Appendix C: U.S. Fish and Wildlife Service Biological Opinion

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Suite W-2605
Sacramento, California 95825-1846

In Reply Refer to:
08ESMF00-
2015- F-1331

FEB 29 2016

To: Resource Management Division Chief, U.S. Bureau of Reclamation, South-Central California Area Office, Fresno, California

From: Field Supervisor, Sacramento Fish and Wildlife Office, Sacramento, California

Subject: Consultation on the Interim Renewal Water Service Contracts for Westlands Water District, and the 3-way Partial Assignment from Mercy Springs Water District to Pajaro Valley Water Management Area, Santa Clara Valley Water District, and Westlands Water District for March 1, 2016 - February 28, 2018

This memorandum is in response to the U.S. Bureau of Reclamation's (Reclamation) September 17, 2015 request for initiation of consultation with the U.S. Fish and Wildlife Service (Service) (Initiation Memo) on the execution of Central Valley Project (CVP) Interim Renewal Water Service Contracts (IRCs) for Westlands Water District (WWD) in western Fresno and Kings counties, and Pajaro Valley Water Management Agency (PVWMA) and Santa Clara Valley Water District (SCVWD) in Santa Clara County, from 2016-2018. Your request was received in our office on September 21, 2015. At issue are the IRCs effects on the federally-listed as endangered California least tern *(Sterna antillarum browni)*, San Joaquin kit fox *(Vulpes macrotis mutica)*, blunt-nosed leopard lizard *(Gambelia silus)*, and San Joaquin woolly-threads *(Monolopia congdonii)*, and federally-listed as threatened giant garter snake *(Thamnophis* gigas). This response is provided under the authority of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act), and in accordance with the implementing regulations pertaining to interagency cooperation (50 CFR 402).

The Federal action on which we are consulting is the two year-renewal of IRCs beginning on March 1, 2016 and ending February 28, 2018, for five WWD contracts, and the three-way partial contract water assignment (Delta Division 3-way IRC) from Mercy Springs Water District to the PVWMA and the SCVWD. Pursuant to 50 CFR 402.12(j), you submitted a biological assessment (BA) for our review and requested concurrence with the findings presented therein. These findings conclude that the proposed project may affect, and is likely to adversely affect the California least tern and giant garter snake, and may affect, and is not likely to adversely affect (NLAA) the blunt-nosed leopard lizard, San Joaquin kit fox, and San Joaquin woolly-threads. Critical habitat has not been designated for any of the species considered in this document.

Reclamation has requested initiation of consultation under the Act. In considering your request, we based our evaluation on the following information: (1) the September 17, 2015 Initiation Memo from Reclamation to the Service; (2) a BA for these IRCs dated September 2015; (3) a Draft Environmental Assessment and FONSI (DEA) dated September 2015; (4) electronic mail between Reclamation and the Service; (5) information provided by Reclamation's South Central California

Area Office for the 2000, 2002, 2004, 2006, 2008, 2010, 2012 and 2014 consultations involving some or all of these IRCs, and (6) other information available to the Service.

The Service's consultations on IRCs have addressed the diversions of water at prescribed diversion points and times for the use of that water on a specified land area (the contractors' service area). All IRCs, while identifying a full contract amount, recognize that the delivery of full contract amount is subject to availability of water and other obligations of the CVP (such as Central Valley Project Improvement Act (CVPIA) and consultation requirements under the Act).

As a result of the small quantity of contract supply for the Delta Division 3-way IRC from Mercy MSWD (6,260 acre feet/year), which includes the CVP contractors PVWMA, SCVWD and WWD Distribution District #1 (D#1), and an environmental commitment in the DEA (page 13) stipulating that "no CVP water would be applied to native lands or lands untilled for three consecutive years or more without additional environmental analysis and approval" (land conversion commitment), Reclamation has determined that the renewal of this IRC will have no effect on the federally-listed species or critical habitats (identified in the BA and included as Appendix A of this memo) and is not requesting concurrence with those determinations.

Reclamation has requested concurrence with a NLAA determination for the blunt-nosed leopard lizard, the San Joaquin kit fox, and the San Joaquin woolly-threads. The information provided for this consultation, as well as the short duration of this project and land conversion commitment in the DEA, provides the basis for the Service to concur with Reclamation's determination that the WWD IRCs are NLAA the blunt-nosed leopard lizard, San Joaquin kit fox, or San Joaquin woolly-threads. No critical habitat for federally-listed species has been designated or proposed within WWD.

