade Water District. SSWD's primary water supply source has historically been groundwater. Currently, SSWD uses both surface and groundwater as its supply sources. Water from the American River diverted at Folsom Reservoir provides SSWD with its surface water. SSWD Section 215 supplies have ranged between approximately 678 AF/yr and 12,145 AF/yr during the period of 1995 through 2003. SSWD estimates that 200 AF/year of Section 215 water will be reasonably available assuming normal years through the year 2040, according to the District's current Urban Water Management Plan (SSWD 2016). SSWD has a surface water entitlement of 26,064 AF/yr from the American River through a contract with the City of Sacramento, dating to 1964 (SSWD 2003). Water diverted under this contract is treated at the City of Sacramento's E.A. Fairbairn WTP and delivered to the former Arcade service area for use in the Town and County system (Figure 1-1). This portion of the SSWD South service area and the associated water supplied from the City of Sacramento is not a part of this proposed LTWAC service area.

Water demands within much of the LTWAC Service Area have historically been met with an increasing reliance on groundwater. Between 1991 and 1999 the former NWD pumped an average of approximately 13,837 AF/yr, representing over 80 percent of its water supply. In 1991, the former NWD began using surface water in limited quantities. Surface water supplied to the Northridge service area since 1991 has included a short-term transfer from Nevada Irrigation District (NID), Section 215 CVP water from Reclamation, and surplus water received from San Juan Water District on an as-available basis.

In 1998, the former NWD received a large amount of Section 215 water (temporary CVP supply pursuant to Section 215 of the Reclamation Reform Act of 1982) made available by Reclamation, which represented almost 70 percent of their water supply for that year. SSWD is eligible to purchase surplus Section 215 water in average and wet water years (SSWD 2003).

The SSWD North Service Area began receiving surface water from PCWA's MFP in June 2000, under an agreement to provide delivery of up to 29,000 AF/yr. The agreement increased the quantity of surface water available to SSWD from 7,000 AF/yr in the year 2000 to 29,000 AF/yr in 2015. According to the original agreement, the 29,000 AF annual water supply would then be maintained through the 25th year of the agreement. The term of this agreement would also be subject

to extension. An extension to the original agreement was, in fact, executed between PCWA and SSWD on June 2, 2016. In keeping with the 2016 amendment, the agreement now extends through December 31, 2045.

From the year 2000 through 2012, SSWD purchased surface water from PCWA under the agreement described above for use in the district's North Service Area during "wet year" conditions when forecasted unimpaired inflow to Folsom Reservoir exceeded 1,600,000 AF for the year (SSWD 2016). Diversions and deliveries were carried out using a series of one-year WA contracts. In 2012, SSWD entered into a five-year WA contract with Reclamation to convey and divert PCWA-purchased surface water. On March 1, 2018, a second short-term five-year Warren Act contract was executed through February 2023.

SSWD diverts water from Folsom Reservoir through a Reclamation-owned 84-inch conduit and flows either by gravity or is pumped by the Folsom Pumping Plant into the North Fork Pipeline. The necessity for pumping depends on the reservoir's surface elevation and on the total system flow requirements at that time. The Folsom Pumping Plant provides the required hydraulic lift necessary to convey water diverted from Folsom Reservoir to the recipient purveyors north of the American River (e.g., SJWD), the City of Roseville, and SSWD) through the North Fork Pipeline and those south of the American River (e.g., the City of Folsom and Folsom State Prison) through the Natoma Pipeline. The North Fork Pipeline, after leaving the Folsom Pumping Plant, splits at a junction point about 700 feet south of Hinkle Reservoir (referred to as the Hinkle "Y"), with both branches proceeding across the Placer County line. One branch of the "Y" delivers water to the Peterson WTP; the approved point of diversion for the delivery of water under the LTWAC.

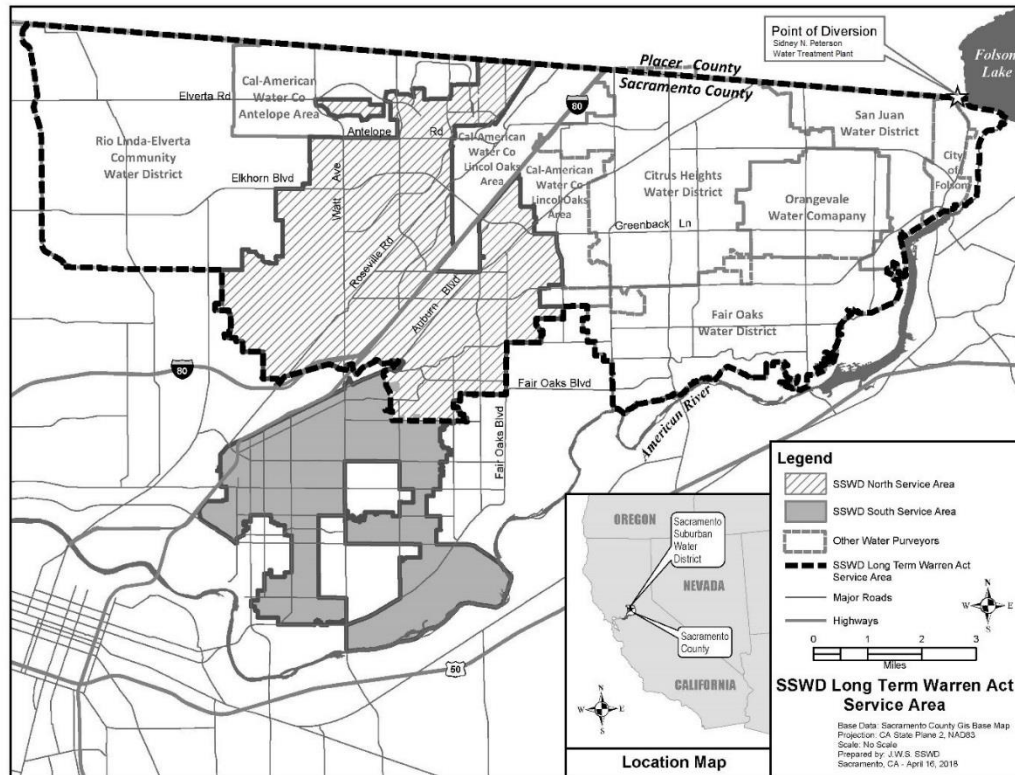


Figure 1-1 Contractor's (SSWD) Long-term Warren Act Boundary Map

In accordance with the current agreement between SSWD and PCWA water that would be made available under the Proposed Action would be used as 'water supply for groundwater stabilization,' "Non-CVP Water shall be delivered to the contractor [SSWD] only: a) in years when the projected March-to-November unimpaired inflows to Folsom Reservoir (M-N_FUI) is greater than 1,600,000 AF, or b) notwithstanding a) above, in a December, January, and February following a March through November period when the unimpaired inflows to Folsom Reservoir was less than 1,600,000 AF, when and after water is being released from Folsom Reservoir for flood protection." If the March through November unimpaired inflow is forecasted greater than 1,600,000 AF and then is subsequently forecasted below 1,600,000 AF, water diversions to SSWD would cease if and until the M-N-FUI was again forecasted greater than 1,600,000 AF.

1.1.3 Groundwater Supplies in SSWD's Service Area

Groundwater levels along the Placer/Sacramento county line west of the City of Roseville continue to decline at a rate of one and one-half feet per year (PCWA and NWD 1998). Curtailment of current and future demands on this aquifer are required in order to avoid further depletion as well as related adverse impacts associated with existing groundwater degradation and a lowered water table, including increased risks of land subsidence, increased groundwater pumping (and wellhead treatment) costs, and the ultimate risk of some existing wells going

dry. The groundwater basin underlying the SSWD is located in the North American Subbasin (5-21.64) which is part of the larger Sacramento Valley Groundwater Basin (SSWD 2016). The Sacramento Valley Groundwater Basin is not adjudicated. The basin is not identified by DWR Bulletin 118 as being in overdraft. The historical use of groundwater in the North American Subbasin (5-21.64) has resulted in a general lowering of groundwater levels that have stabilized in recent years. These depressions have grown and coalesced into a single cone of depression centered in the area of the prior McClellan Air Force Base. Groundwater elevations in the eastern and western areas of the North American Subbasin (5-21.64) have been fairly stable, while the central area (within the cone of depression) experienced continuing decline every year until groundwater levels stabilized and had some recovery starting in the late 1990s. The groundwater level stabilization in the cone of depression was due, at least in part, to expanded conjunctive use operations by water agencies in this area (SSWD 2016).

The water provided under the proposed LTWAC would be used within the SSWD LTWAC service area in north Sacramento County, which includes the former Northridge service area, the former Arcade service area (North Highlands system), and McClellan Business Park (formerly McClellan Air Force Base) within the SSWD North service area, as well as adjacent water purveyor service areas (see Figure 1-1 above).

While SSWD intends to use surface water purchased from PCWA to replace current groundwater pumping, there may be an opportunity for use of some of the surface water for direct groundwater recharge. Groundwater recharge may be accomplished using three existing SSWD wells that also have been outfitted to function as injection wells. In addition, expanded opportunities for direct recharge may be available in the future.

1.1.4 Placer County Water Agency Middle Fork Project (MFP)

The MFP, developed and owned by PCWA, regulates flows along the Middle Fork American River. The MFP is a multi-purpose hydropower, water supply, irrigation, recreation and water conservation project, and includes two large storage reservoirs (French Meadows and Hell Hole), five diversion dams, five power plants, water transmission facilities, tunnels, and other related facilities. PCWA has direct diversion rights from the North Fork American River and two primary diversions: one near the proposed Auburn Dam site and one from Folsom Reservoir (PCWA and NWD 1998). Flows not diverted from the upper American River tributaries are realized as Folsom Reservoir inflow. Folsom Reservoir is located at the confluence of the north and south forks of the American River, north of the City of Folsom, and is the uppermost boundary of the lower American River.

1.1.5 Sacramento Area Water Forum Agreement

The Sacramento Area Water Forum (Water Forum) Agreement includes legal constraints on current surface water entitlements. The Water Forum Agreement was developed to preserve the fishery, wildlife, recreational, and aesthetic values of the lower American River and to provide a reliable and safe water supply for the region. SSWD is a signatory to this agreement. SSWD has agreed under the Water Forum Agreement to limit its surface water supplies from the American River to approximately 29,000 AF/yr until 2030. As defined by the Water Forum Agreement, the SSWD surface water allocation from PCWA is reduced to zero in dry years (SSWD 2003).

The Water Forum Agreement diversion restrictions are dependent upon the March through November projected flow into Folsom Reservoir. During the first 10 years of the agreement between PCWA and SSWD, SSWD was allowed to divert up to 29,000 AF/yr of PCWA American River water¹ in years when the forecasted March through November unimpaired flow into Folsom Reservoir was greater than 950,000 AF. Currently, SSWD can divert PCWA water when the forecasted unimpaired inflow into Folsom Reservoir is greater than 1,600,000 AF through the end of 2017. As noted above, an extension to the original agreement between PCWA and SSWD was executed in 2016 which extends the agreement through December 31, 2045. In December, January, and February following a March through November period when unimpaired inflow into Folsom Reservoir is less than 1,600,000 AF, SSWD will not divert PCWA water.

1.2 Purpose and Need for the Proposed Action

1.2.1 Purpose of the Proposed LTWAC

The purpose of executing a LTWAC with SSWD is to allow for the conveyance of non-CVP water through Folsom Reservoir of up to 29,000 AF/yr purchased from the PCWA MFP under PCWA's water rights to the American River. The LTWAC service area is within PCWA's authorized place of use and constitutes efficient in-basin utilization of PCWA's water by SSWD and other adjacent water purveyors within the LTWAC service area. A new long-term WA contract would provide SSWD and others with the operational flexibility to better meet their existing and future water demands through a combination of CVP and non-CVP surface water supply deliveries, resulting in reduced reliance on groundwater withdrawals to provide water supplies within northern Sacramento County.

1.2.2 SSWD Water Supply Needs

Based on the 2015 SSWD Urban Water Management Plan (WMP) (SSWD 2016) actual maximum district-wide retail demand for potable and raw water totaled

¹ However, the Warren Act contracts entered into at that time with Reclamation were for up to 12,000 AF.

27,502 AF in 2015.² The average annual demand for potable and raw water for the years 2010-2015 was 35,086 AF ranging from 27,502 AF in 2015 to 38,554 AF in 2013.

The 2015 Plan projects buildout within the area served by SSWD will be achieved by the year 2031 with a projected total population of 190,659 within the district service area. This represents an increase in population of 17,279 compared to the District's 2015 population of 173,380. If demand within the District continues as projected in the WMP, total maximum retail demand for potable and raw water within SSWD will reach 41,345 AF / year by the year 2031. These demand forecasts are based on the assumption that SSWD will continue its water conservation efforts consistent with the commitments defined by the Sacramento Area Water Forum (see the subsection entitled Water Forum Purveyor-Specific Agreement Best Management Practices at the end of Chapter 1) (PCWA and NWD 1998).

² SSWD water demand in 2015 shown in the 2015 UWMP represents a substantial (greater than 20%) reduction in district-wide water use relative to that experienced in recent years. This reduction was due to the imposition of the Governor's Executive Order requiring temporary water use restrictions in response to extended drought conditions in California. This order was subsequently lifted in 2017.

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Section 2 Proposed Action and Alternatives

Abiding with NEPA requirements, an EA must consider a reasonable range of alternatives that can accomplish the purpose and need of the proposed action. NEPA regulations require an agency to “rigorously explore and objectively evaluate all reasonable alternatives” (40 CFR § 1502.14(a)), to devote substantial treatment to each alternative (40 CFR § 1502.14(b)), to identify the preferred alternative where one or more exists (40 CFR § 1502.14(e)), and to present the environmental impacts of the proposed action and the alternatives in comparative form to sharply define the issues and provide a clear basis for a choice among alternatives by the decision maker and the public. Other requirements include:

- Providing a “no action” alternative (40 CFR § 1502.14(d));
- Explaining why any alternatives were eliminated from detailed analysis (40 CFR § 1502.14(a));

When determining the scope of an environmental review, the CEQ regulations require an agency to consider three types of alternatives. The three types include the no action alternative, other reasonable courses of action, and mitigation measures that are not an element of the proposed action (40 CFR § 1508.25(b)(1-3)).

The Proposed Action, i.e., the execution of a LTWAC to divert PCWA MFP water from Folsom Lake for use in the SSWD north service area for the purpose of groundwater stabilization, is somewhat atypical in that the range of alternatives available to meet even the most basic objectives of the action is extremely limited.

In order for SSWD to use up to 29,000 AF/yr of PCWA MFP water—water currently available through its existing agreement, diversion at Folsom Reservoir is necessary in order to avoid substantial additional investment, facilities construction and environmental impact associated with the development of alternative diversion and/or conveyance facilities. In addition, the feasibility of such alternative facilities is unknown. One must also consider that any reduction in the total amount of the proposed 29,000 AF/yr diversion in wet years would be inconsistent with the basic purpose of the LTWAC which is to stabilize groundwater resources within the SSWD service area. Lastly, any reduction in the proposed 27-year term of the contract would be inconsistent with the basic purpose of the action; i.e., to improve long-term reliability of diversions for the purpose of groundwater stabilization.

For the reasons presented above, this EA considers two possible actions: the Proposed Action and the No Action Alternative. These are described below.

2.1 Proposed Action

Reclamation's Proposed Action is to enter into a 27-year LTWAC with SSWD for the conveyance of up to 29,000 AF/yr of non-CVP water through the federal facilities at Folsom Dam (e.g., Folsom Pumping Plant). In accordance with the agreement between SSWD's predecessor in interest, NWD, and PCWA for a 'water supply for groundwater stabilization,' "Non-CVP Water shall be delivered to the contractor [SSWD] only: a) in years when the projected March-to-November unimpaired inflows to Folsom Reservoir (M-N_FUI) is greater than 1,600,000 AF, or b) Notwithstanding a) above, in a December, January, and February following a March through November period when the unimpaired inflows to Folsom Reservoir was less than 1,600,000 AF, when and after water is being released from Folsom Reservoir for flood protection." If the March through November unimpaired inflow is forecasted greater than 1,600,000 AF and then is subsequently forecasted below 1,600,000 AF, water diversions to SSWD would cease if and until the M-N-FUI was again forecasted greater than 1,600,000 AF.

Under the Proposed Action, Reclamation would permit SSWD's use of the CVP facilities to convey purchased MFP water from PCWA to the Peterson WTP. PCWA accounts for a conveyance loss of 5% prior to the delivery of up to 29,000 AF/yr of MFP water to SSWD. Therefore, the amount of water diverted at the Federal facilities at Folsom Dam would be up to 29,000 AF/year for M&I purposes. Some of the M&I water would be lost to evapotranspiration, and some would also percolate back into the aquifer. LTWAC water delivery will include areas within the SSWD North Service Area and adjacent Cal American Water Co. (Cal-Am) service areas, as well as SJWD and Rio Linda/Elverta Community Water District (RL/ECWD) in north Sacramento County (see Figure 1-1 above).

Purchased MFP water would not be stored in Folsom Reservoir for more than a few days. In the years when MFP water is sold to SSWD, the increase in inflow to Folsom Reservoir will be equal to the water bypassed at the American River Pump Station (ARPS), and the increased inflow to Folsom Reservoir will be diverted within the same month it was bypassed at the American River Pump Station. Figure 2-1, below, shows the average monthly demand pattern for diversions at the ARPS at full build-out and projected monthly wet-year diversion of 29,000 AF/yr by SSWD at Folsom Dam.

