

**Draft Environmental Assessment** 

# San Joaquin River Exchange Contractors Water Authority Return of Transferred Water

EA-18-016



# **Mission Statements**

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated 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.

# **Contents**

	Page
Section 1 Introduction	1
1.1 Background	
1.2 Need for the Proposed Action	
Section 2 Alternatives Including the Proposed Action	
2.1 No Action Alternative	
2.2 Proposed Action	
2.2.1 Return of Previously Banked CVP Water	
2.2.2 Environmental Commitments	
Section 3 Affected Environment and Environmental Consequences	
3.1 Resources Eliminated from Further Analysis	
3.2 Biological Resources	
3.2.1 Affected Environment	
3.2.2 Environmental Consequences	
No Action	
Proposed Action	12
Cumulative Impacts	
3.3 Water Resources	12
3.3.1 Affected Environment	12
3.3.2 Environmental Consequences	12
No Action	12
Proposed Action	12
Cumulative Impacts	13
Section 4 Consultation and Coordination	15
4.1 Public Review Period	15
4.2 List of Agencies and Persons Coordinated with	15
Section 5 References	17
Figure 1 Proposed Action Area.	5
Table 1 Environmental Protection Measures	6
Table 2 Resources Eliminated from Further Analysis	
Table 3 Federally Listed Threatened and Endangered Species	
Appendix A Cultural Resources Determination	

# **Section 1 Introduction**

## 1.1 Background

The Bureau of Reclamation (Reclamation) and the San Joaquin River Exchange Contractors Water Authority (Exchange Contractors) prepared a joint Environmental Impact Statement/Environmental Impact Report (EIS/EIR) on a proposed long-term program to annually transfer and/or exchange up to 150,000 acre-feet (AF) of water developed by the Exchange Contractors (Reclamation 2013). Under the program, the Exchange Contractors transfer water to San Joaquin Valley wildlife refuges as well as to Friant Division Central Valley Project (CVP) contractors, San Luis Unit CVP contractors, and/or State Water Project (SWP) contractors located west and south of the Sacramento/San Joaquin River Delta (Delta) for existing agricultural and municipal and industrial (M&I) purposes. Water for the proposed transfers and/or exchanges are developed through conservation measures as well as crop idling or land fallowing (annual maximum of 100,000 AF of conserved water and a maximum of 50,000 AF from temporary land fallowing). The EIS/EIR analyzed potential direct, indirect, and cumulative impacts to the following resources: surface water resources (Chapter 4), groundwater resources (Chapter 5), biological resources (Chapter 6), land use and agricultural (Chapter 7), socioeconomics (Chapter 8), Environmental Justice (Chapter 9), Indian Trust Assets (Chapter 10), air quality (Chapter 11), and climate change/greenhouse gases (Chapter 12). The EIS/EIR identified no potentially significant impacts or substantial adverse effects to physical and biological resources from implementing the preferred alternative, and no mitigation was required. However, the Exchange Contractors and Reclamation continue to monitor both surface and groundwater resources to avoid development of substantial adverse effects and meet existing environmental commitments. A Record of Decision (ROD) was signed by Reclamation on July 30, 2013. The program covered 25 consecutive years beginning March 1, 2014, through February 28, 2039. The EIS/EIR and ROD is hereby incorporated by reference.

In order to better manage available water supplies, especially during drought conditions, the Exchange Contractors have requested authorization to return water from Reclamation-approved water banks that was transferred and/or exchanged under the program. As this was not covered in the EIS/EIR, additional environmental review is needed in order to address the potential effects of returning water from Reclamation-acknowledged water banks to the Exchange Contractors.

## 1.2 Need for the Proposed Action

The Exchange Contractors need to find opportunities to better manage available water supplies. The purpose of the Proposed Action is to return available water previously transferred to water banks under the current long-term program for recharge or irrigation purposes within the Exchange Contractors service area and/or transferred to others covered under the long-term

program. The Proposed Action would also allow future water to be banked. The banked water would also be used for the same purposes.