Reclamation's determination that the IRCs considered in this consultation will NLAA the blunt-nosed leopard lizard, the San Joaquin kit fox, and the San Joaquin woolly-threads and would have no effect on federally-listed species or critical habitats identified in Appendix A is based on Reclamation's conclusion that CVP contract deliveries do not result in land use changes that would adversely affect federally-listed species or critical habitat. In the previous consultation completed for these IRCs (File Number 2014-F-0035), the Service requested that prior to the next renewal of these IRCs Reclamation would revise and update the Central Valley Project Improvement Act (CVPIA) Comprehensive Mapping Program to validate the conclusion that CVP IRCs will not result in land use changes within the districts.

On December 7, 2015, Reclamation provided to the Service land cover change maps and tables comparing data for 2006 with 2011 for the WWD, Santa Clara Valley WD and Pajaro Valley Water Management Area. We appreciate the effort made by Reclamation to document land use changes within these districts. Reclamation has prepared and shared its 2016 CVPIA Mapping efforts (based on information from the National Land Cover Database[1] comparing land use data from 2006 with 2011) with the Service. Using the 2016 CVPIA Mapping and Reclamation's 2000 baseline Central Valley Habitat Mapping, Reclamation along with the Service affirm their commitment to continue to work collaboratively to interpret and evaluate the 2016 CVPIA Mapping and to examine sensitive land use changes revealed by said mapping. This commitment is made to comply, in part, with the Biological Opinion on Implementation of the CVPIA and Continued Operation and Maintenance of the CVP, issued in November 2000, File Number 98-F-0124, pages 2-62 through 2-64.

[1] Information on the National Land Cover Database is available at: http://www.mrlc.gov/

The remainder of this biological opinion will address the effects of WWD's IRCs on California least tern and the giant garter snake.

Consultation History

The consultation history, prior to the current proposed action, was identified in detail in previous consultations on WWD and Delta Division 3-way IRCs and is hereby incorporated by reference (Service Files 2014-F-0035 and 2012-F-0256-1).

September 21, 2015: The Service received a memo from Reclamation requesting informal and formal consultation under the Act on WWD and Delta Division 3-way IRCs. The transmittal includes a Biological Assessment as an attachment.

September 24, 2015: The Service received via email from Reclamation, a press release announcing the availability of the DEA and draft Finding of No Significant Impact for WWD and Delta Division 3-way IRCs.

November 9, 2015: The Service received a memo from Reclamation requesting that a draft copy of this formal consultation be provided for review prior to finalization.

December 7, 2015: The Service received via email land cover change maps for the WWD, Santa Clara Valley WD, and Pajaro Valley WMA comparing year 2006 with 2011data from the National Land Cover Database of the U.S. Geological Survey (see http://www.mrlc.gov/index.php).

Relationship of the Proposed Action to Other Reclamation Actions

Coordinated Long-Term Operation of the CVP and State Water Project
The effects of water exports from the Delta on protected species are addressed separately by NMFS and Service in consultations on continued long-term operation of the CVP and State Water Project (SWP) referred to as OCAP. Biological Opinions on OCAP have been issued by NMFS (2009) and Service (December 15, 2008, Service File 08-F-1481-5) for the effects of the continued long-term operation of the CVP and SWP. However, since that time, the United States Court, Eastern District of California remanded the OCAP BiOps, and, Reclamation was ordered by the Court to comply with NEPA before accepting the Reasonable and Prudent Alternatives of the BiOps. Subsequently, the OCAP BiOp issued by the Service was upheld by another Court ruling (see: http://www.fws.gov/sfbaydelta/documents/APPELLATE-315077-v1-Delta_smelt_II_--_panel_decision.pdf). Reclamation recently signed a Record of Decision for OCAP supported by the Coordinated Long-term Operation of the Central Valley Project and State Water Project Final Environmental Impact Statement. The Preferred Alternative identified in the OCAP Final EIS and the Reclamation's decision included in the ROD is to implement the No Action Alternative. The No Action Alternative contains all of the Reasonable and Prudent Alternative actions in the 2008 U.S. Fish and Wildlife Service and 2009 National Marine Fisheries Service Biological Opinions.
The ROD and Final EIS for OCAP are available at
http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=21883

Santa Clara Valley Water District Pipeline Maintenance Program
The San Felipe Water Delivery System was designed and built by Reclamation to deliver water from the San Luis Reservoir to portions of San Benito County and the Santa Clara Valley via the Coyote Pumping Plant. The system is maintained by the SCVWD. Facilities in the San Felipe System include

the Santa Clara Conduit and Tunnel, the Pacheco Conduit and Tunnel, Pacheco Pump Plant, Coyote Pump Plant, the Bifurcation Station, the Hollister Conduit and San Justo Reservoir. Age, wear, corrosion, leaks and loss of integrity due to seismic activity and other geologic processes all contribute to the degradation of the pipelines as time progresses. Preventative and corrective maintenance must be performed to uphold the integrity of the system and to ensure water delivery.