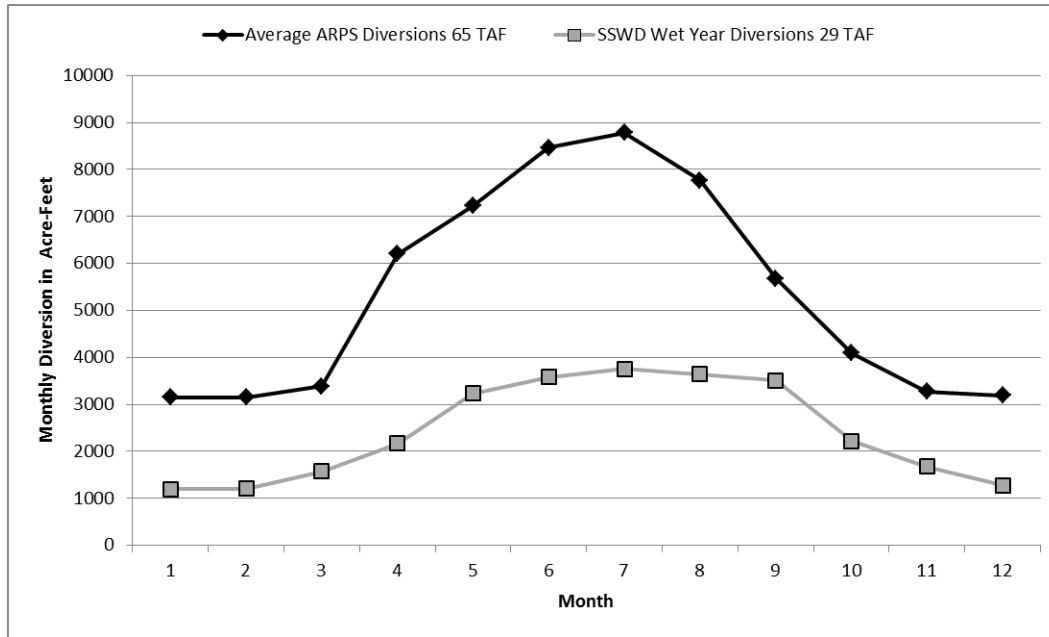


Figure 2-1. American River Pump Station and SSWD Monthly Diversion Patterns

The monthly demand pattern for SSWD was developed using historical SSWD usage, with input from SSWD's Operations Manager (Arnez, 2016). The SSWD Service Area demand pattern is used here as representative of demand patterns anticipated within the LTWAC service area under the Proposed Action. Surface water from Folsom Reservoir can be used throughout SSWD's LTWAC Service Area in lieu of groundwater pumping. The monthly demand pattern for the Proposed Action is developed to meet demands in the LTWAC Service Area. Each month in the demand curve was calculated as the largest SSWD service area usage in that month over the 10-year period of 2004 - 2013. The monthly demand pattern for SSWD is likewise used as the monthly demand pattern of diversion reduction at PCWA's American River Pump Station (ARPS).

For determining the potential maximum impact of the Proposed Action relative to the No Action Alternative, this EA compares the effects of maximum diversion (29,000 AF/year during wet years under the Proposed Action) to the effects of diverting no PCWA MFP water from Folsom Reservoir to serve SSWD customers within the LTWAC service area. Diversions would occur in keeping with established monthly demand patterns described above.

The areas where purchased MFP water would be used within the LTWAC service area are substantially developed for urban uses. The Proposed Action would provide supplemental water for existing and near future demands that would be met through continued groundwater extraction under the No Action Alternative. In fact, a large portion of the LTWAC service area could receive water from groundwater supplies if the PCWA purchased MFP water were not available under the WA. Therefore, it is reasonable to conclude that growth and development within the LTWAC Service Area is not contingent on water

provided under the Proposed Action nor would they be induced by the Proposed Action.

2.1.1 Middle Fork Project Operations

PCWA and SSWD (vis-à-vis the former NWD) entered into a 25-year conditional agreement August 21, 1995 (as amended), for delivery to the District of up to 29,000 AF/yr from the PCWA MFP. As noted above (see Section 1.1.2), the term of this agreement was recently extended through the year 2045.

Currently, daily operations of the MFP are primarily governed by power generation. PCWA owns and jointly operates the MFP with Pacific Gas and Electric Company (PG&E). The MFP was operated to meet the requirements stipulated in a 1963 power purchase contract with PG&E and beginning on May 1, 2013, the project is funded through the new agreement which no longer requires PG&E operational approval. This agreement expired in December of 2017. A separate 1962 agreement between Reclamation and PCWA provides that, following the termination of the power purchase contract between PCWA and PG&E, the MFP will be operated to "...maximize its yield for the development, conservation, and use of water for consumptive purposes" (PCWA and NWD 1998).

Implementation of the Proposed Action would allow the use of surface water released during standard operation of PCWA's MFP. This water would flow downstream past PCWA's North Fork American River pump facilities and into Folsom Reservoir. SSWD will then divert the non-CVP water from Folsom Reservoir consistent with a schedule that would be based on SSWD's monthly demand pattern shown in Figure 2-1, above. This water would be diverted at the urban water supply intake located within Folsom Dam and conveyed to the Folsom Pumping Plant and on to the Peterson WTP via the North Fork Pipeline.

2.1.2 Action Area and LTWAC Service Area

2.1.2.1 Action Area

An "action area" as defined in 50 CFR 402.14(g)(3) is the immediate area involved in the action and the entire area where effects to listed species extend as a direct and indirect effect of the action." Here, "listed species" refers to wildlife, fish and plant species that are federally listed as threatened or endangered under the Endangered Species Act of 1973 as amended (ESA).

The action area for the Proposed Action (Action Area) addressed in this EA includes those waterbodies potentially affected by the LTWAC's proposed diversion (see Figure 2-2). The waterbodies potentially affected by operations associated with the proposed diversion are the:

- North Fork American River downstream of the confluence with the Middle Fork of the American River

- Folsom Reservoir
- Lake Natoma
- Lower American River

The Action Area does not include the area where water would be delivered and ultimately used (i.e., the LTWAC service area). As noted above, delivery of water to the LTWAC service area would continue a practice that has been executed since 2000 under a series of past and ongoing short-term WA contracts. As previously noted, no new infrastructure would be constructed to implement the Proposed Action within the LTWAC service area or elsewhere. In addition, due to the availability of alternate developed water supplies (i.e. groundwater) to serve anticipated future growth and development within the LTWAC service area, the Proposed Action would have no effect on future growth and development within the service area. As such, the Proposed Action would not result in any direct or indirect effects on species present within the LTWAC service area.

Because the Proposed Action does not include any proposed changes in the operations of French Meadows and Hell Hole reservoirs, the Action Area does not include the French Meadows and Hell Hole reservoirs, Middle Fork American River below French Meadows Reservoir, Rubicon River below Hell Hole Reservoir, Ralston Afterbay, and Middle Fork American River below Ralston Afterbay. These waterbodies are included in the “affected environment” discussion herein because the operation of these facilities contributes to regional power supplies, and a portion of these supplies is provided by downstream facilities which may, in fact, be directly or indirectly affected by the Proposed Action. For purposes of this EA, the “affected environment” includes any areas or resources that could be directly or indirectly affected by the Proposed Action. The “Action Area,” as described above, includes only the area where listed species could be directly or indirectly adversely affected by the Proposed Action.

2.1.2.2 LTWAC Service Area

The SSWD LTWAC lies within the broad Central Valley floor and is bordered by the foothills and Sierra Nevada to the east, and the Sacramento River to the west. It is located in North Sacramento County, approximately 9 miles northeast of downtown Sacramento, California and 10 miles southwest of Folsom Reservoir.

The LTWAC service area encompasses approximately 99 square miles, the majority of which is located within unincorporated Sacramento County (see Figure 1-1, above). However, approximately 270 acres (0.4 square miles) along the western boundary of the LTWAC service area are located within the City of Sacramento, and approximately 3,194 acres (5 square miles) along the eastern boundary lie within the City of Citrus Heights. The LTWAC service area includes portions of the SSWD service area, portions of the California American Water service area, the RL/ECWD service area, and SJWD service area.

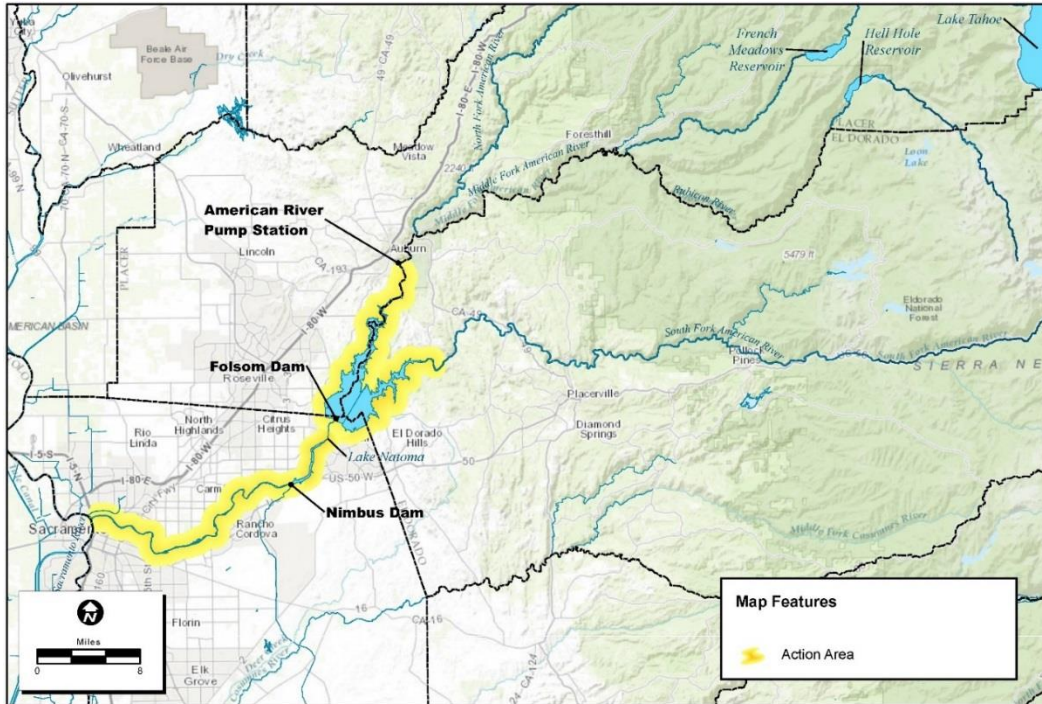


Figure 2-2. Action Area.

The SSWD is located in Sacramento County, north of the American River and serves a large suburban area, the majority of which is in unincorporated Sacramento County, that consists of portions of Arden/Arcade, Foothill Farms between Interstate 80 and the Union Pacific Railroad, with smaller parts of the District within Citrus Heights, Carmichael, Fair Oaks, North Highlands, Sacramento, and Antelope, as well as all of McClellan Business Park. Within SSWD are four service areas: North Service Area; Arbors at Antelope Service Area; McClellan Business Park Service Area; and South Service Area (SSWD 2016). Water provided under the LTWAC will serve each of these areas with the exception of the South Service Area. For purposes of this EA, the area within SSWD to be served under the LTWAC is referred to as the “North Service Area” as shown in Figure 1-1, above.

California American Water (Cal-Am) Service Area

Cal Am’s urban service areas include all of Isleton, as well as portions of South Sacramento, North Highlands, Arden-Arcade, Rancho Cordova, Elverta, Citrus Heights, Antelope, Security Park, and Walnut Grove. Approximately 43,432 AF/yr of water is supplied to Cal Am customers, all of which is groundwater that is pumped from 105 wells within the service area (Sacramento Local Agency Formation Commission Website 2005). Approximately 12.3 square miles of the Cal-Am service area is included within the SSWD LTWAC service area and consists of the Lincoln Oaks and Antelope systems. Cal-Am, formerly the Citizens Utility Company of California, is a private water purveyor that supplies

water to approximately 57,000 customers within an approximately 44 square mile service area.

Rio Linda/Elverta Community Water District (RL/ECWD) Service Area

The RL/ECWD service area includes areas in and around Rio Linda and Elverta, covering approximately 18 square miles. Not all residences or water users within the RL/ECWD service area are district customers. The RL/ECWD service area includes mainly customers in Rio Linda and between Rio Linda and the former McClellan Air Force Base. Customers within the boundary but outside of the service area rely on private wells or other sources for water service. (RL/ECWD 2016)

SJWD Service Area

SJWD is both a wholesale and retail agency. SJWD provides water service to customers in both the retail and wholesale service areas in northeastern Sacramento and southern Placer counties. The wholesale portion of SJWD is forty-five square miles and comprised of a group of retail water agencies. These agencies are the Citrus Heights Water District, Fair Oaks Water District, Orange Vale Water Company, SJWD retail service areas, and the City of Folsom.

2.2 No Action Alternative

The No Action Alternative as defined by NEPA reflects future conditions that are likely to occur without the Proposed Action (40 CFR § 1502.14(d)). The No Action Alternative generally reflects existing management and operational conditions that would cause current activities to continue without significant change. It also includes future actions that are likely to proceed regardless of implementing the Proposed Action. Under NEPA, the No Action Alternative normally serves as a basis of comparison for determining potential effects on the human environment of the proposed action and other project alternatives. In order to describe the No Action Alternative for the LTWAC, one must define the existing management and operational conditions likely to continue in the absence of the Proposed Action.

Since execution of its agreement with PCWA in 2000, SSWD has received diversions from PCWA's MFP water through a series of annual and 5-year short term Warren Act contracts. In 2012, SSWD entered into a 5-year Warren Act Contract (WAC) with Reclamation which would facilitate diversion of up to 14,500 AF/yr in wet years. It is reasonable to assume that, in the absence of a LTWAC, SSWD would continue to pursue short-term WACs to allow them to implement their water purchase agreement with PCWA for the purpose of groundwater stabilization. Reclamation's approval of short-term WACs in future years, however, is not assured. Potential increases in costs, changes in legislation, and capacity constraints at Folsom Dam and Reservoir may affect Reclamation's ability to approve future contracts. For this reason, the No Action Alternative for

the proposed LTWAC assumes that no diversions of PCWA MFP water to SSWD water will occur during the 27-year period of the proposed long-term contract.

For purposes of this EA, the up to 29,000 AF/yr wet-year diversion of PCWA MFP water to SSWD will be retained for use within the PCWA service area in Placer County. Instead of diverting up to 29,000 AF/yr during wet years from Folsom Reservoir as would occur under the Proposed Action, that water would be diverted at the American River Pump Station for use within the PCWA service area. Water to supply existing and near future demands in the SSWD service area would be supplied by groundwater under the No Action Alternative.

Future actions that are likely to proceed regardless of implementing the Proposed Action, include full implementation of the 2016 Record of Decision for the Long Term Operating Agreement for the CVP and SWP, and implementation of all Reasonable and Prudent Alternatives (RPAs) from the 2008 United States Fish and Wildlife Service (USFWS) and 2009 National Marine Fisheries Service (NMFS) Biological Opinions on the Coordinated Long-term Operation of the CVP and SWP, in addition to other ongoing and future programs that would be reasonably foreseeable to be implemented by 2030 and listed below. These actions are consistent with those identified in the 2016 LTO Final EIS (Reclamation 2016) and include actions in the 2008 USFWS BO and 2009 NMFS BO that would have occurred without implementation of the BOs including climate change and sea level rise.

Other actions not included in the 2008 USFWS BO and 2009 NMFS BO but are considered likely to occur with or without the Proposed Action include:

- General Plans 2030
- Central Valley Project Improvement Act programs
- Nimbus Fish Hatchery Fish Passage Project
- Folsom Dam Water Control Manual Update
- FERC Relicensing for the Middle Fork of the American River Project
- Future water supply projects, including water recycling, desalination, groundwater banks and wellfields, and conveyance facilities
- Future Actions Considered as Cumulative Effects Actions in the Year 2030 as described in Section 3.5 of the LTO FEIS including:
 - Bay-Delta Water Quality Control Plan Update
 - FERC Relicensing Projects

- Bay Delta Conservation Plan (including the California WaterFix alternative)
- El Dorado Water and Power Authority Supplemental Water Rights Project
- Sacramento River Water Reliability Project
- Future water supply projects, including water recycling, desalination, conveyance facilities (projects that did not have completed environmental documents during preparation of the EIS)

2.3 Alternatives Considered but Rejected from Detailed Analysis in this EA

The Proposed Action, as noted, is the execution of a long-term Warren Action Contract to divert PCWA MFP water from Folsom Lake for use in the SSWD north service area for the purpose of groundwater stabilization. The SSWD is pursuing the LTWAC in order to achieve two basic project objectives: 1) execution of its existing contract with PCWA for the delivery of up to 29,000 AF of PCWA water during wet years, and 2) use of that water for the purpose of long-term groundwater stabilization within the SSWD service area. In the course of EA preparation, alternatives to the Proposed Action that would achieve these basic project objectives were considered as a means of potentially reducing any identified impacts to the human environment as a consequence of the Proposed Action.

This EA considered the implementation of a “reduced-diversion alternative” which would limit wet-year diversions of PCWA to an amount less than the proposed maximum of 29,000 AF annually and/or reduce the 27-year term of the proposed contract. This alternative was considered as a possible means to reduce any identified impacts caused by the proposed diversion of PCWA water by SSWD. This alternative was considered but rejected for detailed analysis in this EA for the following reasons: 1) the reduced-diversion alternative would not meet the project objective of fully executing SSWD’s contract with PCWA for the delivery of up to 29,000 AF in wet years, 2) the alternative would reduce SSWD’s ability to achieve long-term stabilization of groundwater resources in the SSWD north service area by limiting the amount of surface water available to serve users within SSWD’s north service area, and 3) the alternative would provide no reduction in direct, indirect or cumulative environmental consequences of the Proposed Action identified in this EA.

Further consideration of possible alternatives to the Proposed Action determined that the range of alternatives available to meet even most basic purposes and need for the action is extremely limited. In order for SSWD to use the up to 29,000 AF/yr of PCWA MFP water currently available through an existing agreement,

diversion at Folsom Reservoir is necessary in order to avoid substantial additional investment, facilities construction and likely environmental impact associated with the development of alternative diversion and/or conveyance facilities, the feasibility of which is unknown.

For the reasons presented above, 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.

Section 3 Affected Environment and Environmental Consequences

3.1 Scope and Content of the Environmental Analysis

This EA does not analyze resources for which it would be reasonable to conclude that no impacts would occur from the implementation of the Proposed Action relative to the No Action Alternative. In the absence of an LTWAC, customers within the SSWD North Service Area would continue to be served by groundwater supplies and surface water made available under existing agreements. Because the Proposed Action would require no construction of new facilities and would result in no change in water availability to SSWD customers, direct impacts on resources related to facilities construction and indirect impacts related to growth and development due to the Proposed Action would not occur under the Proposed Action. For these reasons, the lead agency has determined that execution of the proposed LTWAC does not have the potential for impacts on soils, geology, mineral resources, land use, visual resources, transportation, noise, hazards and hazardous materials, public services, utilities, and service systems. Therefore, the EA does not evaluate further the potential effects of the Proposed Action on these resources.

In addition to the resources stated above, Reclamation considered and determined that the Proposed Action would have no effects to Indian Trust Assets; Indian sacred sites; environmental justice; cultural resources; and air quality. The rationale for these determinations are discussed below.