# Section 2 Alternatives Including the Proposed Action

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

#### 2.1 No Action Alternative

Under the No Action Alternative, the existing long-term transfer program would continue, however, Reclamation would not approve the annual return of up to 20,000 AF of previously transferred and/or future banked CVP water from Reclamation-acknowledged water banks over a 9 year period. The Exchange Contractors would not be able to use available water previously transferred or future banked CVP water for recharge or irrigation purposes within their service area or to transfer to other contractors under the long-term transfer program.

# 2.2 Proposed Action

Under the Proposed Action, Reclamation would approve the annual return of up to 20,000 AF of either previously transferred CVP and/or future banked CVP water from Reclamation-acknowledged water banks over a 9 year period (through December 2026).

#### 2.2.1 Return of Previously Banked CVP Water

Return of previously transferred and/or future banked CVP water would be from the following Reclamation-acknowledged water banks<sup>1</sup>:

- West Kern Water District
- Cawelo Water District
- Semitropic Water Storage District
- Rosedale Rio Bravo Water Storage District
- Kern County Water Agency
- Kern Water Bank
- Lakeside Irrigation Water District
- North Kern Water Storage District
- Pixley Irrigation District
- Tulare Lake Basin Water Storage District

<sup>&</sup>lt;sup>1</sup> Groundwater Bank(s): An established groundwater storage aquifer acknowledged by Reclamation in which CVP Contractors bank CVP water.

Draft EA-18-016

Additional water banks located within the CVP Place of Use covered in the long-term EIS/R that undergo additional and separate environmental review and Reclamation acknowledgement may also participate under the Proposed Action.

As the Exchange Contractors are located upstream of the participating water banks (see Figure 1), the previously transferred and/or future banked CVP water would remain for use as previously covered in the long-term EIS/EIR, and a like amount of State Water Project (SWP) water would be provided to the Exchange Contractors in San Luis Reservoir. The SWP water would then either be transferred to participating contractors as previously covered in the long-term EIS/EIR or delivered to the Exchange Contractors through O'Neill Forebay and the Delta-Mendota Canal for recharge or irrigation purposes within their service area.

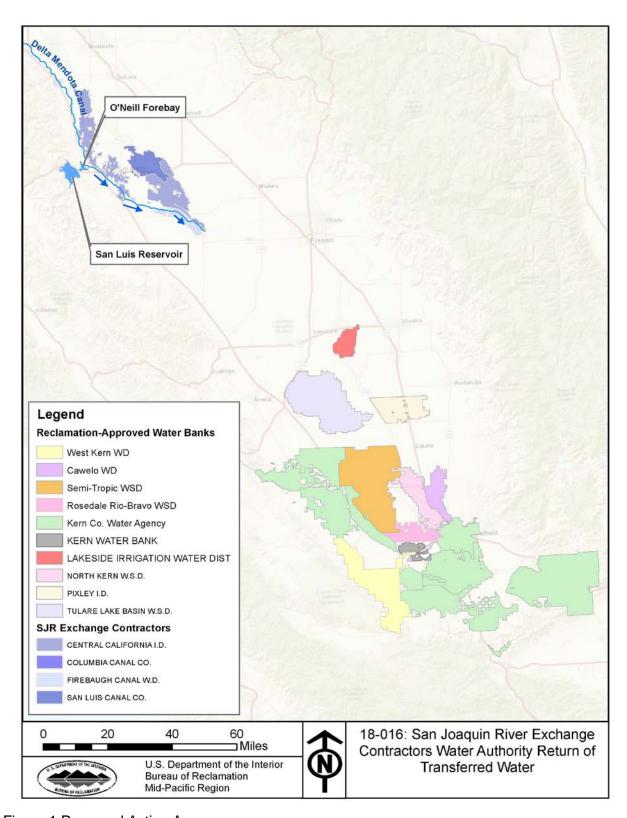


Figure 1 Proposed Action Area

#### 2.2.2 Environmental Commitments

The Exchange Contractors shall implement the following environmental protection measures to avoid environmental consequences associated with the Proposed Action (Table 1).