In August of 2007, the Bureau of Reclamation requested initiation of formal consultation for the Pacheco and Santa Clara Conduits/Tunnels Pipeline Maintenance Program (PMP) on the California red-legged frog and its critical habitat, the California tiger salamander and its critical habitat and the least Bell's vireo. Reclamation requested concurrence with the determination that the proposed action may affect, but is not likely to adversely affect the San Joaquin kit fox. In August 2007 Reclamation sent a BA but subsequently made some minor revisions. A revised BA was sent in March of 2008.

Reclamation has consulted with the Service on SCVWD PMP activities that affect federally-listed species (Service File Nos: 2008-1-0346, 2009-F-0245 and 2010-F-1010). Since those consultations, SCVWD has conducted additional work on a limited area along the Santa Clara Conduit in the fall of 2011, within San Benito County. Reclamation made a determination of no effect on federally-listed species and critical habitat for that action. In 2013, at a location near the 2011 site, another road repair and culvert replacement project was undertaken. Reclamation and SCVWD avoided effects on federally-listed species and critical habitat with the use of avoidance measures and no consultation was needed.

The SCVWD intends to implement the PMP activities on 21 additional pipelines that are owned and maintained by the District. The SCVWD has prepared an Environmental Impact Report for the District PMP, covering all pipelines. However, Reclamation is only involved in work associated with the Pacheco and Santa Clara Conduits and Tunnels, and will consult on PMP activities that involve those features as appropriate.

Background and Related Consultations

This biological opinion is a reinitiation of the Service's *February 29, 2000* Biological Opinion on IRCs (Service File 00-F-0056), and our consultations of *February 27, 2002* (Service File 02-F-0070), *February 27, 2004* (Service File 04-F-0360), *February 28, 2006* (Service File 06-F-0070), *December 15, 2008* (Service File 08-F-0538-1), *December 22, 2009* (Service File 08-I-0538-2), *February 26, 2010* (Service File 08-F-0538-3), *February 29, 2012* (Service File 2012-F-0256-1) and *February 28, 2014* (Service File 14-F-0035).

In 2004, Reclamation requested initiation of formal consultation under the Act for San Luis Unit (SLU) long term contract renewals, including the WWD IRCs. Consultation on SLU long term contract renewals was suspended to allow completion of the consultation for OCAP. In accordance with and as required by Section 3404(c) of the Central Valley Improvement Act (CVPIA) of 1992 (Public Law 102-575), IRCs are undertaken to provide a bridge between the expiration of the original long-term water service contracts and long-term renewal of those contracts. In 2007, Reclamation executed IRCs for the SLU. The Service issued a Biological Opinion on December 18, 2007 for five SLU IRCs (WWD, California Department of Fish and Game, and the Cities of Avenal, Coalinga, and Huron) (Service File No. 2008-F-0538).

This consultation addresses the effects of the proposed renewal of six IRCs in the SLU and Delta Division of the CVP, which are being established in accordance with Section 3401(c) of the CVPIA

for a maximum period of 2 years. The water delivered for these IRCs will be used for agricultural, municipal, and industrial purposes, and will not exceed water allocations determined by existing CVP operations criteria established in applicable Biological Opinions from the Service and the National Marine Fisheries Service for the effects of the continued long-term operation of the CVP and State Water Project (OCAP). Interim CVP water contract renewals are consistent with the tiered implementation of the CVPIA, as described in the CVPIA BiOp (Service File 98-F-0124).

Interim renewal contract deliveries have several components of potential effects on listed species (e.g., effects from agricultural drainage management and disposal, and changes to land use and cropping patterns, etc.).The effects of agricultural drainage management have been addressed in other consultations, described in more detail below.

In 2006 Reclamation completed an Environmental Impact Statement (EIS) and Record of Decision (ROD) under the National Environmental Policy Act (NEPA), and the Service completed a Biological Opinion (Service File No. 2006-F-0027) and a Fish and Wildlife Coordination Act Report in accordance with the provisions of section 2(b) of the Fish and Wildlife Coordination Act (48 stat. 401, as amended; 16 U.S.C. 661, et seq.) on San Luis Drainage Feature Re-evaluation (SLDFR). The purpose of the SLDFR project was to meet Reclamation's obligations under the Federal San Luis Unit Act of June 3, 1960, Public Law 86-488, 74 Stat. 156, Section 5, to provide drainage service to drainage-impacted lands within the San Luis Unit (including drainage impacted lands within WWD). Once fully implemented, Reclamation anticipated in the SLDFR EIS and ROD that the drainage discharge from the SLU would be reduced to sufficient standards to meet the statutory and judicial requirements imposed. Congress has not yet acted to authorize and make appropriations to implement the SLDFR ROD fully, although Reclamation has the authority and funding to complete some of the actions described in the EIS.