As noted above, the Proposed Action would allow the diversion of up to 29,000 AF/yr from Folsom Reservoir to serve customers in the LTWAC service area. Under the No Action Alternative, that same amount would be diverted at PCWA's American River Pump Station for use within PCWA's service area.

3.1.1 Indian Trust Assets (ITA)

ITAs are legal interests in property held in trust for Indian tribes or individuals by the United States. Trust Assets can be lands, minerals, hunting and fishing rights, and water rights. Reclamation's ITA policy and NEPA implementing procedures provide for the protection of ITAs from adverse impacts resulting from federal programs and activities. Federally recognized tribes in the vicinity of the Proposed Action's Action Area include: Miwok Maidu United Auburn Indian Community of the Auburn Rancheria (Placer County); United Auburn Indian Community of the Auburn Rancheria of California (Placer County); Shingle Springs Band of Miwok Indians, including Shingle Springs Rancheria (El Dorado and Nevada Counties); Buena Vista Rancheria of Me-Wuk (Sacramento County); and Wilton Miwok Indians of the Wilton Rancheria (Sacramento County) (Reclamation 2016).

It is Reclamation's policy to protect ITAs from adverse impacts resulting from its programs and activities. Potential impacts on ITAs resulting from implementation of the Proposed Action have been reviewed, and Reclamation has determined that the Proposed Action would have no effects on ITAs for the following reasons.

First, the Proposed Action will not modify existing State and Federal facilities. Second, the Proposed Action will not directly or indirectly result in the construction of new facilities. In addition, State and Federal facilities to facilitate the Proposed Action would remain within the capacity of these facilities. Lastly, under the Proposed Action, execution of the LTWAC would extend the practice of delivery of PCWA water in wet years to SSWD that has historically occurred and continues to occur under contract as enabled by short-term Warren Act contracts. Execution of these short-term contracts have been found to have no impact on ITAs such as hunting, fishing or water rights.

3.1.2 Indian Sacred Sites

Since no modification of the existing State and Federal facilities is necessary and use of these facilities will remain within capacity, no Indian sacred sites will be infringed. The Proposed Action will not result in any ground disturbance and therefore would have no effect on Indian sacred sites.

3.1.3 Environmental Justice

Environmental Justice issues in the American River Division counties under the Proposed Action would be identical to conditions under the No Action Alternative.

3.1.4 Cultural Resources

By implementing the Proposed Action Alternative, all water will be delivered within existing water service area boundaries utilizing existing water conveyance. Reclamation's approval of the long-term Warren Act contract using existing facilities with no changes in land use is the type of activity that does not have the potential to effect historic properties. Therefore, Reclamation has no further obligation under Title 54 U.S.C. § 306108, commonly known as Section 106 of the National Historic Preservation Act, pursuant to 36 C.F.R. § 800.3(a)(1).

3.1.5 Air Quality

Since the Proposed Action has no potential to cause direct or indirect emissions of criteria pollutants that equal or exceed *de minimis* thresholds, a conformity analysis is not required pursuant to the Clean Air Act.

3.1.6 Resources to be Analyzed in this EA

In conclusion, this EA will analyze the affected environment of the Proposed Action and No Action Alternatives in order to determine the potential impacts and cumulative effects on the following environmental resources:

- Water Supply and Hydrology;
- Hydropower;
- Fisheries and Aquatic Resources;
- Terrestrial and Riparian Resources; and
- Recreation.

3.2 Water Supply and Hydrology

3.2.1 Affected Environment

Section 3.3.1 describes the regional and local hydrology pertinent to the Proposed Action to provide a basis for assessing the potential impacts on water supplies and hydrology that the Proposed Action and No Action Alternative could have on these environments. This section describes reservoirs and riverine reaches potentially affected by the Proposed Action. The area affected by the Proposed Action is located on the eastern edge of the Sacramento Valley at the base of the Sierra Nevada foothills. The affected area consists of a portion of the upper American River basin, Folsom Reservoir, the lower American River, and the SSWD LTWAC service area. The portion of the upper American River basin included as part of the action area includes a small section of the North Fork American River located below the American River Pump Station. The affected environment described herein is inclusive of the “Action Area” described in Section 2.3 of this EA and illustrated in Figure 2.2 above. The Action Area for the Proposed Action includes those waterbodies potentially affected by the proposed diversion that would be allowed under the LTWAC. The waterbodies potentially affected by operations associated with the proposed diversion include the: North Fork American River downstream of the confluence with the Middle Fork of the American River; Folsom Reservoir; Lake Natoma, and lower American River (LAR).

This section also provides an overview of the regional groundwater basin and the LTWAC SSWD Service Area as well as regulatory considerations relative to water supply and hydrology.

3.2.1.1 Water Courses and Facilities

Middle Fork and North Fork American Rivers

The headwaters for the Middle Fork American River watershed (i.e., the Rubicon River) are at Rockbound Valley in the Desolation Wilderness (elevation 9,974 feet). The Middle Fork watershed extends westward to the confluence with the North Fork American River, east of Auburn (elevation 650 feet). The average annual yield for the Middle Fork American River for the period of 1959 through 1991 was 805,000 AF. The Rubicon River is the main tributary to the Middle Fork American River and receives its water from the South Fork Rubicon River and Pilot Creek. Other tributaries to the Middle Fork American River are Duncan Canyon Creek and Long Canyon Creek.

The headwaters to the North Fork American River watershed are in the Sierra Nevada at an elevation of approximately 9,000 feet. The watershed extends westerly to Folsom Lake, south of Auburn, at an elevation of 650. The largest tributary to the North Fork American River upstream of its confluence with the Middle Fork is the North Fork of the North Fork. This tributary is unregulated. After the North Fork of the North Fork joins, the North Fork flows are altered by the North Fork Dam at Lake Clementine, upstream of its confluence with the Middle Fork.

Downstream of its confluence with the Middle Fork American River, North Fork flows are a combination of regulated and unregulated flows. Flows in the North Fork below its confluence with the Middle Fork are directly affected by fluctuations in Ralston Afterbay releases, but are attenuated by the unregulated flows from the North Fork of the Middle Fork and the North Fork of the North Fork American River, which exhibit less diurnal fluctuation.

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 flows downstream of Folsom Dam at Fair Oaks are approximately 2,650,000 AF per year (Reclamation 2004). The flow regime in the lower American River has been significantly altered since the completion of Folsom and Nimbus dams.

Folsom Reservoir

Folsom Reservoir is the principal reservoir on the American River, with a maximum storage capacity of 977,000 AF. Flows from the North, Middle and South Forks of the American River each contribute to storage at the reservoir. Folsom Dam was originally authorized for construction by the U.S. Army Corps of Engineers (Corps) in 1944 as a 355,000 AF flood control unit. The Dam was reauthorized in 1949 as a 1,000,000 AF multi-purpose facility, with a surface area of 11,450 acres. Reclamation operates Folsom Dam and Reservoir for the purposes of flood control, meeting water contract obligations, providing adequate instream flows in the lower American River for recreation and fisheries resources, and as a means of meeting Delta water quality standards.

Lake Natoma

Lake Natoma serves as the Folsom Dam afterbay and was formed as a result of Nimbus Dam. Nimbus Dam was built in 1955 by the Corps and later transferred to Reclamation. 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 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.

3.2.1.2 Regional Groundwater Basin

An extensive groundwater aquifer system underlies the Central Valley. Useable groundwater in Sacramento County is categorized into a shallow aquifer zone and an underlying deeper aquifer zone, separated by a discontinuous clay layer. The thickness of the deeper aquifer ranges from 200 to 100 feet in Sacramento County and contains water of poor quality (Sacramento County Water Agency 1997).

Purveyors in the project area (SSWD, Cal American Water Company, RL/ECWD, and SJWD) rely on some combination of groundwater and surface water for their water supplies. As described in the SSWD 2015 Urban Water Management Plan (SSWD 2016), groundwater has historically been the primary source of water in the district's North Service Area and South Service Area. Surface water delivered to SSWD under the Proposed Action would be used exclusively in the North Service Area and in areas served by Cal American, RL/ECWD, and SJWD. Groundwater use in the North Service Area has significantly declined since 1998 due to the availability of surface water as an alternative supply.

The groundwater basin underlying SSWD is located in the North American Subbasin (basin number 5-21.64 as delineated in Bulletin 118, California Department of Water Resources) which is part of the larger Sacramento Valley Groundwater Basin (SSWD 2016). The Sacramento Valley Groundwater Basin is not adjudicated. The basin is not identified by DWR Bulletin 118 as being in overdraft.

SSWD and the other providers to be served under the Proposed Action lie within the "North Basin" as defined within the Water Forum Agreement (SSWD 2016). The water-bearing deposits within the North Basin include the Miocene/Pliocene volcanic Mehrten Formation. Overlying units known collectively as "older-alluvium" include the Pliocene and Pleistocene, Modesto, Riverbank, and Turlock Lake formations, which were previously referred to as the Fair Oaks, Laguna, and local gravels formations. The Mehrten Formation is the most productive fresh water-bearing unit in the eastern Sacramento Valley, though some of the permeable layers of the overlying older alluvium produce moderate amounts of

water. Groundwater is generally recharged along the east side of the subbasin and through the younger alluvium of streams and rivers and flows west/southwest through the subbasin.

The historical use of groundwater in the North American Subbasin (5-21.64) has resulted in a general lowering of groundwater levels that have stabilized in recent years. These depressions have grown and coalesced into a single cone of depression centered in the area of the prior McClellan Air Force Base. Groundwater elevations in the eastern and western areas of the North American Subbasin (5-21.64) have been fairly stable, while the central area (within the cone of depression) experienced continuing decline every year until groundwater levels stabilized and had some recovery starting in the late 1990s. The groundwater level stabilization in the cone of depression was due, at least in part, to expanded conjunctive use operations by water agencies in this area.

The groundwater quality in the North American Subbasin (5-21.64) is generally excellent (SSWD 2016). Most municipal wells do not need any treatment to meet drinking water standards other than disinfection. However, there are some wells that have iron and manganese treatment, as well as locations with elevated levels of arsenic and hexavalent chromium. There are several groundwater contaminant plumes and some point sources of contamination (e.g., leaking underground storage tanks). The three largest groundwater contaminant plumes emanate from source areas at the prior McClellan Air Force Base, the Roseville railroad yard, and Aerojet in Rancho Cordova. The presence of these contaminant plumes has damaged some existing municipal wells and limits the construction of new municipal wells in the vicinity of the contaminant plumes. Significant remediation efforts/programs by federal, state, and local government agencies are in progress to confine and clean up the contaminated groundwater.

3.2.1.3 LTWAC SSWD Service Area

As described in Section 2.1.2.2 above, the LTWAC service area encompasses portions of the service areas contained within SSWD, Cal American, RL/ECWD, and SJWD (see Figure 1-1, above). In total, the LTWAC service area covers approximately 99 square miles, the majority of which is located within unincorporated Sacramento County with approximately 270 acres (0.4 square miles) along the LTWAC service area's boundary located within the City of Sacramento, and approximately 3,194 acres (5 square miles) along the eastern boundary lying within the City of Citrus Heights.

3.2.2 Environmental Consequences

3.2.2.1 Diversion-Related Impacts

Potential impacts on CVP/SWP water supply deliveries resulting from implementation of the Proposed Action were identified and evaluated relative to the No Action condition (2030 levels of demand). The impact analysis focused on

potential changes to annual water deliveries to contractors within the CVP and SWP, and non-CVP American River water users.

The analysis of potential effects on water supply and hydrology associated with implementation of the Proposed Action was based on reductions in reservoir storage or river flows, relative to the No Action condition, of significant frequency and duration to adversely affect delivery allocations (water supply availability) for CVP and SWP customers, and non-CVP American River water users.

No Action Alternative

The No Action Alternative serves as the environmental baseline for determining potential effects of the Proposed Action for this EA. As such, hydrology and operations under the No Action Alternative are identical to those that occur under baseline conditions. Therefore, water deliveries to CVP and SWP customers and non-CVP American River water users would be no different under the No Action Alternative relative to environmental baseline conditions.

Under the No Action Alternative, a total of 120,000 AF of water would be diverted by PCWA annually. This water originates as natural flow in the system and from releases from MFP storage reservoirs (French Meadows and Hell Hole). Of this total, 65,000 AF would be diverted at the American River Pump Station to meet PCWA demands while the remaining 55,000 AF would be diverted at Folsom Reservoir to serve PCWA commitments to San Juan Water District and the City of Roseville (see Table 2.3-1 in Appendix A of this EA). Currently, the entire 65,000 AF is not diverted annually to meet PCWA service area demands or PCWA commitments for surface water supply transfers. Consistent with the Reclamation's Long-Term Operations EIS modeling, demand of 65,000 AF annually is used under the No Action Alternative.

Proposed Action

Middle Fork Project (MFP)

The MFP seasonally stores and releases water to meet consumptive demands within western Placer County and to generate power for the California electrical grid. Water for consumptive purposes is released from the MFP and re-diverted at two locations: (1) the American River Pump Station, located on the North Fork American River near the City of Auburn; and (2) Folsom Reservoir. Both points of re-diversion are downstream of the MFP facilities and neither is part of the MFP as defined in the FERC Project License. PCWA's water rights and water supply agreements currently allow for the consumptive use of up to 120,000 AF of MFP water per year. Consumptive water supplied by PCWA is used to meet municipal, industrial, and agricultural demands.

The Proposed Action would move 29,000 AF of the 65,000 AF annual diversion from PCWA's American River pumping plant location to Folsom Reservoir to be

available to SSWD at the Folsom Reservoir point of diversion. This will occur in years where the forecasted March through November Folsom Reservoir Unimpaired Inflow (M-N FUI) is greater than 1,600,000 AF. If the March through November unimpaired inflow is forecasted greater than 1,600,000 AF and then is subsequently forecasted below 1,600,000 AF, water diversions to SSWD would cease if and until the M-N-FUI was again forecasted greater than 1,600,000 AF. In years when 29,000 AF of water is delivered to SSWD, water diversions will continue in the Proposed Action equal to diversions occurring under the No Action Alternative with only the point of diversion moving from the American River Pump Station downstream to Folsom Reservoir.

Under the Proposed Action, the MFP maintains the same operating criteria and plans as compared to the No Action Alternative. There are no modifications to the MFP operations or operational criteria under the Proposed Action when compared to the No Action Alternative (Ransom, personal communication, 2016).

North Fork American River Downstream of the North Fork Pump Station.

With the implementation of the Proposed Action, the North Fork American River downstream of the North Fork Pump Station (NFPS) will flow higher or the same as a result of reduced projected diversions at the NFPS when and if MFP water is diverted by SSWD at Folsom. As shown in Table A.3.3.15-2 of Appendix A, average annual flow in this reach of the river under the No Action Alternative is 2,167 thousand acre-feet (TAF). Under the Proposed Action, flow would be 2,191 TAF: an increase of approximately 17 TAF annually on average relative to the No Action Alternative. The flow increase is year-round when the project is operational but follows the consumptive demand pattern of a higher increase in the summer and the lowest increase in the winter. Monthly average flow values can be found in Table A.3.3.15-1 of Appendix A.

Folsom Reservoir and the Lower American River.

With implementation of the Proposed Action, Folsom Reservoir storage would not change during any years of project operation (Table A.3.3.4-1 in Appendix A). As shown in Table A.3.3.4-1, diversions for SSWD from Folsom Reservoir would occur immediately after PCWA diversion decreases at the American River Pump Station. The water would not be stored in Folsom Reservoir for more than a few days.

With no change in Folsom Reservoir storage it can be assumed that Folsom Reservoir water surface elevations will remain unchanged as well. As described in detail in Section A.3.3.4 of Appendix A, Folsom Reservoir storage and surface water elevations under the Proposed Action, relative to the No Action condition remain unchanged. This analysis illustrates that re-operation of the CVP/SWP system would not be required with implementation of the Proposed Action. No changes in releases from Folsom Reservoir would occur. Therefore, no impacts on water supply availability are anticipated at Folsom Reservoir and downstream in the lower American River with implementation of the Proposed Action, relative to the No Action Alternative.

3.2.2.2 LTWAC Service Area Impacts

From a water supply perspective, the Proposed Action, in and of itself, is intended to facilitate the acquisition of a long-term sustainable supply to meet current and future anticipated approved growth within the SSWD LTWAC service area. The Proposed Action would reduce reliance on groundwater resources within southwestern Placer County and the SSWD service area through a substitute surface water supply provided by PCWA, as available. The Proposed Action would provide SSWD and others with the operational flexibility to better meet their existing and future water demands through a combination of CVP and non-CVP surface water supply deliveries, resulting in reduced reliance on groundwater withdrawals to provide water supplies within northern Sacramento County. Therefore, the Proposed Action would result in beneficial impacts on water supply within the SSWD LTWAC service area, relative to the No Action Alternative.

With implementation of the Proposed Action, surface water supplies would replace groundwater pumping within the LTWAC service area. This would contribute to the abatement of the current overdraft condition in the aquifer during most water years and promote positive groundwater recharge. Average annual pumping would decrease by up to 19,000 AF per year under the Proposed Action, relative to No Action conditions. Because the Proposed Action would help relieve the current groundwater basin overdraft, no adverse impacts associated with groundwater recharge are anticipated under the Proposed Action, relative to the No Action Alternative.

The stabilization of groundwater levels in and around the LTWAC Service Area has the potential to affect the migration of the groundwater contaminant plume beneath and adjacent to McClellan AFB. The remediation of the contamination plume was initiated by the Department of the Air Force with oversight by the U. S. Environmental Protection Agency (USEPA 2018) and groundwater remediation of the plume is ongoing and remains the responsibility of the Air Force (Pay, S., personal communication, May 2018). The remediation currently in place includes a number of extraction wells intended to contain existing contaminant plumes and to remove contaminant mass from the groundwater. As part of the remedial action, the Air Force has installed a network of monitoring wells. The wells are monitored to evaluate the effectiveness of the remediation system and to identify any changes in the hydrogeologic conditions that could affect system performance. The Air Force is required under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, also known as CERCLA, to modify the system as necessary to address any changing conditions, including any changes that might result from implementation of the Proposed Action. As reported in USEPA's website: *Superfund Site - McClellan Air Force Base (Ground Water Contamination)* (USEPA 2018a and USEPA 2018b) in regard to public health at McClellan, USEPA reports that: 1) There are currently no unacceptable human exposure pathways; and 2) EPA has determined the site is under control for human exposure. In regard to the control of

groundwater migration at the site, USEPA reports that, “EPA reviewed all information on known and reasonably expected groundwater contamination. EPA concluded the migration of contaminated groundwater is stabilized and there is no unacceptable discharge to surface water. EPA will conduct monitoring to confirm that affected groundwater remains in the original area of contamination.”