Table 1 Environmental Protection Measures

Resource	Protection Measure
Water	The water would only be used for beneficial purposes and in accordance with Federal Reclamation
Resources	law and guidelines.
Water	Any return of previously transferred and/or future banked CVP water is required to meet
Resources	Reclamation's then-current water quality criteria prior to introduction into federal facilities.
Various	The water would not be used to place untilled or new lands into production, or to convert
Resources	undeveloped land to other uses. The Proposed Action would not increase or decrease water
	supplies that would result in land development.
Various	No new construction or modification of existing facilities may occur in order to complete the
Resources	Proposed Action.
Various	The Proposed Action cannot alter the flow regime of natural waterways or natural watercourses such
Resources	as rivers, streams, creeks, ponds, pools, wetlands, etc., so as to have a detrimental effect on fish or
	wildlife or their habitats.
Various	All monitoring and environmental commitments from the 2013 ROD shall be implemented under the
Resources	Proposed Action.

Environmental consequences for resource areas assume the measures specified would be fully implemented. Copies of all reports would be submitted to Reclamation.

# **Section 3 Affected Environment and Environmental Consequences**

This section identifies the potentially affected environment and the environmental consequences involved with the Proposed Action and the No Action Alternative, in addition to environmental trends and conditions that currently exist.

# 3.1 Resources Eliminated from Further Analysis

Reclamation analyzed the affected environment and determined that the Proposed Action did not have the potential to cause direct, indirect, or cumulative adverse effects to the resources listed in Table 2.

Table 2 Resources Eliminated from Further Analysis

Resource	Reason Eliminated
Air Quality	No new construction or new facilities would be needed under the Proposed Action to convey water between the Districts. Some pumping would be required to move water under the Proposed Action, but power usage would be within the typical range for the facilities involved and are a part of the baseline condition. In addition, delivery of water to the Districts would be from existing facilities with or without the Proposed Action and is therefore part of the existing conditions. As there would be no change from existing conditions, a conformity analysis is not required and there would be no impact to air quality as a result of the Proposed Action.
Cultural Resources	The Proposed Action consists of water management actions that would convey through existing Reclamation facilities. As no construction or modification of facilities would be needed in order to complete the Proposed Action, Reclamation has determined that these activities have no potential to cause effects to historic properties pursuant to 36 CFR Part 800.3(a)(1). See Appendix A for Reclamation's determination.
Environmental Justice	The Proposed Action would not cause dislocation, changes in employment, or increase flood, drought, or disease nor would it disproportionately impact economically disadvantaged or minority populations.
Global Climate Change	Recently, the U.S. Global Research Program (USGRP) concluded in its Climate Science Special Report (2017) that "Many lines of evidence demonstrate that it is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20 <sup>th</sup> century." The USGRP also concludes that "Global climate is projected to continue to change over this century and beyond. The magnitude of climate change beyond the next few decades will depend primarily on the amount of greenhouse (heat trapping) gases emitted globally and on the remaining uncertainty in the sensitivity of the Earth's climate to those emissions (very high confidence)."  Reclamation developed a global climate model in 2016 for the Sacramento and San Joaquin Basins. The model predicts increased temperatures, increased precipitation, increased runoff, and reduced snowpack at higher latitudes during the 21 <sup>st</sup> century.  The Proposed Action does not include construction of new facilities or modification to existing facilities. While pumping would be necessary to deliver CVP water, no additional electrical production beyond baseline conditions would occur. In addition, the generating power plant that produces electricity for the electric pumps operates under permits that are regulated for greenhouse gas emissions. As such, there would be no additional impacts to global climate change. Global climate change is expected to have some effect on the snow pack of the Sierra Nevada and the runoff regime. It is