On December 18, 2009, the Service issued a Biological Opinion to Reclamation on the continued agricultural drainage management and disposal called the Grassland Bypass Project (GBP), involving seven agricultural water districts downslope of WWD (Service File No. 2009- F-1036). The Service concluded that the GBP is likely to adversely affect, but is not likely to jeopardize the continued existence of the giant garter snake and the San Joaquin kit fox, and not likely to adversely affect the Delta smelt (including Critical Habitat). The 2009 Biological Opinion provided reasonable and prudent measures and terms and conditions to implement those measures.

On June 4, 2012, the Service completed informal consultation on the SLDFR Demonstration Treatment Facility (Demo-Plant) at Panoche Drainage District, within the geographical boundaries of the existing Grassland Bypass Project's Drainage Reuse Area (Service File No. 2011-F-0855). The purpose of the Demo-Plant was to operate for up to 18 months testing the efficacy and operation of reverse osmosis treatment and selenium biotreatment technologies for agricultural drainage disposal. Construction of this facility was completed in 2014 and the Demo-Plant began test operations ("whole system testing") during the summer of 2014. Testing was suspended, however, when certain tanks associated with the bioreactor part of the Demo-Plant (that part which removes selenium) buckled as a result of scaling. This scaling involved the deposition of calcium in piping and carbon media used to remove selenium, much like the build-up of calcium deposits from hard water in a home plumbing system. Reclamation is working with its construction contractor and designers to determine appropriate measures to prevent future scaling in the tanks and to re-start the

Demo-Plant as soon as possible[2]. Reclamation expects the Demo-Plant to be placed in service in early 2016 (Pers. comm. M.C.S. Eacock, 2015), at which point a contractor is expected to operate the plant for a period of up to two years to obtain design data and to document the optimal performance metrics of the plant. Subsequently, Reclamation may elect to continue operating the Demo-Plant indefinitely or delegate it to their designated operating partner for treating reuse drainage. Disposition and operation of the facility after the 18-month time period is unknown at this time.

On June 7, 2014, the Service completed informal consultation on the authorization to install, operate, and maintain pipelines rerouting drainage from the six drainage sumps that discharge into the Delta Mendota Canal (DMC), to the GBP's San Joaquin River Improvement Project's (SJRIP) drainage reuse area (Service File No. 2014-I-0435). Construction for the rerouting of the drainage sumps was completed in 2015 (USBR 2015). Drainage from the sumps is now released into ditches within the SJRIP where it is re-circulated and reused in the same manner as existing drainage managed for the GBP. This project should re-route approximately 1,200 acre-feet (AF) of poor quality subsurface agricultural drainage water that previously discharged into the DMC, and prevent approximately 800 pounds of selenium and 8,300 tons of salts from entering the DMC annually.

On September 15, 2015 the U.S. Department of Justice and WWD signed a settlement agreement (Settlement) that would relieve the United States of significant financial obligations and legal liability regarding agricultural drainage service in WWD. Implementation of the Settlement is contingent upon congressional authorization of enabling legislation. Under the Proposed Terms of the Settlement[3], Westlands will:

- Permanently retire not less than 100,000 acres of land from production. Westlands will agree to permanently retire a total of not less than 100,000 acres of lands within its boundaries utilizing those lands only for the following purposes: 1) Management of drain water, including irrigation of reuse areas; 2) Renewable energy projects; 3) Upland habitat restoration projects; or 4) Other uses subject to the consent of the United States.
- Cap contract deliveries at 75 percent of its full CVP contact amount (from 1.193 million acre-feet to 895 thousand acre-feet).
- Assume all responsibility for drainage management and disposal in accordance with all legal requirements under State and Federal law. Westlands WD would become legally responsible for the management of drainage water within its boundaries, in accordance with Federal and State law.
- Indemnify the United States for any damages and pay compensation for claims arising out of existing drainage litigation.
- Continue to wheel water to Lemoore Naval Air Station.
- Be relieved from potential drainage repayment.

For the purposes of this consultation on these IRCs, we assume that any drainage service implemented in the SLU will be consistent with the project description and assumptions in the San Luis Drainage Feature Re-evaluation (SLDFR) BiOp (Service File 06-F-0027). Any drainage

[2] Excerpted from Federal Defendants' Status Report of April 1, 2015 for Case 1:88-cv-00634-LJO-DLB, FIREBAUGH CANAL WATER DISTRICT and CENTRAL CALIFORNIA IRRIGATION DISTRICT (Plaintiffs) vs. UNITED STATES OF AMERICA, *et al.*, (Defendants), and WESTLANDS WATER DISTRICT *et al.*, (Defendants-in-Intervention).