As noted above in this EA, SSWD’s groundwater stabilization program was implemented in 2000 and has been executed through a series of short-term Warren Act Contracts with Reclamation. Most recently, SSWD executed a temporary five-year WAC with Reclamation which runs through the year 2023. In the time since implementation of the program, migration of the groundwater contamination plume at McClellan AFB has stabilized as is noted above. In light of these conditions, it is reasonable to conclude that the effect of continued implementation of the SSWD groundwater stabilization program under the Proposed Action would be less than significant given that: 1) past and ongoing operation of the groundwater stabilization program has not resulted in off-site migration of the contaminant plume and 2) measures are in place at the McClellan AFB under its ongoing groundwater remediation program to ensure that stabilization of the groundwater plume and containment of the plume within the McClellan site are maintained. Therefore, potential impact on groundwater quality with implementation of the Proposed Action is considered less than significant relative to the No Action Alternative.

No adverse impacts associated with water supply and hydrology are anticipated for the Proposed Action, relative to the No Action Alternative. For reasons presented above, no impacts would occur on water supply, or groundwater recharge, and impacts on groundwater quality would be less than significant, relative to the No Action Alternative.

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. Hydropower facilities that rely on water from the Middle Fork American River watershed include the PCWA MFP facilities and CVP facilities downstream of the Middle Fork American River.

This section of the EA identifies hydroelectric facilities and pumping plants that could be directly or indirectly affected by changes to local and regional hydrology brought about by the Proposed Action and No Action Alternative. This section also evaluates the potential effects of the Proposed Action and No Action Alternative on future energy use that could result from pumping demands associated with each alternative.

3.3.1 Affected Environment

3.3.1.1 Middle Fork Project

The MFP is a multipurpose project that uses the waters of the Middle Fork of the American River, the Rubicon River, and certain tributaries for irrigation, domestic, and commercial purposes and for the generation of electric energy. Principal features of the Middle Fork Project are two storage reservoirs (French Meadows and Hell Hole) and five diversion dams, five powerhouses, diversion and water transmission facilities, five tunnels, and related facilities. The powerhouses have a combined generating capacity of 224 MWh and include French Meadows, Hell Hole, Middle Fork, Ralston, and Oxbow. The power division of PCWA operates the MFP.

French Meadows Powerhouse at Hell Hole Reservoir

The French Meadows Powerhouse is at Hell Hole Reservoir south of the South Fork of the American River. PCWA diverts water from French Meadows Reservoir through the French Meadows Tunnel. The water passes through the Francis turbine at the powerhouse, which has a capacity of 15.3 MWh (PCWA 2017). The water is then held in Hell Hole Reservoir.

Hell Hole Powerhouse

The Hell Hole Powerhouse is on the Rubicon River at Hell Hole Reservoir. Water flows from the reservoir through the Hell Hole Dam to the Hell Hole Powerhouse. The Hell Hole Powerhouse has a capacity of 0.73 MWh (PCWA 2017). From the plant, the water flows through a tunnel to the Ralston Afterbay.

Middle Fork Powerhouse

The Middle Fork Powerhouse is on the Middle Fork of the American River at the Middle Fork-Ralston Interbay. Water for the powerhouse comes from French Meadows Reservoir, through the French Meadows Tunnel, through Hell Hole Reservoir, and finally through the Middle Fork Tunnel. The water passes over the Impulse turbine at the powerhouse, which has a capacity of 122.4 MWh. (PCWA 2017). The water flows from the powerhouse through the Ralston Tunnel.

Ralston Powerhouse

The Ralston Powerhouse is on the Rubicon River at the Ralston Afterbay. Water for the Ralston Powerhouse follows the same path as the water for the Middle Fork Powerhouse, through the Ralston Tunnel, to the Ralston Powerhouse. The Ralston Powerhouse has an Impulse turbine and a capacity of 79.2 MWh (PCWA 2017). From the plant, the water flows back into the Ralston Tunnel, which continues to the Oxbow Powerhouse.

Oxbow Powerhouse

The Oxbow Powerhouse is on the Middle Fork of the American River at the Oxbow Bar. Water for the Oxbow Powerhouse flows from the Ralston Powerhouse through the Ralston Tunnel. The plant has a Francis turbine and a

capacity of 6.1 MWh (PCWA 2017). From the powerhouse, the water continues to the Auburn Ravine and to the lower American River.

3.3.1.2 Central Valley Project

Hydropower generation at CVP facilities substantively contribute to the reliability of California's electrical power system. Impacts to CVP hydropower operations can result from increased water diversions that result in both lower reservoir levels and less water flow through turbines. In addition to potential impacts to electric system reliability, loss of hydropower capacity and generation can also result in indirect environmental impacts by necessitating increased power generation using means that are less environmentally benign.

The CVP hydropower system consists of eight power plants and two pump-generating plants located within the Sacramento River, American River, and Delta Export and San Joaquin Valley service areas. The CVP hydropower system is fully integrated with the northern California power system and provides a significant portion of the hydropower available for use in northern and central California. The installed capacity of the system is 2,044 MWh (Reclamation 2001). In comparison, the combined capacity of the 368 operational hydroelectric power plants in California is 12,866 MWh. The area's major power supplier, PG&E, has a generating capacity from all sources of over 20,000 MWh.

Folsom and Nimbus Power Plants

The principal purpose of the Folsom and Nimbus power plants is to generate power using the water releases mandated for downstream appropriators, flood control, fish, and other uses. 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 MWh (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 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 flow in the lower American River, Nimbus Dam and Lake Natoma serve as a regulating facility to help maintain constant releases to the lower American River regardless of changes to water surface elevation. The Nimbus Power Plant consists of two generating units with a release capacity of approximately 5,100 cfs (Reclamation 2001). Electrical generation from this facility is continuous throughout the day.

3.3.2 Environmental Consequences

The Proposed Action could adversely affect power supplies relative to the No Action Alternative if: 1) the action results in hydrological effects which, in turn,

result in decreased power generation at Folsom, Nimbus, or MFP power plants, and/or 2) the Proposed Action would result in higher net energy demand to divert, treat and convey water use within the LTWAC Service Area. The analysis provided below assumes that the effect of the Proposed Action on power supply availability would be significant only if hydropower generation were reduced, pumping energy requirements for Folsom Reservoir diverters were increased, and/or electrical energy use were increased relative to the No Action Alternative.

3.3.2.1 Effects on Hydropower Generation

MFP Hydropower Generation

The typical monthly demand pattern included in the Proposed Action (shown in Figure 2-1, above) is consistent with the allowable monthly distribution of diversions as specified in the power purchase agreement between PCWA and PG&E. The release of surface water from the MFP would not change under the Proposed Action, relative to the No Action Alternative. As a result, flows through the French Meadows, Hell Hole, Middle Fork, Ralston, and Oxbow power plants would not change. Water conveyed under the LTWAC would not result in a change of MFP powerhouse flows or changes in reservoir storage levels, relative to the No Action Alternative.

CVP Hydropower Generation

As described above, the Proposed Action would divert up to 29,000 AF/yr of MFP water at Folsom Dam in wet years for use in the LTWAC Service Area. Under the No Action Alternative, this water would instead be diverted at the American River Pump Station. Changes in CVP power production at the Folsom Power Plant would occur only if the Proposed Action would result in a substantial difference in water surface elevation (head) in Folsom Reservoir relative to the No Action Alternative. As demonstrated in hydrological modeling results presented in Appendix A of this EA,³ the difference in projected Folsom Reservoir storage under the Proposed Action and No Action Alternative is negligible. As such, the electrical capacity or power plant (penstock) releases which affect electrical generation at Folsom and Nimbus power plants, would not be substantially different under the Proposed Action or No Action Alternative.

3.3.2.2 Effects on Pumping Energy Use

The difference in the amount of energy required to deliver water under the Proposed Action and No Action Alternative is largely contingent on pumping requirements associated with each alternative. MFP water delivered under the Proposed Action would either be diverted via gravity at Folsom Dam for treatment at the Peterson WTP or pumped from the reservoir via the Folsom

³ Appendix A: CalSim II and HEC- 5Q Modeling – Figure A.3.3.4-1 (Folsom Lake End of May Storage); Figure A.3.3.4-2 (Folsom Lake End of September Storage); and Table A.3.3.4-1 (Folsom Lake End of Month Storage).

Pumping Plant. The necessity for pumping depends on the reservoir's surface elevation and on the total system flow requirements at that time. Water diverted under the No Action Alternative would be pumped from the North Fork American River at PCWA's American River Pump Station.

Pumping energy requirements are affected by total reservoir storage, because less storage means that water must be lifted a greater height from the reservoir surface. Any reductions in Folsom Reservoir elevations caused by the Proposed Action relative to the No Action Alternative would increase energy requirements for pumping water at the Folsom Pumping Plant and the EID pumping plant at Folsom Reservoir. These effects, like those for hydropower generation, would not be expected to cause direct environmental effects, but would have economic consequences and may cause indirect effects requiring additional energy generation. As discussed in the preceding section, however, the effects of the Proposed Action on reservoir storage would be negligible relative to the No Action Alternative.

Overall, pumping energy requirements would be lower under the Proposed Action relative to the No Action Alternative. While it is true that energy use at the Folsom Pumping Plant may increase under the Proposed Action (depending on total system flow requirements and reservoir surface water elevation) to accommodate the diversion of up to 29,000 AF/yr that increase would be offset by reduced diversions at the American River Pump Station. This offset is partly due to the fact that diversions under the No Action Alternative would occur exclusively via the pumping, while some diversions under the Proposed Action would occur via gravity when conditions permit. Energy use under the Proposed Action would be further reduced relative to the No Action Alternative because the hydraulic lift required to move water from the North Fork American River via the American River Pump Station is greater than that required to divert water from Folsom Dam via the Folsom Pump Station.

In addition to reductions in energy use associated with the diversion of MFP water under the Proposed Action another factor in the considering energy use under the Proposed Action is the potential energy savings related to reduced groundwater pumping within the SSWD LTWAC. On an acre-foot basis, the energy use for delivering water from Folsom Reservoir is expected to be less than the energy use for groundwater pumping within the SSWD LTWAC service area (PCWA and NWD 1998).

In consideration of each of the factors presented above, the Proposed Action's effect on energy use and hydropower generation would be less than significant relative to the No Action Alternative. In summary, water that is bypassed at the American River Pump Station as part of the proposed LTWAC, would require less energy for delivery to users within the LTWAC Service Area than would be required to deliver water diverted at the American River Pump Station for use by PCWA. Also, water bypassed at the American River Pump Station would not

lessen opportunities for power generation on the Middle Fork of the American River.

3.4 Fisheries and Aquatic Resources

The analysis of potential effects on fisheries and aquatic resources presented in this EA includes an assessment of the warmwater and coldwater fisheries of Folsom reservoir and an assessment of fishery resources of the North Fork American River below the confluence with the Middle Fork American River and the lower American River below Nimbus Dam to its confluence with the Sacramento River. Because the Proposed Action does not include any proposed changes in the future operations at French Meadows and Hell Hole reservoirs, fisheries and aquatic resources in those reservoirs, in the Middle Fork American River below French Meadows Reservoir, in the Rubicon River below Hell Hole Reservoir, and in the Middle Fork American River below Ralston Afterbay are not evaluated further in this EA. For purposes of this EA, environmental conditions anticipated to occur under the No Action Alternative described above serve as the environmental baseline for determining the potential effects of the Proposed Action.

3.4.1 Affected Environment

3.4.1.1 Water Courses and Facilities

North Fork American River

Downstream of its confluence with the Middle Fork, the North Fork American River supports warmwater fish species year-round, including smallmouth bass (*Micropterus dolomieu*), Sacramento pikeminnow, Sacramento sucker, riffle sculpin, brown bullhead (*Ictalurus nebulosus*), and green sunfish (*Lepomis cyanellus*). Although some rainbow and brown trout are present, summer and fall water temperatures are generally too warm for significant spawning and early-life stage rearing of trout. The majority of trout that do occur in the North Fork American River below the confluence with the Middle Fork American River are believed to be transitory downstream adult and/or sub-adult migrants that have dispersed into the area from upstream habitats (i.e., Middle Fork American River). No special-status fish species⁴ are reported to occur in the North Fork American River.

Folsom Reservoir

Strong thermal stratification occurs within Folsom Reservoir annually between April and November. Thermal stratification establishes a warm surface water

⁴ Special-status fish species are those having designated critical habitat and/or are listed, proposed for listing, or candidate species under the federal or state endangered species acts, a managed species under the MSFCMA, and/or a federal or state species of concern.

layer (epilimnion), a middle water layer characterized by decreasing water temperature with increasing depth (metalimnion or thermocline), and a bottom, coldwater layer (hypolimnion) within the reservoir. The warm epilimnion of Folsom Reservoir provides habitat for warmwater fishes, whereas the reservoir's lower metalimnion and hypolimnion form a "coldwater pool" that provides habitat for coldwater fish species throughout the summer and fall portions of the year. Hence, Folsom Reservoir supports a "two-story" fishery during the stratified portion of the year (April through November), with warmwater species using the upper, warmwater layer and coldwater species using the deeper, colder portion of the reservoir.

Native species that occur in the reservoir include hardhead (*Mylopharodon conocephalus*) and Sacramento pikeminnow. However, introduced largemouth bass (*Micropterus salmoides*), smallmouth bass, spotted bass (*Micropterus punctulatus*), bluegill (*Lepomis macrochirus*), black and white crappie (*Pomoxis nigromaculatus* and *P. annularis*), and catfishes (*Ictalurus* spp. and *Ameiurus* spp.) constitute the primary warmwater sport fisheries of Folsom Reservoir. The coldwater sport species present in the reservoir include rainbow and brown trout, kokanee salmon (*Oncorhynchus nerka*), and Chinook salmon, all of which are currently or have been stocked by CDFW. Although brown trout are no longer stocked, a population still remains in the reservoir. Because these coldwater salmonid species are stream spawners, they do not reproduce within Folsom Reservoir. However, some spawning by one or more of these species may occur in the North Fork American River upstream of Folsom Reservoir.

Folsom Reservoir's coldwater pool is important not only to the reservoir's coldwater fish species identified above, but also is important to lower American River fall-run Chinook salmon and Central Valley steelhead. Seasonal releases from the reservoir's coldwater pool provide thermal conditions in the lower American River that support annual in-river production of these salmonid species. However, Folsom Reservoir's coldwater pool is not large enough to facilitate coldwater releases during the warmest months (July through September) to provide maximum thermal benefits to over-summering juvenile steelhead rearing in the lower American River or coldwater releases during October and November that would maximally benefit fall-run Chinook salmon immigration, spawning, and embryo incubation. Consequently, management of the reservoir's coldwater pool on an annual basis is essential to providing thermal benefits to both fall-run Chinook salmon and steelhead, within the constraints of coldwater pool availability.

Lake Natoma

Lake Natoma supports many of the same fisheries found in Folsom Reservoir (e.g., rainbow trout, bass, sunfish, and catfish). Some recruitment of warmwater and coldwater fishes likely comes from Folsom Reservoir. In addition, CDFW annually stocks Lake Natoma with catchable-sized rainbow trout. Although supporting many of the same fish species found in Folsom Reservoir, Lake

Natoma's limited primary and secondary production, colder epilimnetic water temperatures (relative to Folsom Reservoir), and daily elevation fluctuations are believed to reduce the size and annual production of many of its fish populations, relative to Folsom Reservoir (USFWS 1991). Lake Natoma's habitat characteristics, coupled with limited public access, result in its lower angler use compared to Folsom Reservoir.

Lake Natoma was constructed to serve as a regulating afterbay for Folsom Reservoir. Despite its relatively small size (an operating range of 2,800 AF), Lake Natoma can influence the temperature of water flowing through it. High residence times in the lake, particularly during summer months, have a warming effect on water released from Folsom Reservoir. Water is released from Lake Natoma into the lower American River below Nimbus Dam.

Nimbus Fish Hatchery

CDFW operates the Nimbus Salmon and Steelhead Hatchery and the American River Trout Hatchery, which produce anadromous fall-run Chinook salmon and steelhead, and non-anadromous rainbow trout, respectively. Both of these hatcheries are located at the same facility immediately downstream of Nimbus Dam. Each year, nearly four million salmon produced by the Nimbus Hatchery are trucked and released into the Sacramento River-San Joaquin Estuary. Steelhead are released into the Sacramento River at either Miller Park or Garcia Bend. Trout are stocked in numerous water bodies throughout the region.

The Nimbus Hatchery receives water for its operations directly from Lake Natoma via a 60-inch-diameter pipeline. Water temperatures in the hatchery are dictated by the temperature of water diverted from Lake Natoma, which in turn, is primarily dependent upon several factors including the temperature of water released from Folsom Reservoir, ambient air temperature, and retention time in Lake Natoma. The temperature of water diverted from Lake Natoma for hatchery operations is frequently higher than that which is generally desired for hatchery production of salmonids. Under such conditions, more suitable water temperatures may be achieved by increasing releases at Folsom Dam and/or releasing colder water from a lower elevation within Folsom Reservoir. However, seasonal releases from Folsom Reservoir's limited coldwater pool to benefit hatchery operations are considered in conjunction with seasonal in-river benefits from such releases.

Lower American River

The American River drains a watershed of approximately 1,895 square miles and is a major tributary to the Sacramento River. Historically the American River system supported over 125 miles of upstream riverine habitat available to anadromous and resident fish, serving as a regionally vital component for the reproduction and survival of fall- and spring-run Chinook salmon (Water Forum 2001).

While development and dam construction reportedly extirpated the spring-run fishery, the lower American River (below Nimbus Dam) continues to function as spawning and rearing habitat for large numbers of fall-run Chinook salmon and supports a mixed run of hatchery and naturally produced fish (Yoshiyama et al. 2001). Presently, use of the American River by anadromous fish is limited to the 23 miles of river below Nimbus Dam to the confluence with the Sacramento River (i.e., the lower American River).

The lower American River provides a diversity of aquatic habitats, including shallow, fast-water riffles, glides, runs, pools, and off-channel backwater habitats. The lower American River from Nimbus Dam (river mile [RM] 23) to approximately Goethe Park (RM 14) is primarily unrestricted by levees but is bordered by some developed areas. The river reach downstream of Goethe Park, and extending to its confluence with the Sacramento River (RM 0), is bordered by levees. The construction of levees changed the channel geomorphology and has reduced river meanders and increased depth.