Resource	Reason Eliminated
	anticipated that climate change would result in more short-duration high-rainfall events and less snowpack runoff in the winter and early spring months by 2030 compared to recent historical conditions (Reclamation 2016, pg 16-26). However, the effects of this are long-term and are not expected to impact CVP operations within the two-year window of this action. Further, CVP water allocations are made dependent on hydrologic conditions and environmental requirements. Since Reclamation operations and allocations are flexible, any changes in hydrologic conditions due to global climate change would be addressed within Reclamation's operation flexibility.
Indian Sacred Sites	The Proposed Action would not limit access to ceremonial use of Indian Sacred Sites on federal lands by Indian religious practitioners or significantly adversely affect the physical integrity of such sacred sites. Therefore, there would be no impacts to Indian Sacred Sites as a result of the Proposed Action.
Indian Trust Assets	The Proposed Action would not impact Indian Trust Assets as there are none in the Proposed Action area.

# 3.2 Biological Resources

#### 3.2.1 Affected Environment

Reclamation requested official species lists for the Proposed Action Area from the U.S. Fish and Wildlife Service (Service) Sacramento and Carlsbad offices on May 21, 2018 by accessing the Service's website: https://ecos.fws.gov/ipac/ (Consultation Codes: 08ESMF00-2018-SLI-2163 and 08ECAR00-2018-SLI-1099). Reclamation further queried the California Department of Fish and Wildlife, California Natural Diversity Database (CNDDB) for records of protected species near the Proposed Action Area (CNDDB, 2018). This information, in addition to other information within Reclamation's files was combined to create the following list (Table 3).

Table 3 Federally Listed Threatened and Endangered Species

Species	Status <sup>1</sup>	Effects <sup>2</sup>	Potential to occur and summary basis for ESA determination <sup>3</sup>
Amphibians			
California red-legged frog Rana draytonii	Т, Х	NE	Absent. This species, and designated Critical Habitat for this species, do not occur within the Proposed Action Area. There would be No Effect to this species or its designated Critical Habitat.
California tiger salamander Central California DPS Ambystoma californiense	Т, Х	NE	Absent. This species, and designated Critical Habitat for this species, do not occur within the Proposed Action Area. There would be No Effect to this species or its designated Critical Habitat.
Birds			
California condor Gymnogyps californianus	E, X	NE	Possible. There are CNDDB <sup>4</sup> records of this species in the Kern County Water Agency (KCWA) and the West Kern Water District, and designated Critical Habitat for this species overlaps KCWA. The Proposed Action would not alter or convert any areas of suitable habitat for this species. There would be No Effect to this species or its designated Critical Habitat.
Southwestern willow flycatcher Empidonax traillii extimus	E, X	NE	Absent. This species, and designated Critical Habitat for this species, do not occur within the Proposed Action Area. There would be No Effect to this species or its designated Critical Habitat.