[3] Adapted from http://www.usbr.gov/mp/docs/Westlands-v-United-States-Settlement.pdf

management implemented in a manner not considered in the SLDFR BiOp will need to undergo separate section 7 or section 10 consultation pursuant to the Act.

BIOLOGICAL OPINION

Description of the Proposed Action

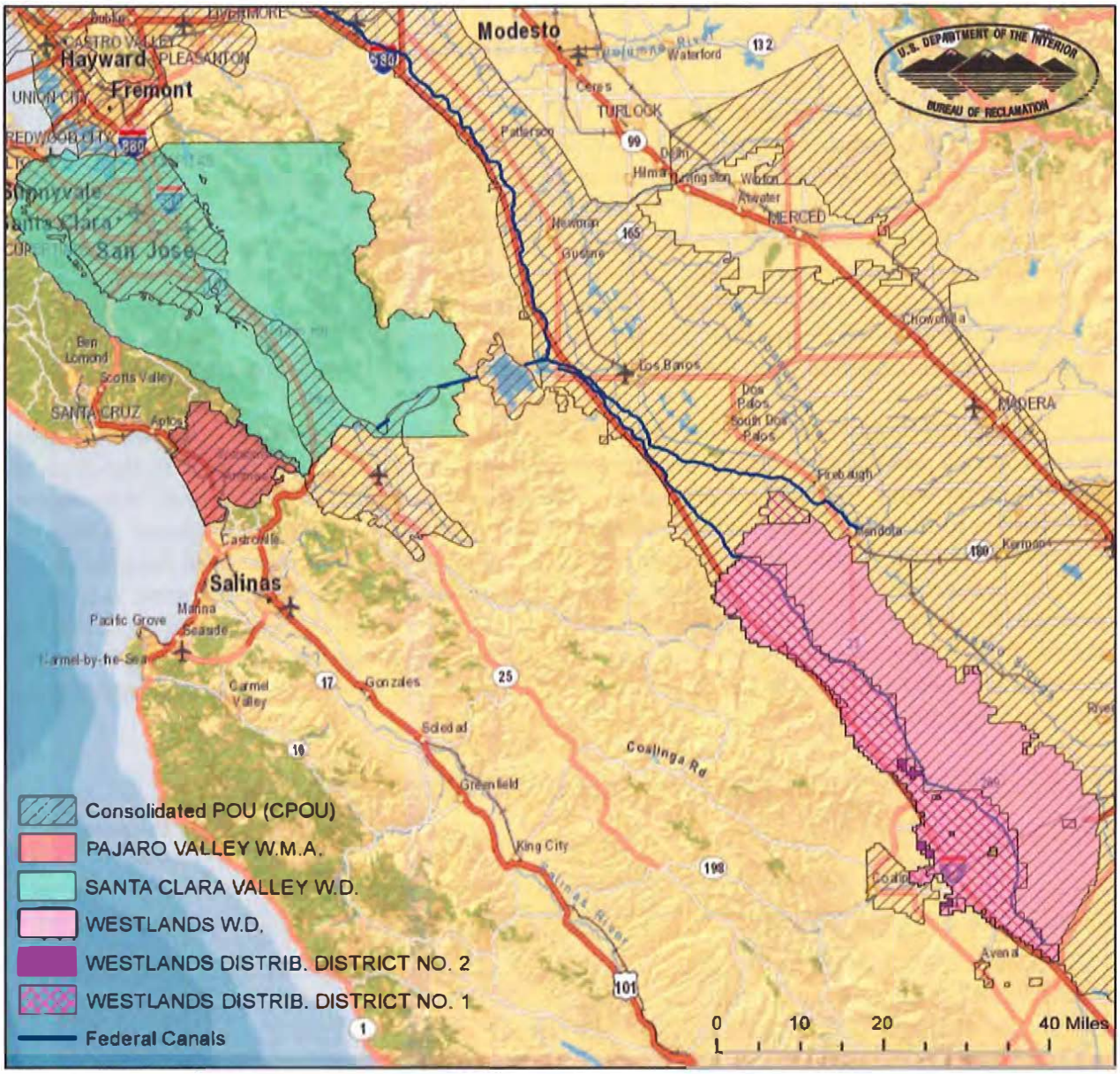
The purpose of the proposed action is to execute one Delta Division and five SLU IRCs, between Reclamation and the contractors listed in Table 1 below, for a two-year period from March 1, 2016 through February 28, 2018, as required by, and to further implement CVPIA Section 3404(c). Execution of these six IRCs will provide the contractual relationship for the continued delivery of CVP water to the contractors pending execution of the long-term renewal contracts. Westlands WD's main contract (14-06-200-495A-IR3) is currently on its fourth interim renewal contract. The Proposed Action would be the fifth. The remaining IRCs listed in Table 1 are currently on their fourteenth interim renewal contract. The Proposed Action would be their fifteenth.