At least 43 species of fish have been reported to occur in the lower American River system, including numerous resident native and introduced species, as well as several anadromous species. Although these fish species occupy a range of ecological niches, several species are of primary management concern either as a result of their declining status or because of their importance to a recreational and/or commercial fishery.

Special-status fish species in the lower American River include Central Valley steelhead, spring-run Chinook salmon, winter-run Chinook salmon, and fall-run/late-fall-run Chinook salmon. Central Valley steelhead are listed as a threatened species under the federal ESA and have no CESA or CDFW status. The lower 10 miles of the American River has been designated as critical habitat for spring-run Chinook salmon under ESA. Fall-run/late fall-run Chinook salmon⁵ is recognized as a federal species of concern by NMFS. Chinook salmon also is a federally managed fish species under the MSFCMA due to its commercial importance. Historically, the winter-run Chinook salmon ESU was not considered present in the American River watershed (NMFS 2014). Winter-run Chinook salmon, however, are currently considered as potentially occurring within the lower American River by NMFS, presumably for juvenile fish to make

⁵ NMFS recognizes the late-fall-run Chinook salmon in the Central Valley fall-run Evolutionarily Significant Unit (ESU) (Moyle 2002). On April 15, 2004, NMFS published a notice in the Federal Register acknowledging establishment of a species of concern list, addition of species to the species of concern list, description of factors for identifying species of concern, and revision of the candidate species list. In this notice, NMFS announced the Central Valley Fall-run and Late Fall-run Chinook Salmon ESU change in status from a candidate species to a species of concern. In 1999, the Central Valley ESU underwent a status review after NMFS received a petition for listing. Pursuant to that review, NMFS found that the species did not warrant listing as threatened or endangered under the ESA, but sufficient concerns remained to justify addition to the candidate species list. Therefore, according to NMFS' April 15, 2004 interpretation of the ESA provisions, the Central Valley ESU now qualifies as a species of concern, rather than a candidate species (69 FR 19977).

opportunistic use of the lower reach of the lower American River for short-term holding during the emigration period.

Recreationally and/or commercially important anadromous species in the lower American River include fall-run Chinook salmon, steelhead, striped bass, and American shad. A variety of centrarchid species including black bass also are recreationally important.

LTWAC Service Area Watercourses

Aquatic habitats within the LTWAC service area are associated with streams such as Dry Creek, Arcade Creek, Cripple Creek, Magpie Creek, Goat Creek, and Rio Linda Creek. These waterways support submergent vegetation within the channel and emergent vegetation along the stream banks.

Of these streams, only Dry Creek has previously been identified as supporting both Chinook salmon and steelhead fisheries. Dry Creek is noteworthy for having one of the only documented salmon runs of local area creeks (County of Sacramento Department of Regional Parks, Recreation and Open Space 2002) and has been designated as critical habitat for Central Valley steelhead (70 FR 170). Arcade and Cripple creeks are not known to contain anadromous fishes despite both streams maintaining perennial flows. The smaller aforementioned creeks are all tributary streams and are not known to contain anadromous fishes.

According to CDFW and field surveys conducted for Sacramento County, at least 13 species of fish are commonly found in the reaches of Dry Creek that pass through the Dry Creek Parkway Recreational Master Plan area. Fish in Dry Creek include fall-run Chinook salmon, steelhead, mosquito fish (*Gambusia affinis*), common carp (*Cyprinus carpio*), Sacramento sucker, brown bullhead, tule perch (*Hysterocarpus traski*), hitch (*Lavinia exilicauda*), threadfin shad (*Dorosoma petenense*), Pacific lamprey (*Lampetra tridentata*), bluegill (*Lepomis macrochirus*), green sunfish, and largemouth bass (County of Sacramento Department of Regional Parks, Recreation and Open Space 2002).

3.4.1.2 Species Occurrence and Status of Species in the Action Area

Threatened, Endangered, Proposed Threatened, or Proposed Endangered Species

Pursuant to Section 7(c) of the ESA, Reclamation requested that USFWS and NMFS provide information about any species that is listed or proposed for listing as threatened or endangered, including designated or proposed critical habitats, under the federal ESA that may be present in the action area. Two species lists were provided by USFWS on May 19, 2017 and are presented in Appendix B of this EA. The lists include species under the jurisdiction of both USFWS and NMFS. Table 3-1 below contains only the fish and aquatic species included in the species lists.

As described in Section 2.1.2.1 above, the Action Area for this Proposed Action includes those waterbodies potentially affected by the proposed diversion that would be allowed under the LTWAC. The waterbodies potentially affected by operations associated with the proposed diversion include the: North Fork American River downstream of the confluence with the Middle Fork of the American River; Folsom Reservoir; Lake Natoma, and lower American River (LAR).

Delta smelt (*Hypomesus transpacificus*) is a federally listed threatened species that occurs in the estuarine mixing zone of the Sacramento-San Joaquin Delta. While critical habitat for delta smelt extends upstream in the Sacramento River to just downriver of the Action Area, delta smelt have not been documented from the LAR and primarily occur in the Delta. For this reason, the Proposed Action will not adversely affect this species and it is not evaluated further in this EA.

California tiger salamander (*Ambystoma californiense*), California red-legged frog (*Rana draytonii*), and giant garter snake (*Thamnophis gigas*) are included in the USFWS species list but are not likely to occur within the action area due to lack of habitat within reservoir storage and rivers located within the Action Area. Similarly, habitat for aquatic animal and plant species associated with vernal pool habitat are unlikely to occur within the Action Areas due to the lack of this habitat within the area affected by the Proposed Action. These species include Conservancy fairy shrimp (*Branchinecta conservation*), vernal pool fairy shrimp (*Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardii*), Sacramento Orcutt grass (*Orcuttia viscida*) and slender Orcutt grass (*Orcuttia tenuis*) from potentially occurring within the Action Area.

Critical Habitat

Critical habitat for a threatened or endangered species is defined in Section 3(5)(A) of the ESA as the specific areas occupied by the species, at the time it is listed, on which are found those physical or biological features essential to the conservation of the species, and which may require special management considerations or protection. Further, specific areas outside the geographical area occupied by the species also may be designated as critical habitat, upon a determination that such areas are essential for the conservation of the species. Within the Action Area, designated critical habitat includes the following species:

- Southern District Population Segment (DPS) green sturgeon
- Central Valley spring-run Chinook salmon
- California Central Valley steelhead

Essential Fish Habitat (EFH)

The MSFCMA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires federal agencies whose actions may adversely affect Essential Fish Habitat (EFH) to consult with NMFS. EFH are the waters and substrate

necessary for fish spawning, breeding, feeding, or growth to maturity, and include several important components: adequate substrate; water quality; water quantity, depth, and velocity; channel gradient and stability; food; cover and habitat complexity; space; access and passage; and habitat connectivity. Designated EFH for Pacific Chinook salmon is present in the Action Area. A description of Pacific Chinook salmon EFH (specifically the Fall/Late Fall-Run Chinook Salmon) is described in this section.

Table 3-1. Federally Listed Fish and Aquatic Species Potentially Occurring Within the Action Area

Common Name Scientific Name	Status	Habitat Description	Potential to Occur On-Site	Rationale
Plants				
Sacramento Orcutt grass <i>Orcuttia viscida</i>	FE	vernal pools	Does not occur in Action Area	The Action Area does not include vernal pools
Slender Orcutt grass <i>Orcuttia tenuis</i>	FT	vernal pools	Does not occur in Action Area	The Action Area does not include vernal pools
Invertebrates				
Conservancy fairy shrimp <i>Branchinecta conservatio</i>	FE	vernal pools/wetlands	Does not occur in Action Area	The Action Area does not include vernal pools or wetlands
Vernal pool fairy shrimp <i>Branchinecta lynchi</i>	FT	vernal pools/wetlands	Does not occur in Action Area	The Action Area does not include vernal pools or wetlands
Vernal pool tadpole shrimp <i>Lepidurus packardii</i>	FE	vernal pools/wetlands	Does not occur in Action Area	The Action Area does not include vernal pools or wetlands
Fish				
Delta smelt <i>Hypomesus transpacificus</i>	FT	Sacramento-San Joaquin Delta. Delta smelt is a species of the estuarine mixing zone of the Sacramento-San Joaquin Delta.	Does not occur in Action Area	While critical habitat for delta smelt extends upstream in the Sacramento River to just downriver of the Action Area, delta smelt have not been documented from the LAR and primarily occur in the Delta.

Common Name Scientific Name	Status	Habitat Description	Potential to Occur On-Site	Rationale
North American green sturgeon (Southern DPS)	FT	The anadromous North American green sturgeon rely on riverine, estuarine, and marine habitats. Freshwater spawning habitat of the southern DPS are limited to accessible reaches of the Sacramento River upstream of Hamilton City and downstream of Keswick Dam.	May occur in Action Area	The LAR is known to provide habitat for this species. Critical habitat for green sturgeon includes the LAR.
Central Valley spring-run Chinook salmon <i>Oncorhynchus tshawytscha</i>	FT	Found in undammed rivers, streams, creeks in and around the Sacramento River Drainage.	May occur in Action Area	The LAR may provide potential rearing habitat for this species and Action Area is within designated critical habitat for CV spring-run Chinook salmon.
Central Valley fall/late-fall run Chinook Salmon <i>Oncorhynchus tshawytscha</i>	NMFS – EFH Designation	Found in undammed rivers, streams, creeks in and around the Sacramento River Drainage.	Likely to occur in Action Area	The LAR is known to provide habitat for this species.
Sacramento River winter-run Chinook salmon <i>Oncorhynchus tshawytscha</i>	FE	Found in undammed rivers, streams, creeks in and around the Sacramento River Drainage.	May occur in Action Area	While no designated critical habitat exists for this species in the action area, the LAR may provide potential rearing habitat for this species in the Action Area.
Central Valley steelhead <i>Oncorhynchus mykiss</i>	FT	Includes populations of steelhead in the Sacramento River, excluding San Francisco and San Pablo Bays.	Likely to occur in Action Area	The LAR is known to provide habitat for this species and critical habitat for this species occurs in the Action Area.
Amphibians				
California red-legged frog <i>Rana draytonii</i>	FT	Coast Ranges from Mendocino County south to Baja California, and inland from northern Sacramento Valley to Sierra Nevada foothills. Occurs in lowlands or foothills at waters with dense riparian vegetation. Larvae require 11 to 20 weeks to transform. Adults must have aestivation habitat.	Does not occur in Action Area	Lack of suitable habitat in the Action Area – could occur in smaller tributary creeks to the American River, but not in the Action Area.

Common Name Scientific Name	Status	Habitat Description	Potential to Occur On-Site	Rationale
California tiger salamander <i>Ambystoma californiense</i>	FT	Vernal pools, wetlands, adjacent grassland/oak woodland with underground refuge	Does not occur in Action Area	The Action Area does not include vernal pools or wetlands
Reptiles				
Giant garter snake <i>Thamnophis gigas</i>	FT	Freshwater ditches, sloughs, and marshes in the Central Valley	Not Likely to occur in the Action Area	The Action Area does not include ditches, sloughs, or marshes, but rather riparian areas.

Status:

DPS	DPS Distinct Population Segment
EFH	Essential Fish Habitat
FE	ESA listed, Endangered.
FT	ESA listed, Threatened
FT	ESA listed, Threatened.
NMFS	National Marine Fisheries Service

Critical Habitat and Essential Fish Habitat

The ESA requires federal agencies to ensure that any activities they authorize, fund, or carry out are not likely to destroy or adversely modify the designated critical habitat of a listed species. Critical habitat is defined as: 1) specific areas within the geographical area occupied by the species at the time of listing, if they contain physical or biological features essential to conservation, and those features may require special management considerations or protection; and 2) specific areas outside the geographical area occupied by the species if the agency determines that the area itself is essential for conservation. The Action Area includes Critical Habitat for Central Valley steelhead and spring-run Chinook salmon. A description of Critical Habitat for each species is described in this section.

Central Valley Steelhead Critical Habitat

Critical Habitat was designated for Central Valley steelhead on September 2, 2005 (70 FR 52488) and includes streams in all or portions of various counties in the Central Valley and Sacramento-San Joaquin Delta. Pertinent to this EA, the lower American River below Nimbus Dam in Sacramento County is designated Critical Central Valley Steelhead Habitat.

Critical Habitat includes the stream channels in the designated stream reaches and the lateral extent as defined by the ordinary high-water line. In areas where the ordinary highwater line has not been defined, the lateral extent is defined by the bankfull elevation (defined as the level at which water begins to leave the channel and move into the floodplain; it is reached at a discharge that generally has a recurrence interval of one to two years on the annual flood series) (Bain and Stevenson 1999; 70 FR 52488).

Critical Habitat for Central Valley steelhead is defined as specific areas that contain the Primary Constituent Elements (PCEs) and physical habitat elements essential to the conservation of the species. Within the Action Area, Critical Habitat for Central Valley steelhead is present within the Lower American River.

Spring-Run Chinook Salmon Critical Habitat

Critical Habitat was designated for Central Valley spring-run Chinook salmon on 2 September 2005 (70 FR 52488). Critical Habitat for Central Valley spring-run Chinook salmon is defined as specific areas that contain the PCEs and physical habitat elements essential to the conservation of the species. Within the Action Area, Critical Habitat for Central Valley spring-run Chinook salmon is designated in the lower 10 miles of the American River and PCE's in the lower American River for this species includes freshwater rearing habitat.

Sacramento River Winter-Run Chinook Salmon Critical Habitat

Critical Habitat was designated for Sacramento River winter-run Chinook salmon on June 16, 1993 (58 FR 33212). In the Sacramento River, critical habitat includes the river water column, river bottom, and adjacent riparian zone used by fry and juveniles for rearing. In the areas westward of Chipps Island, critical habitat includes the estuarine water column and essential foraging habitat and food resources used by Sacramento River winter-run Chinook salmon as part of their juvenile emigration or adult spawning migration.

No designated Critical Habitat for Sacramento River winter-run Chinook salmon occurs within the Action Area.

Southern DPS of the North American Green Sturgeon Critical Habitat

On October 9, 2009, NMFS (74 FR 52,300) designated critical habitat for the green sturgeon Southern DPS throughout most of its occupied range, including: coastal marine waters from Monterey Bay to the Washington/Canada border; coastal bays and estuaries in California, Oregon, and Washington; and fresh water rivers in the Central Valley, California. The essential physical and biological habitat features identified for the Southern DPS include prey resources (benthic invertebrates and small fish), water quality, water flow (particularly in freshwater rivers), water depth, substrate types (i.e., appropriate spawning substrates within freshwater rivers), sediment quality, and migratory corridors. Proposed inland critical habitat in the Sacramento and San Joaquin River basins includes the Sacramento River downstream of Keswick Dam, the Feather River downstream of Oroville Dam, and the Yuba River downstream of Daguerre Dam; portions of Sutter and Yolo Bypasses; the legal Delta, excluding Five Mile Slough, Seven Mile Slough, Snodgrass Slough, Tom Paine Slough and Trapper Slough; and San Francisco, San Pablo, and Suisun bays.

Designated Critical Habitat for North American Green Sturgeon is found within the Action Area and occurs within the from the confluence with the mainstem

Sacramento River upstream to the State Route 160 bridge over the American River.

Fall/Late Fall-Run Chinook Salmon (Pacific Chinook Salmon) Essential Fish Habitat

EFH for fall/late fall-run Chinook salmon (included as part of the species Pacific Chinook salmon) is present within the Action Area. Freshwater EFH for Pacific Chinook salmon in the California Central Valley includes waters currently or historically accessible to salmon within the Central Valley ecosystem. This EFH includes not only the watersheds of the Sacramento and San Joaquin River basins, but also the Delta, Suisun Bay, and the Lower Sacramento. Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, and Central Valley fall/late fall-run Chinook salmon are ESU's included in these designated EFH locations. The only persistent Chinook salmon population spawning in the American River is the fall/late fall-run Chinook salmon.

3.4.2 Environmental Consequences

The analysis of potential effects on fisheries and aquatic resources includes an assessment of warmwater and coldwater fisheries of Folsom reservoir, and an assessment of fishery resources of the North Fork American River below the confluence with the Middle Fork American River, and the lower American River below Nimbus Dam to its confluence with the Sacramento River. As described in detail above, the direct and indirect effects of the Proposed Action are limited to these waterbodies and do not extend to the LTWAC service area where, under the Proposed Action, surface water will replace groundwater supplied to municipal and industrial customers under the prescribed circumstances. As no effect on water courses within the LTWAC will result from the Proposed Action, fish and aquatic species that occur in or downstream of the LTWAC service area are not addressed in this section.

Within the reach of the North Fork of the American River below PCWA diversion site and above Folsom Lake, flow is expected to be unchanged in normal and dry years and increase in years when 29,000 ac-feet is allowed to bypass the PCWA diversion for downstream diversion by SSWD near Folsom Dam. While increased flow could have effects on riparian habitat and species along this reach, modeling results indicate that this change is negligible relative to the No Action Alternative. The magnitude and velocity of flow in this reach, augmented with the additional 29,000 ac-feet, falls within the range of flow in this reach occurring under the No Action Alternative. This is illustrated in Figure 3-1, below, which compares modeled flows for this reach under the Proposed Action with those projected for the No Action Alternative. Based on this result, the effect on terrestrial and riparian special-status species in this reach would be negligible relative to the No Action Alternative.