Species	Status <sup>1</sup>	Effects <sup>2</sup>	Potential to occur and summary basis for ESA determination <sup>3</sup>
Western snowy plover Charadrius alexandrinus nivosus	Т, Х	NE	Present. There are CNDDB records of this species in Semitropic Water Storage District (Semitropic) and KCWA; however, there is no designated Critical Habitat for this species in the Action Area. The Proposed Action would not alter or convert any areas of suitable habitat for this species. There would be No Effect to this species or its designated Critical Habitat.
Yellow-billed cuckoo Coccyzus americanus	T, PX	NE	Possible. There is one possibly extirpated CNDDB occurrence of this species in a San Joaquin River Exchange Contractor district. Proposed Critical Habitat for this species is not present within the Proposed Action Area. The Proposed Action would not alter or convert any areas of suitable habitat for this species. There would be No Effect to this species or its proposed Critical Habitat.
Crustaceans			
Conservancy fairy shrimp Branchinecta conservatio	E, X	NE	Absent. This species, and designated Critical Habitat for this species, do not occur within the Proposed Action Area. There would be No Effect to this species or its designated Critical Habitat.
Vernal pool fairy shrimp Branchinecta lynchi	т, х	NE	Possible. There are CNDDB occurrences of this species near the Pixley Water Bank; however, designated Critical Habitat for this species is not present in the Proposed Action Area. The Proposed Action would not alter or convert any areas of suitable habitat for this species. There would be No Effect to this species or its designated Critical Habitat.
Vernal pool tadpole shrimp Lepidurus packardi	E, X	NE	Absent. This species, and designated Critical Habitat for this species, do not occur within the Proposed Action Area. There would be No Effect to this species or its designated Critical Habitat.
Fish			
Delta Smelt Hypomesus transpacificus	T, X	NE	Absent. This species, and designated Critical Habitat for this species, do not occur within the Proposed Action Area. There would be <i>No Effect</i> to this species or its designated Critical Habitat.
Insects			
Kern primrose sphinx moth Euproserpinus euterpe	T, PX	NE	Absent. This species, and proposed Critical Habitat for this species, do not occur within the Proposed Action Area. There would be <i>No Effect</i> to this species or its proposed Critical Habitat.
Valley elderberry longhorn beetle Desmocerus californicus dimorphus	T, X	NE	Possible. There is one CNDDB occurrence of this species near the border of KCWA. Designated Critical Habitat for this species is not present within the Proposed Action Area. The Proposed Action would not alter or convert any areas of suitable habitat for this species. There would be No Effect to this species or its designated Critical Habitat.
Mammals			

Species	Status <sup>1</sup>	Effects <sup>2</sup>	Potential to occur and summary basis for ESA determination <sup>3</sup>
Buena Vista lake ornate shrew Sorex ornatus relictus	E, X	NE	Present. There are CNDDB records of this species in Semitropic and KCWA, and designated Critical Habitat for this species is present within KCWA. The Proposed Action would not alter or convert any areas of suitable habitat for this species, and would not involve any ground disturbance or construction. There would be <i>No Effect</i> to this species or its designated critical Habitat.
Fresno kangaroo rat Dipodomys nitratoides exilis	E, X	NE	Absent. This species, and designated Critical Habitat for this species, do not occur within the Proposed Action Area. There would be No Effect to this species or its designated Critical Habitat.
Giant kangaroo rat Dipodomys ingens	Е	NE	Present. There are multiple CNDDB records of this species within KCWA. The Proposed Action would not alter or convert any areas of suitable habitat for this species, and would not involve any ground disturbance or construction. There would be No Effect to this species.
San Joaquin kit fox Vulpes macrotis mutica	Е	NE	Present. There are CNDDB occurrences of this species within the San Joaquin River Exchange Contractor districts. The Proposed Action would not alter or convert any areas of suitable habitat for this species, and would not involve any ground disturbance or construction. There would be No Effect to this species.
Tipton kangaroo rat Dipodomys nitratoides nitratoides	E	NE	Present. There are multiple CNDDB occurrences of this species within Semitropic and KCWA. The Proposed Action would not alter or convert any areas of suitable habitat for this species, and would not involve any ground disturbance or construction. There would be <i>No Effect</i> to this species.
Plants			
Bakersfield cactus Opuntia treleasei	E	NE	Present. There are CNDDB occurrences of this species in the Cawelo Water District and KCWA. The Proposed Action would not alter or convert any areas of suitable habitat for this species, and would not involve any ground disturbance or construction. There would be <i>No Effect</i> to this species.
California jewelflower Caulanthus californicus	Е	NE	Possible. There are some possibly extirpated CNDDB occurrences of this species in KCWA. The Proposed Action would not alter or convert any areas of suitable habitat for this species, and would not involve any ground disturbance or construction. There would be <i>No Effect</i> to this species.
Colusa grass Neostapfia colusana	Т, Х	NE	Absent. This species, and designated Critical Habitat for this species, do not occur within the Proposed Action Area. There would be No Effect to this species or its designated Critical Habitat.
Hoover's spurge Chamaesyce hooveri	Т, Х	NE	Absent. This species, and designated Critical Habitat for this species, do not occur within the Proposed Action Area. There would be <i>No Effect</i> to this species or its designated Critical Habitat.
Kern mallow Eremalche kernensis	E	NE	Present. There are extant CNDDB records of this species in KCWA. The Proposed Action would not alter or convert any areas of suitable habitat for this species, and would not involve any ground disturbance or construction. There would be No Effect to this species.