The Proposed Action would continue these existing IRCs, with only minor administrative changes to the contract provisions to update the previous IRCs for the new contract period. In the event that new long-term water contracts are executed involving these contracts, the IRCs would then expire. No changes to the contractors' service areas or water deliveries are part of the Proposed Action. Central Valley Project water deliveries under the IRCs can only be used within each designated contract service area (Figure 1). The proposed IRC quantities (Table 1) remain the same as in the existing IRCs. Water can be delivered under the IRCs in quantities up to the contract total, although it is likely that deliveries will be less than the contract total. The terms and conditions of the Delta Division and five SLU IRCs analyzed within the DEA for this action are incorporated by reference into the Proposed Action.

Table 1. Interim Contracts, Contract Entitlements and Purpose of Use

Contractor	Contract number	Contract Entitlement (AF)	Purpose of Use
Delta Division			
PVMWA, WWD DD#1, SCVWD (3-way assignment from MSWD)	14-06-200-3365A-IR14-B	6,260	Ag or M&I
San Luis Unit			
WWD	14-06-200-495A-IR4	1,150,000	Ag or M&I
WWD DD #1 (full assignment from Broadview Water District)	14-06-200-8092-IR14	27,000	Ag or M&I
WWD DD#1 (full assignment from Centinella Water District)	7-07-20-W0055-IR14-B	2,500	Ag or M&I
WWD DD #1 (full assignment from Widren Water District)	14-06-200-8018-IR14-B	2,990	Ag or M&I
WWD DD #2 (partial assignment from MSWD)	14-06-200-3365A-IR14-C	4,198	Ag or M&I

Figure 1. Overview of Proposed Action Area



Conservation Measures

For the purposes of this consultation, and as outlined in the BA for this action, the conservation measures from the CVPIA BiOp apply to the WWD and Delta Division 3-way IRCs for the period of March 1, 2016 through February 28, 2018, or until long-term contracts are executed, whichever comes first. These measures are summarized in Appendix B.

In addition, the DEA for WWD and Delta Division 3-way IRCs includes the following environmental protection measures (from page 13):

1. CVP water will only be applied within areas that are inside the CVP Place of Use Boundary[4].

[4] As defined by the California State Water Resources Control Board's in *Revised Water Right Decision 1641* (available on the internet at: http://www.swrcb.ca.gov/waterrights/board_decisions/adopted_orders/decisions/d1600_d1649/wrd1641_1999dec29.pdf).

2. No CVP water will be applied to native lands or lands untilled for three consecutive years or more without additional environmental analysis and approval.
3. No new construction or modification of existing facilities will take place as part of this action.

Westlands Water District
Westlands WD's permanent distribution system consists of 1,034 miles of closed, buried pipeline that conveys CVP water from the San Luis and Coalinga Canals and 7.4 miles of unlined canal that conveys CVP water from the Mendota Pool. The area served by the system encompasses about 88 percent of the irrigable land in the district, including all land lying east of the San Luis Canal. The district also operates and maintains the 12-mile long, concrete-lined Coalinga Canal, the Pleasant Valley Pumping Plant, and the laterals that supply CVP water to Coalinga and Huron. Westlands WD provides water via gravity water service and pumping from the San Luis Canal depending on location.

On June 5, 1963, WWD entered into a long-term contract (Contract 14-06-200-495-A) with Reclamation for 1,008,000 acre-feet of CVP supply from the San Luis Canal, Coalinga Canal, and Mendota Pool. In a stipulated agreement dated September 14, 1981, the contractual entitlement to CVP water was increased to 1.15 million acre-feet. The long-term contract expired on December 31, 2007. The first deliveries of CVP water from the San Luis Canal to WWD began in 1968.

In addition to the CVP supply, groundwater is available to some of the lands within WWD. The safe yield of the aquifer underlying the District is about 200,000 acre-feet (WWD 2009). Westlands WD supplies groundwater to some district farmers and owns some groundwater wells, with the remaining wells privately owned by water users in the district. Other water supply sources available to the district for purchase include floodwater diverted from the Mendota Pool in periods of high runoff and water transfers from other districts.

Santa Clara Valley Water District
The SCVWD includes all of Santa Clara County The CVP place of use, however, does not include the entire county. Although CVP water is commingled with other sources of water, CVP water can only be applied in the CVP place of use within the SCVWD (see Figure 1).