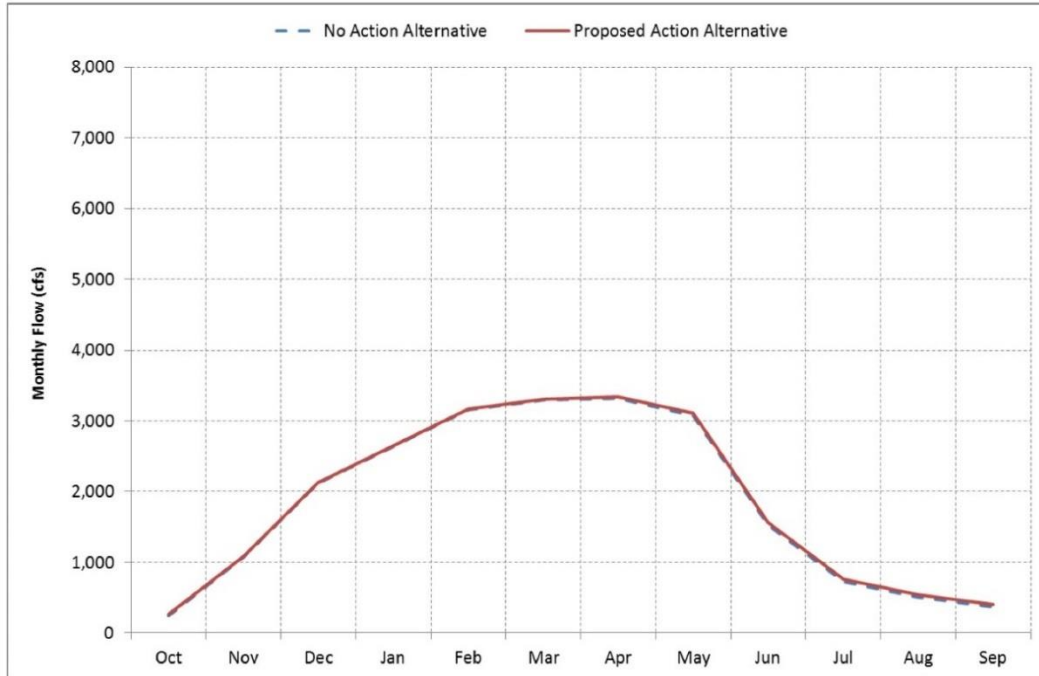


Figure 3-1. North Fork American River below American River Pump Station, Long-Term* Average Flow

* Based on the 82-year simulation period.

Source: Appendix A – CalSim Modeling Assumptions, Methods, and Results [Figure A.3.15-1])

3.4.2.1 Diversion-Related Impacts

No Action Alternative

In keeping with NEPA requirements, the No Action Alternative for this EA serves as the “environmental baseline” for determining the significance of potential adverse effects of the Proposed Action. The environmental baseline is defined as including “the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process” (50 CFR § 402.02). The fisheries management plans, programs, and other regulatory initiatives described in Section 2.2 (No Action Alternative), and any other Federal, State, and private actions occurring in the Action Area are all part of the environmental baseline. The effects of the Proposed Action are assessed in consideration of environmental baseline conditions for each of the listed species and their critical habitats.

Proposed Action

Overview of Methods and Assumptions for Effects Assessment

The spawning period for warmwater fish in waters affected by the Proposed Action generally extends from March through June. However, the majority of warmwater fish spawning occurs during the months of April and May. Adverse effects on warmwater fish spawning in Folsom Reservoir are assumed to have the potential to occur when reservoir elevations decrease to the extent that nest-dewatering occurs during the spawning period. Projects that store water for extended periods in Folsom Reservoir or divert Project water from the reservoir or upstream of the reservoir could adversely affect warmwater fisheries in Folsom Reservoir if they result in decreases in reservoir surface water elevation of sufficient magnitude or frequency to adversely affect long-term population of warmwater fish for a given month during the extended March through June spawning period, and especially during the primary spawning period of April and May.

Under the Proposed Action, however, purchased MFP water would not remain in Folsom Reservoir on a month-to-month basis. In the years when MFP water is sold to SSWD, the increase in inflow to Folsom Reservoir will be equal to the water bypassed at the American River Pump Station. Figure 3-1, above, shows the average monthly demand pattern for diversions at the ARPS and projected monthly wet-year diversion of 29,000 AF by SSWD at Folsom Dam. As described above, the proposed effects of the LTWAC on reservoir storage, monthly fluctuation in reservoir elevation or temperature would be minimal. As such, the potential for the Proposed Action to adversely affect Folsom Reservoir warmwater fisheries is considered minimal.

Instream flows and water temperatures are important parameters related to the production and condition of cold-water fishery resources in riverine environments. Instream flows, and the magnitude and duration of flow fluctuation events, may affect fish populations, particularly salmonid populations, by determining the amount of available habitat or altering the timing of life history events (e.g., spawning). Rapid changes in flow have the potential to affect the survival of eggs and alevins by exposing redds, and rapidly receding flow conditions may strand juveniles in pools and side channels or on beach substrates where desiccation, rapidly increasing water temperature, and predation may reduce overall survival. In addition, water temperatures influence metabolic, physiologic, and behavioral patterns, as well as fecundity and overall spawning success of fish populations (PCWA 2003).

The primary factor potentially limiting fall-run Chinook salmon and steelhead production within the lower American River is believed to be high water temperatures during portions of their freshwater residency in the river. Warm water temperatures during the fall can delay the onset of spawning by adult fall-run Chinook salmon, and water temperatures can become unsuitably warm for juvenile salmon rearing during spring and juvenile steelhead rearing during summer. In addition, relatively low October and November flows, when they

occur, tend to increase the amount of fall-run Chinook salmon redd superimposition, thereby potentially limiting initial year-class strength.

The impacts analyses for this EA focused on determining potential effects to anadromous salmonids in the lower American River because fall-run Chinook salmon and steelhead life history requirements generally are more restrictive than those of other fish species found in the river. Thus, if fall-run Chinook salmon and steelhead are not adversely affected by implementation of the Proposed Action, it is unlikely that other, less sensitive fish species would be adversely affected. The evaluation of potential impacts to fall-run Chinook salmon and steelhead in the lower American River focused on potential reductions in instream flows and/or increases in water temperatures due to the Proposed Action. Such changes could adversely affect fall-run Chinook salmon and steelhead adult immigration, spawning and embryo incubation, and juvenile rearing and emigration for a given month. In addition, the evaluation of potential impacts to American shad and striped bass was based on changes in instream flows and water temperatures which could potentially adversely affect American shad adult immigration and spawning and striped bass adult spawning, embryo incubation, and initial rearing during May and June.

North Fork American River above the American River Pump Station

As discussed in the Affected Environment section, implementation of the Proposed Action will result in no change in the operation of the Middle Fork Project facilities upstream of PCWA's American River Pump Station. As such, the hydrology of the North Fork of the American River above the PCWA diversion site at the pump station would remain unchanged. Thus, the Proposed Action would have no potential for impact on aquatic resources and fisheries in the North Fork of the American River above the PCWA diversion site at the pump station.

North Fork American River Downstream of the PCWA American River Pump Station

Within the reach of the North Fork of the American River below PCWA diversion site and above Folsom Lake, flow is expected to be unchanged in normal and dry years and increase in years when 29,000 ac-feet is allowed to bypass the PCWA diversion for downstream diversion by SSWD near Folsom Dam. While increased flow could have effects on riparian habitat and species along this reach, modeling results indicate that this change is negligible relative to the No Action Alternative. The magnitude and velocity of flow in this reach, augmented with the additional 29,000 ac-feet, falls within the range of flow in this reach occurring under the No Action Alternative. This is illustrated in Figure 5, below, which compares modeled flows for this reach under the Proposed Action with those projected for the No Action Alternative. Based on this result, the effect on aquatic resources and fisheries special-status species in this reach would be negligible relative to the No Action Alternative.

Folsom Reservoir

Purchased MFP water would not remain in Folsom Reservoir on a month-to-month basis. In the years when MFP water is sold to SSWD, the increase in inflow to Folsom Reservoir will be equal to the water bypassed at the American River Pump Station. Figure 2-1, above, shows the average monthly demand pattern for diversions at the ARPS and projected monthly wet-year diversion of 29,000 AF by SSWD at Folsom Dam.

Hydrologic conditions associated with the Proposed Action would not alter the existing operational pattern of releases from Folsom Dam and, thus, storage and surface water elevation in Folsom Reservoir would not be expected to change as a result of the Proposed Action relative to the No Action Alternative. Because potential adverse effects on warmwater and coldwater reservoir fish species are typically due to changes in the frequency and magnitude of fluctuations in reservoir conditions (e.g., surface water elevation, littoral habitat availability, and storage), no effects on resident fish species found in Folsom Reservoir would be expected to occur as a result of the Proposed Action. Consequently, no quantitative assessment of potential storage- or surface water elevation-related effects on fisheries resources in this water body was warranted. Therefore, no impacts on coldwater or warmwater fisheries are anticipated at Folsom Reservoir with implementation of the Proposed Action, relative to the No Action Alternative.

Lake Natoma

As a regulating afterbay of Folsom Reservoir, monthly storage and surface water elevation in Lake Natoma fluctuate significantly on a daily and hourly basis within the range of normal operating conditions. Because the Proposed Action would not change the current pattern of upstream releases from Folsom Dam, which serve as inflow into Lake Natoma, no storage- or surface water elevation-related effects on the fisheries resources in Lake Natoma would be anticipated to occur, relative to the No Action Alternative. Consequently, no quantitative assessment of potential storage- or surface water elevation-related effects on fisheries resources in this water body was warranted. Therefore, no impacts on coldwater or warmwater fisheries are anticipated at Lake Natoma with implementation of the Proposed Action, relative to the No Action Alternative.

Nimbus Fish Hatchery

As described above, Table A.3.3.4-1 of Appendix A of this EA illustrates that projected end-of-month storage at Folsom Reservoir during wet years under the Proposed Action would be identical to that of the No Action Alternative. Relatedly, projected releases from Folsom Reservoir under the Proposed Action would also be identical to those under the No Action Alternative as shown in Table A.3.3.14-1 of Appendix A. Thus, it is reasonable to conclude that operation of Folsom Dam and Reservoir under the Proposed Action would have no effect on water temperatures below Nimbus Dam, relative to the No Action Alternative. As such, there would be no anticipated impacts on Nimbus Hatchery resources, under the Proposed Action relative to the No Action Alternative.

Lower American River

As discussed above for Folsom Reservoir, no changes in operations of Folsom Reservoir would occur with implementation of the Proposed Action relative to the No Action Alternative. Therefore, no flow-related impacts on lower American fisheries and aquatic resources are anticipated with implementation of the Proposed Action, relative to the No Action Alternative. The effect of the Proposed Action on water temperatures in the Lower American River, relative to the No Action Alternative would also be negligible. As shown in Table A.3.4.1-1 of Appendix A, projected monthly temperatures in the American River below Nimbus Dam under the Proposed Action would be identical to those of the No Action Alternative. Table A.3.4.3-1 of Appendix A illustrates that monthly temperatures at the mouth of the lower American River also would be the same under both the No Action Alternative and the Proposed Action.

Fall-Run Chinook Salmon

As discussed above for Folsom Reservoir, no changes in operations of Folsom Reservoir would occur with implementation of the Proposed Action relative to the No Action Alternative. Therefore, no flow-related impacts on lower American fisheries and aquatic resources are anticipated with implementation of the Proposed Action, relative to the No Action Alternative. In addition, the Proposed Action would have no effects on water temperatures below Nimbus Dam, relative to the No Action Alternative.

Because the Proposed Action would result no changes in flow or temperature in the lower American River under the Proposed Action relative to the No Action condition. Therefore, the Proposed Action would result in no effect to fall run Chinook salmon adult immigration, adult spawning and embryo incubation, or juvenile rearing and smolt emigration in the lower American River.

Steelhead

As noted, no changes in operations of Folsom Reservoir would occur with implementation of the Proposed Action relative to the No Action Alternative. Therefore, no flow-related impacts on lower American fisheries and aquatic resources are anticipated with implementation of the Proposed Action, relative to the No Action Alternative. In addition, the Proposed Action would have no effect or a negligible effect on water temperatures below Nimbus Dam, relative to the No Action Alternative. Therefore, the Proposed Action will not affect water quantity and quality conditions and substrate supporting steelhead spawning and egg incubation; freshwater migration corridors for steelhead emigration, rearing sites with water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility; water quality and forage supporting juvenile development; and natural cover for steelhead rearing in the lower American River. Therefore, the Proposed Action would result in no effect to steelhead in the lower American River relative to the No Action Alternative.

American Shad

No flow-related impacts and negligible effects on water temperatures are anticipated on lower American fisheries and aquatic resources with implementation of the Proposed Action below Nimbus Dam. Therefore, the Proposed Action would result in no effect to American shad relative to the No Action Alternative.

Striped Bass

No flow-related impacts and negligible effects on water temperatures are anticipated on lower American fisheries and aquatic resources with implementation of the Proposed Action below Nimbus Dam. Therefore, the Proposed Action would result in no effect to striped bass relative to the No Action Alternative.

3.4.2.2 SSWD Service Area Impacts

No Action Alternative

Under the No Action Alternative, SSWD would continue to provide water from their existing (predominately groundwater) sources to their customers. No change in water deliveries would occur under the No Action Alternative, therefore there would be no anticipated adverse SSWD Service Area impacts on fisheries or aquatic resources within the Action Area, relative to the environmental baseline.

Proposed Action

Under the Proposed Action, SSWD would replace some of their existing groundwater withdrawals with the LTWAC surface water. No change in water deliveries would occur under the Proposed Action, therefore there would be no anticipated adverse SSWD Service Area impacts on fisheries or aquatic resources within the Action Area, relative to the No Action Alternative.

Future land use decisions by local, state, and federal agencies and private land use activities within the SSWD Service Area could result in adverse effects on aquatic and fisheries resources. Water provided under the Proposed Action, however, will have no bearing on such actions because of the availability of an alternate water supply, i.e., groundwater, to carry out these activities with or without execution of the LTWAC.

3.5 Terrestrial and Riparian Resources

This section describes existing terrestrial and riparian resources in the Action Area identified for the Proposed Action. Terrestrial resources include upland vegetation and associated species that use it for habitat, including special-status species. Riparian resources include riparian and wetland vegetation and associated species that use it for habitat, including special-status species. Special-status species are those species that are listed as threatened and endangered,

species proposed for listing, and candidate species under ESA and CESA; species designated as "species of concern" by USFWS and "species of special concern" by CDFW; and species tracked by the California Natural Diversity Database (CNDDB) and California Native Plant Society (CNPS).

This section describes the methods used for evaluating the environmental consequences of the Proposed Action and No Action Alternative. The analysis of potential effects on terrestrial and riparian resources includes a discussion of the riparian corridors of the North Fork and lower American rivers, Folsom Reservoir, Lake Natoma, and the LTWAC Service Area.

3.5.1 Affected Environment

3.5.1.1 Water Courses and Facilities

North Fork American River

The terrestrial and riparian habitats associated with North Fork American River below the confluence with the Middle Fork of the American River to the Folsom Reservoir include montane woodland and forests (mixed conifer and oak), montane riparian, upland scrub, urban-agriculture, montane riverine aquatic, and non-tidal freshwater permanent emergent wetlands. Montane woodlands and forests are predominantly ponderosa pine (*Pinus ponderosa*) forests. Upland scrub is mostly dominated by whiteleaf manzanita (*Arctostaphylos viscida*).

At least 238 species of birds, 47 mammals, 10 amphibians, and 20 species of reptiles are supported by the American River Canyon ecosystem and its habitats. Potential habitat for approximately 90 species of neotropical migratory birds includes habitat for the black-chinned hummingbird (*Archilochus alexandri*), calliope hummingbird (*Stellula calliope*), belted kingfisher (*Ceryle alcyon*), yellow-breasted chat (*Icteria virens*), yellow warbler (*Dendroica petechia*), Wilson's warbler (*Wilsonia pusilla*), common yellowthroat (*Geothlypis trichas*), Macgillivray's warbler (*Opornis tolmiei*), and Lincoln's sparrow (*Melospiza lincolnii*). Migratory waterfowl are known to feed and rest in the grasslands associated with the North Fork American River above Folsom Reservoir (USFWS 1991).

Folsom Reservoir and Lake Natoma

The terrestrial and riparian habitats associated with Folsom Reservoir and Lake Natoma include non-native grassland, blue oak-pine woodland, and mixed oak woodland. Non-native grasslands occur around the Folsom Reservoir, primarily at the southern end. The majority of the drawdown zone is devoid of vegetation, although arroyo willow (*Salix lasiolepis*) and narrow-leaved willow (*Salix exigua*) have established in some areas (USFWS 1991). The only contiguous riparian vegetation occurs along Sweetwater Creek at the southern end of the reservoir (USFWS 1991). Because the drawdown zone is virtually devoid of vegetation and the sparse willows that have established in some areas do not form a contiguous

riparian community, the drawdown zone does not possess substantial habitat value. Vegetation surrounding the lake is subject to variable water levels that fluctuate several feet in elevation daily and weekly. The primary vegetation along the shoreline of Lake Natoma consists of cottonwoods, poison oak, and wild grape (*Vitis californica*) with the larger area surrounding Lake Natoma mostly supporting blue oak-pine woodland and mixed oak woodland in areas that are not developed.

Non-native grassland habitat around the reservoirs consists of wild oats (*Avena fatua*), soft chess brome (*Bromus hordeaceus*), ryegrass (*Lolium multiflorum*), mustard (*Brassica* sp.), and foxtail (*Hordeum murinum* ssp. *leporinum*). The oak woodland habitat located on the upland banks and slopes is dominated by live oak (*Quercus wislizeni*), blue oak (*Quercus douglasii*), and foothill pine (*Pinus sabiniana*) with several species of understory shrubs and forbs including poison oak (*Toxicodendron diversilobum*), manzanita (*Arctostaphylos* sp.), California wild rose (*Rosa californica*), and lupine (*Lupinus* spp.).

Oak-pine woodlands and non-native grasslands in the Folsom Reservoir and Lake Natoma area support a variety of birds, including acorn woodpecker (*Melanerpes formicivorus*), Nuttall's woodpecker (*Picoides nuttallii*), western wood pewee (*Contopus sordidulus*), scrub jay (*Aphelocoma californica*), Bewick's wren (*Thryomanes bewickii*), plain titmouse (*Parus inornatus*), hermit thrush (*Catharus guttatus*), loggerhead shrike (*Lanius ludovicianus*), black-headed grosbeak (*Pheucticus melanocephalus*), dark-eyed junco (*Junco hyemalis*), and Bullock's oriole (*Icterus bullockii*). A number of raptor species use oak woodland habitats for nesting, foraging, and roosting including red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*Accipiter cooperii*), red-shouldered hawk (*Buteo lineatus*), great horned owl (*Bubo virginianus*), and long-eared owl (*Asio otus*). Mammal species likely to occur in the woodland habitat include mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), gray fox (*Urocyon cinereoargenteus*), Virginia opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), black-tailed jackrabbit (*Lepus californicus*), California ground squirrel (*Spermophilus beecheyi*), and a variety of rodents. Amphibians and reptiles that may be found in oak woodlands include California newt (*Taricha torosa*), Pacific tree frog (*Hyla regilla*), western fence lizard (*Sceloporus occidentalis*), gopher snake (*Pituophis catenifer*), common kingsnake (*Lampropeltis getulus*), and western rattlesnake (*Crotalus viridis*).