Species	Status <sup>1</sup>	Effects <sup>2</sup>	Potential to occur and summary basis for ESA determination <sup>3</sup>
Palmate-bracted bird's beak Cordylanthus palmatus	Е	NE	Absent. This species does not occur within the Proposed Action Area. There would be <i>No Effect</i> to this species.
San Joaquin Adobe sunburst Pseudobahia peirsonii	Т	NE	Absent. This species does not occur within the Proposed Action Area. There would be <i>No Effect</i> to this species
San Joaquin wooly-threads Monolopia congdonii	E	NE	Present. There are records of this species in Semitropic. The Proposed Action would not alter or convert any areas of suitable habitat for this species, and would not involve any ground disturbance or construction. There would be <i>No Effect</i> to this species.
Reptiles			
Blunt-nosed leopard lizard Gambelia silus	E	NE	Present. There are CNDDB occurrences of this species in Semitropic and KCWA. The Proposed Action would not alter or convert any areas of suitable habitat for this species, and would not involve any ground disturbance or construction. There would be <i>No Effect</i> to this species.
Desert tortoise Gopherus agassizii	E, X	NE	Absent. This species, and designated Critical Habitat for this species, do not occur within the Proposed Action Area. There would be <i>No Effect</i> to this species or its designated Critical Habitat.
Giant garter snake Thamnophis gigas	Т	NE	Present. There are CNDDB occurrences of this species in the San Joaquin Exchange Contractor districts and in KCWA. The Proposed Action would not alter or convert any areas of suitable habitat for this species, and would not involve any ground disturbance or construction. There would be No Effect to this species.
Green sea turtle Chelonia mydas	Т	NE	Absent. This species does not occur within the Proposed Action Area. There would be No Effect to this species

<sup>1</sup> Status = Status of federally protected species protected under the ESA.

- E: Listed as Endangered
- T: Listed as Threatened
- X: Critical Habitat designated for this species
- 2 Effects = ESA Effect determination

NE: No Effect anticipated from the Proposed Action to federally listed species or designated critical habitat

- 3 Definition of Occurrence Indicators
  - Present: Species recorded in area and suitable habitat present.
  - Possible: Species recorded in area and habitat suboptimal.
  - Absent: Species not recorded in study area and suitable habitat absent.
- 4 CNDDB May 2018

#### 3.2.2 Environmental Consequences

#### No Action

Under the No Action alternative, the Exchange Contractors would not be able to use available water previously transferred for recharge or irrigation purposes within their service area or to transfer the water to other contractors under the long-term transfer program. The Exchange Contractors' service area consists of intensively farmed croplands and graded and maintained roads which provide sub-optimal or unsuitable habitat for listed species. Habitat conditions in the Proposed Action Area would not change under the No Action alternative and there would therefore be no effect on federally listed species and no take of migratory birds.

Draft EA-18-016

#### **Proposed Action**

The Proposed Action would not involve any construction, ground disturbance, or changes in land use. The water involved in the Proposed Action has already been diverted, so the Proposed Action would not involve any increased diversions from natural waterways, including the Delta. Conveyance facilities involved in the Proposed Action are not managed for fisheries and do not support any listed fish species. The water involved in the Proposed Action would be used to support existing demands, and would not be used to convert natural lands or lands that have been untilled or fallowed for three or more years. No native lands would be cultivated as a result of the Proposed Action.