Included in the 2002, 2004, 2006, 2008, 2010, 2012 and 2014 IRCs, this interim renewal is the delivery of water from the partial assignment of MSWD to WWD Distribution District #1 (DD#1), and SCVWD. In 1999, MSWD assigned 6,260 acre-feet of its CVP Contract to the PVWMA, WWD DD #1, and the SCVWD (Contract 14-06-200-3365A-IR13-B). In conjunction with this Partial Contract Assignment, PVWMA, SCVWD and WWD DD #1 executed the "Agreement Relating to Partial Assignment of Water Service Contract" (Related Agreement) In general, the Related Agreement allows SCVWD and WWD DD#1 to take delivery of the water on an interim basis unless and until PVWMA is ready to take delivery of this CVP water. For the purposes of this consultation and as provided in the BA, PVWMA is assumed to not take this water until after 2019. The proposed action does not include an analysis of the construction of a conveyance structure or effects of the delivery of CVP water to PVWMA service area. Pajaro VWMA currently has no

infrastructure to divert and convey CVP water to its service area, and will not have that capability at any time during this 2-year IRC period.

The County of Santa Clara; Valley Transportation Authority, SCVWD, and the cities of San Jose, Morgan Hill, and Gilroy (Local Partners) are implementing the Santa Clara Valley Habitat Conservation Plan/Natural Community Conservation Plan (SCVHP) (http://scv-habitatagency.org/178/Final-Habitat-Plan). The SCVHCP is a 50-year Plan that allows for the permitting by a new local agency created under a Joint Powers Agreement (JPA) by Santa Clara County and the cities of San Jose, Morgan Hill, Gilroy, and Santa Clara County[5]. A second Administrative Draft was completed in June 2009, and a public review draft was released in late 2010. The Local Partners obtained both ESA and NCCP permits in 2013. On April 10, 2013, the Service completed an Intra-Service Biological Opinion and Conference Opinion on the issuance of a Section 10(a)(1)(B) Incidental Take Permit to the Local Partners for the Santa Clara Valley Habitat Conservation Plan/Natural Community Conservation Plan (Service File No. 2009-F-0077). The SCVHCP provides incidental take coverage for 9 wildlife species and 9 plant species.

Action Area

The action area is defined in 50 CFR § 402.02, as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action. The action area for this Proposed Action falls mainly within portions of western Fresno and Kings Counties and a portion of Santa Clara County (see Figure 1).

The action area primarily consists of lands within the boundary of the CVP's SLU and San Felipe Division. The action area also includes the canals and waterways that convey agricultural runoff and subsurface drainage flows from agricultural lands within and down slope of the SLU (including those in the Grasslands marshes) back to the San Joaquin River.

Specifically, the action area also includes the CVP Service Areas of the WWD and SCVWD. The WWD boundary covers 605,422 acres of which 595,884 acres are within the CVP Place of Use Boundary (permitted to receive CVP water). In 2006, WWD purchased 9,100 acres of lands previously owned by Broadview WD and these lands are now considered part of WWD DD#1. SCVWD, which is within the San Felipe Division of the CVP, encompasses the entire Santa Clara County; however, the permitted place of use for the CVP water is considerably smaller. Maps of the CVP Contract Service Area boundaries are included in the DEA for this action and are hereby incorporated by reference.

Key Assumptions

Because of the complex history as well as the complex present environmental and regulatory context of IRCs, and because this action is related to a number of other Reclamation actions, the Service has had to make a number of assumptions about likely future events and context of the interim renewal action. While not exhaustive, the following list of key assumptions has been central to our effects analysis. As such, the failing of any key assumption should be considered reason for reinitiating consultation on these IRCs. The Service assumes the following:

[5] The Santa Clara Valley Water District and Santa Clara Valley Transportation Authority are considered Permittees under the Plan.

1. Reclamation will continue to adhere to the conservation measures from previous IRC consultations, specifically to ensure that project water is not used in a manner that adversely affects listed, proposed or candidate species. The Service considers the scope of this conservation measure to include the assurance that project water will not be used in whole or in part to facilitate the conversion of existing natural habitat to agricultural or other purposes. This determination is essential to add support to the conclusions made regarding the overall effects of the proposed action.
2. Reclamation will continue to implement in a timely manner relevant environmental commitments, conservation measures, and terms and conditions from other biological opinions as appropriate. These commitments include implementation of the CVPIA and Continued Operations and Maintenance of the CVP (November 21, 2000, Service File No., 98-F-0124), and the Grassland Bypass Project 2010-2019 (Service File No., 09-F-1036). Other CVP-related, non-CVPIA actions benefiting fish, wildlife, and associated habitats and related to effects of IRCs will continue, with at least current funding levels, including:
    a. the Central Valley Habitat Monitoring Program's Comprehensive Mapping Effort;
    b. implementation of the Central Valley Habitat Monitoring Program's Land Use Monitoring and Reporting; and,
    c. CVP Conservation Program and CVPIA B(1)(other) Habitat Restoration Program.