The non-native grassland surrounding Folsom Reservoir and Lake Natoma support habitat for a variety of rodents, which in turn serve as a prey base for carnivores such as hawks and owls, coyote, bobcat, gray fox, and some snakes. Although very few birds nest in the grassland areas, a number of species forage in this habitat, including white-crowned sparrow (*Zonotrichia leucophrys*), lesser goldfinch (*Carduelis psaltria*), western meadowlark (*Sturnella neglecta*), and several raptor species. Several of the reptiles and amphibians that inhabit the oak woodlands also occur in the adjacent non-native grasslands.

Lower American River

The lower American River provides a diverse assemblage of vegetation communities, including freshwater marsh and emergent wetland, riparian scrub, riparian forest, and in the upper, drier areas farther away from the river, oak woodland and non-native grassland. The current distribution and structure of riparian communities along the river has been determined by human-induced changes such as gravel extraction, dam construction and operation, levee construction and maintenance, and historic and on-going streamflow and sedimentation processes. Because of these factors, several riparian vegetation zones exist along the banks of the lower American River.

In general, willow scrub and alder forest tend to occupy areas within the active channel of the lower American River, which are repeatedly disturbed by river flows. Cottonwood-willow thickets and cottonwood forests occupy the narrow belts along the active river channel where repeated disturbance by occasional high flows keep the vegetative communities at earlier successional stages. Fremont cottonwood (*Populus fremontii*) dominates these riparian forest zones. Other species associated with this habitat include various willow species (*Salix* spp.), poison oak, wild grape, blackberry (*Rubus ursinus*), northern California black walnut (*Juglans californica* var. *hindsii*), and white alder (*Alnus rhombifolia*).

Alder-cottonwood forest is typical of the steep, but moist banks along much of the river corridor. Valley oak woodland occurs on upper terraces composed of fine sediment where soil moisture provides a long growing season. Valley oak (*Quercus lobata*) is the dominant tree species in these areas, although some of the sites also have a cottonwood component as a result of infrequent flood inundation. Live oak woodland occurs in the more arid and gravelly terraces that are isolated from the fluvial dynamics and moisture of the river. Non-native grassland commonly occurs in areas that have been disturbed by human activity and can be found on many of the sites within the river corridor.

Backwater areas and off-river ponds that are recharged during high flows support emergent wetland vegetation. These habitat areas are located throughout the length of the river, but occur more regularly downstream of the Watt Avenue bridge. Plant species that dominate this habitat type include various species of willow, sedge (*Carex* spp.), cattail (*Typha* spp.), bulrush (*Scirpus* spp.), rush (*Juncus* spp.), barnyard grass (*Echinochloa crusgalli*), slough grass (*Paspalum dilatatum*), and lycopodium (*Lycopodium americanus*).

Previous studies have determined that the cottonwood-dominated riparian forest and areas associated with the backwater and off-river ponds are highest in wildlife diversity and species richness relative to other river corridor habitats (Sanders et al. 1985; USFWS 1991). 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). Common species that can be found along the river include great blue heron (*Ardea herodias*), mallard (*Anas platyrhynchos*),

red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), American kestrel (*Falco sparverius*), California quail (*Callipepla californica*), killdeer (*Charadrius vociferous*), belted kingfisher (*Ceryle alcyon*), western scrub jay (*Aphelocoma californica*), ash-throated flycatcher (*Myiarchus cinerascens*), tree swallow (*Tachycineta bicolor*), and American robin (*Turdus migratorius*).

More than 30 species of mammals reside along the lower American River, including striped skunk, Virginia opossum, brush rabbit (*Sylvilagus bachmani*), raccoon, western gray squirrel (*Sciurus griseus*), California ground squirrel, meadow vole (*Microtus pennsylvanicus*), muskrat (*Ondatra zibethicus*), black-tailed deer (*Odocoileus hemionus*), gray fox, and coyote.

The most common reptiles and amphibians that depend on the riparian habitats along the lower American River include western toad (*Bufo boreas*), Pacific tree frog, bullfrog (*Rana catesbeiana*), western pond turtle (*Clemmys marmorata*), western fence lizard, common garter snake (*Thamnophis sirtalis*), and gopher snake.

Wildlife species that have been recorded in backwater pond areas include: pied-billed grebe (*Podilymbus podiceps*), American bittern (*Botaurus lentiginosus*), green heron (*Butorides striatus*), common merganser (*Mergus merganser*), white-tailed kite (*Elanus leucurus*), wood duck (*Aix sponsa*), yellow warbler (*Dendroica petechia*), warbling vireo (*Vireo gilvus*), dusky-footed woodrat (*Neotoma fuscipes*), western gray squirrel, Pacific tree frog, and western toad.

3.5.1.2 Federally listed, proposed, and candidate terrestrial and riparian species potentially occurring within the Action Area

Pursuant to Section 7(c) of the ESA, Reclamation requested that USFWS and NMFS provide information about any species that is listed or proposed for listing as threatened or endangered, including designated or proposed critical habitats, under the federal ESA that may be present in the Action Area. USFWS provided two lists of special-status species, which may be present in the Action Area and could potentially be affected by implementation of the Proposed Action. The species lists were provided by USFWS on May 19, 2017, and are presented in Appendix B of this EA. Terrestrial species identified in the USFWS are listed in Table 3-2 below along with their Federal designation, habitat description, potential to occur within the Action Area, including a rationale for this determination.

Table 3-2. Federally Listed Terrestrial Species Potentially Occurring Within the Action Area

Common Name Scientific Name	Federal Status	Habitat Description	Potential to Occur On-Site (Rationale)
Plants			
Stebbins' morning-glory <i>Calystegia stebbinsii</i>	FE	Gabbroic or serpentinite soils in chaparral (opens) and cismontane woodland (607' - 3,576').	Does not occur in Action Area; does not include gabbroic or serpentinite soils, chaparral or woodland
Pine Hill Ceanothus <i>Ceanothus roderickii</i>	FE	Serpentine or gabbroic soils in chaparral and cismontane woodland (804' - 2,067')	Does not occur in Action Area; does not include gabbroic or serpentinite soils, chaparral or woodland
Pine Hill flannelbush <i>Fremontodendron decumbens</i>	FE	Serpentine or gabbro rock outcrops in chaparral and cismontane woodland (1,394' - 2,493').	Does not occur in Action Area; does not include gabbroic or serpentinite soils, chaparral or woodland
El Dorado Bedstraw <i>Galium Californicum ssp. sierrae</i>	FE	Gabbro soils in: chaparral, cismontane woodland, and lower montane coniferous forest (328' - 1,919')	Does not occur in the Action Area; does not include gabbroic soils, chaparral, coniferous forest or woodland
Layne's butterweed <i>Senecio layneae</i>	FT	Serpentinite or gabbro outcrops in: chaparral and cismontane woodland (656' - 3,281')	Does not occur in Action Area; does not include gabbroic soils, chaparral, coniferous forest or woodland
Birds			
Least Bell's vireo (LBV) <i>Vireo bellii pusillus</i>	FE	Riparian	Not Likely to occur in the Action Area; Suitable nesting habitat occurs in the Action Area in willow scrub below the high-water mark in the North Fork AR and LAR. Although the Action Area occurs within the historic range of LBV, this species has not been observed within a 5-mile radius of the LAR (CDFW 2017), and is not expected to nest in the Action Area.

Status:

DPS	DPS Distinct Population Segment
EFH	Essential Fish Habitat
FE	ESA listed, Endangered.
FT	ESA listed, Threatened
FT	ESA listed, Threatened.
NMFS	National Marine Fisheries Service

Table 3-2 identifies federally listed terrestrial (non-aquatic) species potentially present within the Action Area including plant and animal species. As described above, no new construction would occur as a direct or indirect result of the Proposed Action. In addition, the delivery of water made available under the proposed action to customers within the Action Area would in no way influence

growth and development within the service area due to the availability of existing alternate sources of water. As such, the potential effects of the Proposed Action on listed terrestrial species within the Action Area would be limited to only those species that occur in or are dependent on habitat within the north fork American River downstream of the American River Pump Station, Folsom Reservoir, or the lower American River downstream of Folsom Dam.

Plant species associated with gabbroic soils [i.e., Stebbins' morning-glory (*Calystegia stebbinsii*), Pine Hill ceanothus (*Ceanothus roderickii*), Pine Hill flannelbush (*Fremontodendron decumbens*), El Dorado bedstraw (*Galium Californicum* ssp. *sierrae*), and Layne's butterweed (*Senecio layneae*)] are not likely to occur due to lack of habitat within the Action Area. As stated in Table 3-2, suitable nesting habitat for least Bell's Vireo (LBV) does occur in the Action Area in willow scrub below the high-water mark in the North Fork AR and LAR. Although the Action Area occurs within the historic range of LBV, this species has not been observed within a 5-mile radius of the LAR (CDFW 2017), and is not expected to nest in the Action Area.

3.5.2 Environmental Consequences

This section describes potential impacts on terrestrial and riparian resources in the Action Area that could result from the No Action Alternative and Proposed Project. The analysis addresses potential diversion-related effects on terrestrial and riparian resources associated with the North Fork of the American River, Folsom Reservoir, Lake Natoma, and the lower American River.

3.5.2.1 Diversion-Related Impacts

No Action Alternative

As described in Section 2.2 of this EA, hydrology and operations within the Action Area under the No Action Alternative are identical to those of the environmental baseline as defined for this EA. As such, the No Action Alternative would result in no change in reservoir surface water elevations or river flow relative to the environmental baseline. Therefore, no effects are anticipated on terrestrial and riparian resources within the Action Area under the No Action Alternative relative to baseline conditions.

Proposed Action

North Fork American River

There will be no change in operations of the Middle Fork Project facilities under the Proposed Action and therefore no impacts on terrestrial and riparian resources would occur in the North Fork of the American River above the PCWA diversion site.

Within the reach of the North Fork of the American River below PCWA diversion site and above Folsom Lake, flow is expected to be unchanged in normal and dry years and increase in years when 29,000 AF is allowed to bypass the PCWA diversion for downstream diversion by SSWD near Folsom Dam. While increased flow could have effects on riparian habitat and species along this reach, modeling results indicate that this change is negligible relative to the No Action Alternative. The magnitude and velocity of flow in this reach, augmented with the additional 29,000 AF, falls within the range of flow in this reach occurring under the No Action Alternative. This is illustrated in Figure 3-1, above, which compares modeled flows for this reach under the Proposed Action with those projected for the No Action Alternative. Based on this result, no effects on terrestrial and riparian special-status species in this reach are anticipated with implementation of the Proposed Action, relative to the No Action Alternative.

Folsom Reservoir, Lake Natoma, and Lower American River

Folsom Reservoir storage and surface water elevations would not change during any years under the Proposed Action relative to the No Action Alternative. No changes in release from Folsom Reservoir would occur. Therefore, no impacts on terrestrial and riparian resources are anticipated at Folsom Reservoir, Lake Natoma, or the lower American River with implementation of the Proposed Action, relative to the No Action Alternative.

3.5.2.2 LTWAC Service Area Impacts

No Action Alternative

Under the No Action Alternative, SSWD would continue to provide water from their existing (predominately groundwater) sources to their customers. No change in water deliveries would occur under the No Action Alternative, therefore there would be no anticipated impacts on terrestrial and riparian resources within the LTWAC Service Area, relative to the environmental baseline.

Future land use decisions by local, state, and federal agencies and private land use activities within the LTWAC Service Area could result in adverse effects on terrestrial and riparian resources. Such impacts would continue under the No Action Alternative. These future actions would be required at the time they are proposed to comply with federal, state, and local regulations (e.g., CEQA/NEPA, ESA, CESA, California Fish and Game Code Section 1600-1616, Clean Water Act Sections 404 and 401, MSFCMA) that protect terrestrial and riparian resources.

Proposed Action

Under the Proposed Action, SSWD would replace some of their existing groundwater withdrawals with the LTWAC surface water. No change in water deliveries would occur under the Proposed Action, therefore there would be no

anticipated impacts on terrestrial and riparian resources within the LTWAC Service Area, relative to the No Action Alternative.

Future land use decisions by local, state, and federal agencies and private land use activities within the LTWAC service area could result in adverse effects on terrestrial and riparian resources. Water provided under the Proposed Action, however, will have no bearing on such actions because of the availability of an alternate water supply, i.e., groundwater, to carry out these activities with or without execution of the LTWAC.

No adverse effects would be caused to terrestrial or riparian resources as a result of implementation of the Proposed Action. Therefore, no mitigation measures are required.

3.6 Recreation

Recreational resources associated the North Fork, and lower American rivers, and within the LTWAC Service Area would be affected by implementation of the Proposed Action. This section provides a description of the recreational opportunities and facilities associated with these water bodies and the project service area.

3.6.1 Affected Environment

3.6.1.1 Water Courses and Facilities

North Fork American River

Boating and other water-related activities are discouraged on the North Fork downstream of the confluence with the Middle Fork, and prohibited within the area one-half mile upstream and one-half mile downstream of the Auburn Dam construction by-pass tunnel due to safety hazards associated with the tunnel (Anderson 1998; CDPR and Reclamation 1992). Riparian vegetation along these rivers provides sightseeing, bird watching, and photographic opportunities. Other river-related uses that occur in the area include fishing, swimming, hiking, and sunbathing.

Folsom Reservoir and Lake Natoma

The California Department of Parks and Recreation (CDPR) manages the Folsom Lake SRA, which includes Folsom Reservoir and Lake Natoma. The Folsom Lake SRA is heavily utilized due to its proximity to a rapidly growing metropolitan area; the hot, dry summer climate of the area; the high recreational interest of the surrounding population; the diminishing open space; and its convenience as a recreational resource. There are 176 campsites that accommodate tent, trailer, RV and group campers; 11 day-use areas; and over 90 miles of existing trails in the Folsom Lake SRA (Reclamation 2005).

Visitation peaks during the summer and diminishes during the fall and winter. Seventy-five percent of all visits to the SRA occur during the spring and summer months. Water-enhanced (land-based) activities at the SRA account for approximately 15 percent of the total recreation demand, and water-dependent activities account for nearly 85 percent. Water-dependent activities on Folsom Lake include boating, personal watercraft use (jet skis), windsurfing, water skiing, rafting, swimming, and fishing. On Lake Natoma, water-dependent activities include paddling (kayaking, rowing, canoeing, and outriggers), swimming, and fishing. Boating accounts for approximately 30 percent of the total recreation demand at the Folsom Lake SRA, swimming and wading account for 27 percent, fishing accounts for nearly 20 percent, and 23 percent consists of picnicking, camping, and miscellaneous water-dependent activities (Reclamation 2005).

Recreation use and quality of the Folsom Lake SRA are closely related to Folsom Lake's function as a flood control, irrigation, and water supply reservoir, particularly as it relates to water surface elevations of the lake. Folsom Lake water surface elevations directly affect the availability of boat ramps, beaches, berth sites, and other facilities that depend on water depth or surface area. These elevations can vary as much as 70 feet in normal years. The highest water surface elevations occur during the rainy season and during spring run-off in late winter and early spring. The lowest surface elevations occur during late fall or early winter prior to the beginning of the rainy season. The surface water elevations drop continuously from the beginning of the recreation season (Memorial Day) through the end of the season (Labor Day). Water surface elevations during normal years generally fall from an elevation of approximately 466 feet msl at the beginning of the season to a low of approximately 405 feet msl in late fall, after the season has ended (Reclamation 2005).

Major facilities at Folsom Lake include six developed boat-launching areas, one marina, and two formal beach areas. If Folsom Lake's surface water elevation stays above approximately 405 feet msl, berthing slips for year-round mooring are available. When reservoir elevations rise higher than about 450 feet msl, lake inundation results in nearshore boat ramps and parking spaces becoming unavailable, affecting the carrying capacity of the reservoir. When reservoir water levels decline below 436 feet msl, submerged boat ramps become exposed. Boat ramps can become unusable when the surface water elevation drops to approximately 420 feet msl. Summer is the most sensitive time to changes in water surface elevations because a lack of access to a recreational facility could occur (Reclamation 2005).

Lake Natoma is located at the downstream end of the Folsom Lake SRA. Nimbus Dam and Lake Natoma regulate releases to the lower American River while allowing varied water releases from Folsom Dam so that power production benefits can be optimized. The water surface elevation typically fluctuates 4 feet to 7 feet daily. Recreation use on Lake Natoma is less affected than at Folsom Lake due to the minimal changes in water surface elevation (Reclamation 2005).

Major facilities at Lake Natoma include three boat launching areas, formal beaches at Negro Bar and Nimbus Flat, and the California State University, Sacramento Aquatic Center just upstream of Nimbus Dam. The Aquatic Center provides instruction and equipment rentals for rowing, sailboarding, canoeing, and small boat sailing. Other Lake Natoma facilities include several picnic areas and an 8-mile segment of the American River paved trail that is used by equestrians, hikers, runners, mountain bikers, and in-line skaters. Bank fishing is common, and swimming and diving occur from the rock outcrops at the upper end of the lake. The predominant recreational activity is trail use (jogging, bicycling, hiking, and horseback riding). Summer water temperatures in Lake Natoma are generally much cooler than in Folsom Lake. Therefore, Lake Natoma is less intensely used for swimming and wading (Reclamation 2005).

Lower American River

Recreational opportunities along the lower American River primarily are associated with the American River Parkway (Parkway). The 23-mile Parkway parallels the lower American River from Nimbus Dam to the confluence with the Sacramento River. The Parkway includes 14 parks along the publicly owned lands of the river. The County of Sacramento operates and maintains facilities within the Parkway downstream of Nimbus Dam, and CDPR operates and maintains facilities upstream of the dam. The Parkway is recognized as one of the nation's premier urban parkways, providing outstanding recreational opportunities for Sacramento area residents.

The lower American River has been designated as a Wild and Scenic River pursuant to both the State and Federal Wild and Scenic River Acts. This designation prohibits federal construction, assistance, and licensing of water resource projects that would adversely affect the values for which the designated river segments are included in the national system. The lower American River is a major site for recreational boating (rafting, kayaking, and canoeing). The level of lower American River boating activity, particularly commercial rafting, primarily depends on air temperature, river flows, and season. The boating and rafting season generally is between April and October. Fishing is permitted in the Parkway year-round except during fall and early winter, when portions of the river are closed to protect spawning fish. Swimming and wading are other popular water-dependent activities affected by river flows. There are 10 popular swimming areas along the river, although only Paradise Beach and Tiscornia Park have large sand beach areas.