Additional water banks located within the CVP Place of Use covered in the long-term EIS/EIR which undergo additional environmental review and Reclamation acknowledgement may also participate in the Proposed Action. The effects of the operation of these water banks on federally listed species and migratory birds would be covered under the additional environmental review; the participation of these water banks in the Proposed Action is not expected to result in any additional effects beyond what would be covered in the environmental review for the operation of these water banks.

Reclamation has determined that there would be *No Effect* to proposed or listed species or Critical Habitat under the Endangered Species Act of 1973, as amended (16 U.S.C. §1531 et seq.), and there would be *No Take* of birds protected under the Migratory Bird Treaty Act (16 U.S.C. §703 et seq.).

#### Cumulative Impacts

As the Proposed Action is not expected to result in any direct or indirect impacts to biological resources, there would be no cumulative impacts.

#### 3.3 Water Resources

#### 3.3.1 Affected Environment

The affected environment is the same as previously covered in the EIS/EIR for the long-term transfer program (Reclamation 2013) which has been incorporated by reference.

#### 3.3.2 Environmental Consequences

#### No Action

Under the No Action alternative, opportunities to address water shortages, especially during drought years, would be reduced as would opportunities for recharge of depleted groundwater. If other water supplies are not available this could lead to greater overdraft and/or increased fallowing.

#### **Proposed Action**

The Proposed Action would provide additional benefits to available water supplies in the Action area as it would enable further opportunities to meet existing demands during periods of water shortages with available surface water supplies reducing the need for additional groundwater

pumping to meet demands. In addition, recharge opportunities would provide benefits to over-drafted areas.

#### **Cumulative Impacts**

The EIS/EIR addressed cumulative impacts to surface water resources (Section 4.0) and groundwater resources (Section 5.0) in the Proposed Action area. Cumulative impacts to surface water and groundwater resources was determined to not be significant (Reclamation 2013, pages 4-50 and 5-16, respectively). As the water under the Proposed Action would have been transferred to the participating water banks as previously analyzed under the long-term EIS/EIR and the return of the transferred water would be via operation exchange (i.e., a like amount of SWP water would be provided at San Luis Reservoir by the participating banks), there would be no cumulative impacts beyond those previously addressed in the EIS/EIR.

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# **Section 4 Consultation and Coordination**

#### 4.1 Public Review Period

Reclamation intends to provide the public with an opportunity to comment on the Draft Finding of No Significant Impact and Draft Environmental Assessment during a 30-day public review period.

# 4.2 List of Agencies and Persons Coordinated with

Reclamation has consulted with the following regarding the Proposed Action:

- West Kern Water District
- Cawelo Water District
- Semitropic Water Storage District
- Rosedale Rio Bravo Water Storage District
- Kern County Water Agency
- Kern Water Bank
- Lakeside Irrigation Water District
- North Kern Water Storage District
- Pixley Irrigation District
- Tulare Lake Basin Water Storage District
- The Exchange Contractors

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# **Section 5 References**

Bureau of Reclamation (Reclamation). 2013. EIS/EIR Water Transfer Program for the San Joaquin River Exchange Contractors Water Authority, 2014-2038.

Bureau of Reclamation (Reclamation). 2016. Record of Decision and Environmental Impact Statement for the Coordinated Long-Term Operation of the Central Valley Project and State Water Project. Mid-Pacific Region Bay-Delta Office. Sacramento, CA

CNDDB (California Natural Diversity Database). 2018. California Department of Fish and Wildlife's Natural Diversity Database, Version 3.1.1. RareFind 3. Last Updated May 2018.

U.S. Global Research Program (USGRP). 2017. Executive summary. In: Climate Science Special Report: Fourth National Climate Assessment, Volume I [Wuebbles, D.J., D.W. Fahey, K.A. Hibbard, D.J. Dokken, B.C. Stewart, and T.K. Maycock (eds.)]. U.S. Global Change Research Program, Washington, DC. pp. 12-34. Website:

https://science2017.globalchange.gov/chapter/executive-summary/. Accessed: June 4, 2018.