3.6.1.2 SSWD Service Area

Due to the nature of land uses and zoning within the LTWAC service area, recreational opportunities exist primarily on specified parcels of land. Local recreation and park districts provide both park and open space areas. Parks within the service area contain recreational facilities such as baseball fields, playgrounds, exercise courses, tennis and volleyball courts, picnic benches and barbecues,

restrooms, and open play areas. In addition, several of the local park and recreation districts manage open space areas such as Gibson Ranch Park and Arcade Creek Nature Area. Specific locations within the service area also offer such amenities as golf centers, horse arenas, fishing ponds, and hiking trails. The Sacramento County Department of Parks, Recreation, and Open Space oversees various park and open space resources, which are managed by local recreation and park districts.

3.6.2 Environmental Consequences

3.6.2.1 Diversion-Related Impacts

Recreational opportunities associated with waterbodies within the action area could be affected by changes in reservoir levels and river flows with implementation of the Proposed Action. Any significant modifications in river flows could result in adverse effects on swimming, tubing, canoeing, kayaking and rafting activities. Reductions in reservoir surface water elevations could result in boat ramps and other recreational facilities becoming unusable.

No Action Alternative

As described in Section 2.2 of this EA, hydrology and operations within the Action Area under the No Action Alternative are identical to those of environmental baseline as defined for this EA. As such, the No Action Alternative would result in no change in reservoir surface water elevations or river flows relative to the environmental baseline.

Proposed Action

North Fork of the American River

Because instream flow is expected to be unchanged on the North Fork American River upstream of the North Fork Pumping Plant and instream below this location will be unchanged in normal and dry years and increase in years when 29,000 ac-feet is delivered to SSWD (i.e. when M-N FUI is greater than 1.6 MAF) under the Proposed Action, there would be no unreasonable adverse effects, as well as no anticipated increases in recreational opportunities, in the North Fork American river with implementation of the Proposed Action. Therefore, implementation of the Proposed Action would result no effects to North Fork of the American river recreation opportunities, relative to the No Action Alternative.

Folsom Reservoir

With implementation of the Proposed Action, Folsom Reservoir storage and surface water elevations would not change in any year thus maintaining Folsom Reservoir storage and surface water elevations under the Proposed Action, relative to the No Action condition. No changes in release from Folsom Reservoir would occur. Therefore, no impacts on recreational opportunities are anticipated

at Folsom Reservoir with implementation of the Proposed Action, relative to the No Action Alternative.

Lake Natoma

Under current operating procedures, Lake Natoma serves as a regulating reservoir for Folsom Dam. This function enables releases from Folsom Dam to fluctuate as needed for electrical power or other purposes, while releases from Nimbus Dam to the lower American River can be made to change less abruptly. As a result, the water level of Lake Natoma fluctuates regularly, but within a much smaller range of water surface levels than Folsom Reservoir. Typically, lake levels change only within a range of 4 to 7 feet, creating a relatively stable shoreline and launching ramp conditions for swimming, fishing, and boating.

Under the Proposed Action, Folsom Dam releases would not change or alter the function of Lake Natoma as a regulating reservoir. Consequently, the historical range of water level fluctuations on Lake Natoma would be expected to continue into the future without substantial change. Therefore, there would be no impact on recreation opportunities on Lake Natoma with implementation of the Proposed Action, relative to the No Action Alternative.

Lower American River

With implementation of the Proposed Action, relative to the No Action condition, no changes in release from Folsom Reservoir would occur. Therefore, no impacts on recreational opportunities are anticipated with the lower American River with implementation of the Proposed Action, relative to the No Action Alternative.

3.6.2.2 LTWAC Service Area Impacts

The Sacramento County Department of Parks, Recreation, and Open Space oversees various park and open space resources, which are managed by local recreation and park districts, including the Sacramento County, Rio Linda/Elverta, Arcade, and Citrus Heights Recreation and Parks Departments. These entities are responsible for the development and maintenance of the various recreational facilities and administering the associated levels of recreational activities. The Proposed Action, as a water delivery action, would not affect the ability to develop or maintain existing recreational facilities within the LTWAC service area or the standard for recreational land intensity. Therefore, implementation of the Proposed Action, relative to the No Action Alternative, would result in no impact on recreational facilities or the levels of recreational activity within the LTWAC service area, beyond that previously disclosed in the Sacramento County General Plan and City of Citrus Heights General Plan EIRs

No recreational impacts on Folsom Reservoir, North Fork, and lower American rivers, or within the LTWAC service area are anticipated as a result of the Proposed Action, therefore, no mitigation measures are necessary or recommended.

3.7 Other NEPA-Required Assessments

3.7.1 Introduction

In addition to the affected environment/environmental consequences assessments presented in Sections 3.2 through 3.6 above, the following section of this EA addresses two areas of potential impact related to the Proposed Action: the cumulative effect of the Proposed Action, and the potential irreversible and irretrievable commitment of resources associated with the Proposed Action.

3.7.2 Cumulative Impact

3.7.2.1 Approach to Assessing Diversion-Related Cumulative Impacts

Reclamation has completed several environmental documents that definitively illustrate, through CalSim II modeling, the anticipated future cumulative impacts associated with operation of the integrated CVP/SWP. The *Coordinated Long-Term Operation of the Central Valley Project and State Water Project Final Environmental Impact Statement (LTO EIS)* dated January 2016, evaluated the potential cumulative effect of long-term operation of the CVP and SWP on each of the water-related resources addressed in this EA, i.e., Water Supply, Hydropower, Fisheries and Aquatic Resources, Terrestrial Resources, and Recreational Resources.

As discussed below, the LTO EIS presents a comprehensive listing of past, present, and reasonably foreseeable future actions relevant to assessing the cumulative impact of diversion-related actions within the CVP/SWP system. In keeping with CEQ regulations and requirements, this EA uses and relies upon the hydrologic modeling output and future cumulative impacts analysis contained in the LTO EIS.

To determine the proposed action's contribution to cumulative impact conditions presented in the LTO EIS, additional CalSim II modeling was conducted. This modeling analyzed the impact of moving 29,000 AF of water from PCWA's American River Pumping Station down to the municipal pumps at Folsom Reservoir in wetter years. Details of the assumptions and methods used for this modeling effort can be found in Appendix A of this EA.

3.7.2.2 Cumulative Context: Past, Present and Future Actions

On January 16, 2016, Reclamation signed the *Coordinated Long-Term Operation of the Central Valley Project and State Water Project Record of Decision (LTO ROD)* (Reclamation 2016). The LTO ROD presents Reclamation's decision to implement the No Action Alternative as defined in that document. As discussed in Section 1.1 (Background) of this EA, the No Action Alternative for the LTO contains all of the reasonable and prudent alternative (RPA) actions in the 2008 USFWS BO and 2009 NMFS BO, as amended, including the RPA actions to evaluate fish passage to upstream habitats that exhibit lower water temperatures.

The 2009 NMFS BO includes RPA actions to implement fish passage to upstream habitat because often during periods with warm air and low flows, water temperatures below Shasta, Folsom, and New Melones dams become lethal to incubating eggs.

The following is a summary of the central conclusions of the diversion-related cumulative impact analysis for the No Action Alternative included within the LTO EIS. Detailed discussions of the modeling results for each of the resources potentially affected by the proposed diversions are provided in the LTO EIS and are not reiterated in herein.

The LTO EIS evaluated the potential for future impacts on water-related resources associated with operation of the CVP/SWP within the Sacramento and American river basins, as well as the Delta. The cumulative impact analysis included both quantitative and qualitative considerations. The technical approach for conducting the quantitative cumulative impact assessment involved comparing CalSim II hydrologic model output for the 2030 level of development with that of the “Second Basis of Comparison” which served as the baseline for comparison of impact for implementation of the RPAs proposed for the 2008 and 2009 BOs that would be implemented under the LTO EIS’s No Action Alternative.

The reasonably foreseeable future actions included in the LTO EIS’s cumulative effects analysis are summarized below:

- Actions in the 2008 USFWS BO and 2009 NMFS BO that would have occurred without implementation of the BOs, as described in of Chapter 3 of the LTO FEIS, Descriptions of Alternatives (Section 3.3.1.2), including climate change and sea level rise.
- Actions not included in the 2008 USFWS BO and 2009 NMFS BO that would have occurred without implementation of the BOs, as described in Chapter 3 of the LTO FEIS, Descriptions of Alternatives (Section 3.3.1.3) including:
 - Implementation of Federal and state policies and programs, including Clean Water Act (e.g., Total Maximum Daily Loads); Safe Drinking Water Act; Clean Air Act; and flood management programs
 - General Plans 2030⁶
 - Trinity River Restoration Program
 - Central Valley Project Improvement Act programs
 - Iron Mountain Mine Superfund Site

⁶ Anticipated development that would occur through 2030 under approved County and City General Plans within the CVP and SWP service areas.

- Nimbus Fish Hatchery Fish Passage Project
- Folsom Dam Water Control Manual Update
- FERC Relicensing for the Middle Fork of the American River Project
- Lower Mokelumne River Spawning Habitat Improvement Project
- Dutch Slough Tidal Marsh Restoration
- Suisun Marsh Habitat Management, Preservation, and Restoration Plan Implementation
- Tidal Wetland Restoration: Yolo Ranch, Northern Liberty Island Fish Restoration Project, Prospect Island Restoration Project, and Calhoun Cut/Lindsey Slough Tidal Habitat Restoration Project
- San Joaquin River Restoration Program
- Stockton Deep Water Ship Channel Dissolved Oxygen Project
- Grasslands Bypass Project
- Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS)
- Future water supply projects, including water recycling, desalination, groundwater banks and wellfields, and conveyance facilities
- Future Actions Considered as Cumulative Effects Actions in the Year 2030 as described in Section 3.5 of the LTO FEIS including:
 - Bay-Delta Water Quality Control Plan Update
 - FERC Relicensing Projects
 - Bay Delta Conservation Plan (including the California WaterFix alternative)
 - Shasta Lake Water Resources, North-of-the-Delta Offstream Storage, Los Vaqueros Reservoir Expansion Phase 2, and Upper San Joaquin River Basin Storage Investigations
 - El Dorado Water and Power Authority Supplemental Water Rights Project
 - Sacramento River Water Reliability Project
 - Semitropic Water Storage District Delta Wetlands
 - North Bay Aqueduct Alternative Intake
 - Irrigated Lands Regulatory Program
 - San Luis Reservoir Low Point Improvement Project
 - Westlands Water District v. United States Settlement

- Future water supply projects, including water recycling, desalination, conveyance facilities (projects that did not have completed environmental documents during preparation of the EIS)
- Full implementation of the 2008 USFWS BO and 2009 NMFS BO.

3.7.2.3 Cumulative Impacts – Diversion-related Resources

This section includes an assessment of the proposed action's contribution to cumulative impact conditions presented in the LTO EIS. The assessment is based on new CalSim model runs (Appendix A) that were used to determine whether the incremental impact of the proposed action is considerable and significant relative to past, present and foreseeable future actions evaluated in the LTO EIS. Detailed discussions of the modeling results for each of the potentially affected water-related resources are provided in the LTO EIS and are not reiterated in this EA.

As described in detail in Appendix A, the CalSim modeling effort conducted for this EA demonstrates that the Proposed Action will have no impact on Folsom Reservoir Storage. The modeling results and analysis specific to Folsom Reservoir storage are presented in Section A.3.3.4 of Appendix A. Relatedly, releases from Folsom Reservoir under the Proposed Action were found to be identical to those projected for the No Action Alternative. Those results are described in Section A.3.3.14 of Appendix A.

The projected effects of the Proposed Action on other CVP or SWP storage Reservoirs were also found to be negligible relative to the No Action Alternative. Modeling results and analysis for those facilities are presented in Sections A.3.3.1 through A.3.3.7 of Appendix A. Sacramento River inflows to the Delta, as well as water exports out of the Delta were also found to be unaffected by the Proposed Action. The modeling results and analysis supporting this conclusion are presented in Sections A.3.3.16 and A.3.3.23 of Appendix A, respectively.

In summary, the Proposed Action would have no incremental effect on Folsom Reservoir storage, releases from Folsom Reservoir, other CVP or SWP storage Reservoirs, Sacramento River inflows to the Delta, or exports out of the Delta relative to the No Action Alternative. Therefore, the Proposed Action would have negligible effects to cumulative conditions relative to water supply and hydrology, energy, fisheries and aquatic resources, terrestrial and riparian resources, and affected recreation when compared to the No Action Alternative.

3.7.2.4 Long-Term Warren Act Contract Service Area Cumulative Impacts

The areas where MFP water purchased from PCWA may be provided under the SSWD LTWAC (i.e., the LTWAC service area) are substantially developed for urban uses and are almost entirely built out. Based on this 20-year historical annual average growth rate within the SSWD North and South service areas, SSWD is projected to reach buildout by 2031 with the residential customer

population growing from 173,380 in 2015 to a projected 190,659 in 2031 (SSWD 2016). Limited growth potential within the LTWAC service area in combination with the ready availability of alternate water supply in the form of developed groundwater sources support the finding in this EA that the Proposed Action not serve to induce new growth in or near the LTWAC service area.

Sacramento County and the City of Citrus Heights have addressed potential project-specific and cumulative service area impacts upon environmental resources through the adoption and implementation of mitigation measures to minimize or avoid significant effects. The Proposed Action, through delivery of a reliable surface water supply within the LTWAC service area, would not directly cause the impacts related to development of urban uses within the LTWAC service area identified in these earlier analyses. The overall contribution of the Proposed Action to previously identified cumulative impacts is considered negligible because no new impacts would occur with implementation of the Proposed Action beyond those previously disclosed in prior environmental documents.

3.7.3 Irreversible and Irretrievable Commitments of Resources

As stated in Reclamation's NEPA Handbook:

“Irreversible commitments are decisions affecting renewable resources such as soils, wetlands, and waterfowl habitat. Such decisions are considered irreversible because their implementation could affect a resource that has deteriorated to the point that renewal can occur only over a long period of time or at great expense or because they would cause the resource to be destroyed or removed.”

No irreversible commitments of resources associated with implementation of the Proposed Action have been identified. The handbook states further:

“Irretrievable commitment of natural resources means loss of production or use of resources as a result of a decision. It represents opportunities foregone for the period of time that a resource cannot be used.”

Irretrievable commitments of resources that would result from implementation of the Proposed Action include:

- Energy needed for operation and maintenance of facilities.

Section 4 Consultation and Coordination

4.1 National Environmental Policy Act

NEPA requires federal agencies to examine the impact of any major federal actions affecting the environment (42 U.S.C. § 102). Federal actions include projects undertaken or funded by the agencies as well as proposals over which the agency has approval powers. Reclamation is the lead federal agency under NEPA for the Proposed Action. This EA has been prepared in compliance with NEPA.

4.2 Federal Endangered Species Act of 1973, as Amended

As part of this project, Reclamation requested and received from USFWS a list of federally designated endangered, threatened, and proposed listed species. The list was dated May 19, 2017, and endangered, threatened, proposed listed, and candidate species located within the Action Area. Potential impacts on those species are discussed in Section 3.5, Fisheries and Aquatic Resources, and Section 3.6, Terrestrial and Riparian Resources of this EA.

Following a review of the impacts on special status species, Reclamation has concluded no effects to Federally designated species under the respective jurisdictions of USFWS and NMFS pursuant to section § 7(a)(2) of the federal ESA.

4.3 Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA)

The 1996 amendments to the MSFCMA (16 USC 1801 et seq.) require the identification of EFH for federally managed fishery species and the implementation of measures to conserve and enhance this habitat. EFH includes specifically identified waters and substrate necessary for fish spawning, breeding, feeding, or growth to maturity and covers a species' full life cycle (16 USC 1802(10)). Federal action agencies are required to consult with NMFS on any action authorized, funded, or undertaken that may adversely impact EFH. This consultation process is usually integrated into existing environmental review procedures in accordance with the NEPA or ESA to provide the greatest level of efficiency. Coordination efforts with NMFS address EFH for species managed under the MSFCMA. Informal discussions with NMFS, concluded that there would be no effects on EFH in implementing the Proposed Action.

4.4 National Wild and Scenic Rivers Act

The Wild and Scenic Rivers Act of 1968 (P.L.-542, 16 U.S.C. 1271-1287) establishes the policy that certain rivers and their immediate environments which

possess outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values will be preserved and protected. In January 1981, the Department of the Interior designated the lower American River from Nimbus Dam to its confluence with the Sacramento River as wild and scenic for both fishery and recreation values.

Section 10 of this act requires that each component of the Wild and Scenic river system be administered in such a manner as to protect and enhance the values for which the river was designated. Under this act, federal agencies that have discretionary decision-making authority (i.e., permitting authority) must review the proposed project in relation to Section 7 and Section 10 of the act to determine if the proposed project would affect the values of the Wild and Scenic river. As the Proposed Action does not change the releases from Folsom or Nimbus Dam, nor change the water temperature of these releases into the lower American River, the Proposed Action would not affect the values of the Wild and Scenic American River downstream of Nimbus Dam.

4.5 Other Federal Statutes and Regulations of Relevance

Presented below is a preliminary review of federal requirements that may be associated with the implementation of the proposed long-term WA contract. No dredging, excavation, or fill would occur as part of the Proposed Action. No wetlands would be removed or created.

4.5.1 Executive Order 12898 (Environmental Justice).

Executive Order 12898 on Environmental Justice requires that environmental analyses of proposed federal actions address any disproportionately high and adverse human health or environmental effects on minority and low-income communities. Reclamation's responsibility under this order applies equally to Native American programs. In addition, each federal agency must ensure that public documents, notices, and hearings are readily accessible to the public. No disproportionately high or adverse human health or environmental effects on minority and low-income communities have been identified. Mailing notices and distribution of other project information includes property owners and potentially affected persons and institutions without any distinction based on minority or income status.

4.5.2 Executive Order 11988 (Floodplain Management)

Executive Order 11988 on Floodplain Management requires the Corps to provide leadership and take action to: 1) avoid development in the base (100-year) floodplain; 2) reduce the hazards and risks associated with floods; 3) minimize the impact of floods on human safety, health, and welfare; and 4) restore and preserve the natural and beneficial values of the base flood plain. The Proposed Action is in compliance with this executive order.

Section 5 Literature Cited

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