3. The analysis for this opinion is based on the assumption that CVP water contract amounts and deliveries will remain consistent with those provided and analyzed in the Final PEIS for CVPIA and the 2008 OCAP biological opinion.

Analytical Framework for the Jeopardy Analysis

In accordance with policy and regulation, the jeopardy analyses in this biological opinion relies on four components: (1) the *Status of the Species*, which evaluates the giant garter snake and California least tern range-wide condition, the factors responsible for that condition, and its survival and recovery needs; (2) the *Environmental Baseline*, which evaluates the condition of the giant garter snake and California least tern in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the giant garter snake and California least tern; (3) the Effects of the Action, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the giant garter snake and California least tern; and (4) *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on the giant garter snake and California least tern.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the giant garter snake and California least tern current status, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the species in the wild.

The jeopardy analysis in this biological opinion places an emphasis on consideration of the range-wide survival and recovery needs of the giant garter snake and California least tern and the role of the action area in the survival and recovery of giant garter snake and California least tern as the context for evaluating the significance of the effects on the proposed Federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

Status of the Species

California Least Tern
For the most recent comprehensive assessment of the species' range-wide status, please refer to the California Least Tern (*Sterna antillarum browni*) 5-Year Review: Summary and Evaluation (USFWS 2006a). This 5-year review resulted in a recommendation that the species' listing status be down-listed to Threatened as a result of recovery efforts that had ameliorated, but not removed, threats to the population; intensive, site-specific management is still required to reduce threats of habitat loss and predation that would reverse the population recovery that has been seen since the species was listed. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2006 5-year review was finalized. In 2009 the Service published a Spotlight Species Action Plan for the California least tern (USFWS 2009), which included the statement that nesting has occurred sporadically but increasingly at inland sites in the Bay-Delta and Central Valley. While there have been continued losses of California least tern habitat throughout its range, including the action area for the proposed project, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species.

Giant Garter Snake
For the most recent comprehensive assessment of the species' range-wide status, please refer to the Giant Garter Snake (*Thamnophis gigas*) 5-Year Review: Summary and Evaluation (USFWS 2012). No change in the species' listing status was recommended in this 5-year review. Threats evaluated during that review and discussed in the final document have continued to act on the species since the 2012 5-year review was finalized, with loss and fragmentation of habitat from both urban and agricultural development, as well as the potential loss of habitat associated with changes in rice production, being the most significant threats. While there have been continued losses of giant garter snake habitat throughout the various recovery units, including the Tulare Basin and San Joaquin Basin Units, where the proposed project is located, to date no project has proposed a level of effects for which the Service has issued a biological opinion of jeopardy for the species. The Service published a draft recovery plan for this species in January 2016.

Environmental Baseline

As defined at 50 CFR 402.2, the environmental baseline includes 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.

The environmental baseline for a portion of the action area considered in this consultation, the surface waters in the Grasslands marshes and San Joaquin River, was updated in the Grassland Bypass Project Biological Opinion for 2010 - 2019 (GBP BiOp) (Service File 09-F-1036), and is incorporated here by reference. Further, the environmental baseline for the giant garter snake was updated in the GBP BiOp, and as the action area for this IRC consultation is consistent with the action area for the GBP BiOp, these species' baselines are incorporated here by reference as well.

The baseline condition for IRCs assumes that any drainage service provided to the SLU be consistent with the project description and assumptions in the San Luis Drainage Feature Re-evaluation (SLDFR) BiOp (Service File 06-F-0027). Any drainage management implemented in a manner not considered in the SLDFR BiOp will need to undergo separate section 7 or section 10 consultation pursuant to the Act.

Land use patterns within the San Luis Unit

In the BA for Long Term Contract Renewal for the SLU (SLU BA; USBR 2004a), Reclamation estimated that about 14 percent of the Unit's land area remained undeveloped. Approximately 71 percent of undeveloped lands were in the hills surrounding the Pleasant Valley near the City of Coalinga and the Kettleman Hills near the City of Avenal. The remaining 29 percent was in the northern portion of the SLU near Santa Nella and various small parcels throughout the Unit. Approximately 75 to 81 percent of the SLU was estimated to be irrigated farmland, 2.5 percent to be in oil production, and 1.5 percent to be in urban areas, farmsteads, and transportation and conveyance facilities (CDWR 2004, USBR 2004a).

The SLU BA estimated that in 2004, about one half of the Unit's irrigated farmland was used for the production of cotton (35 percent) and tomatoes (16 percent). About 11 percent was used for orchards and vineyards, half of which is used for the production of almonds. The remaining farmland was used for a variety of crops, such as alfalfa, asparagus, wheat, melons, corn, grain, and various pasture crops (CDWR 2004; USBR 2004a).

Since the 2004 SLU BA, there has been a trend toward an increasing proportion of WWD planted in permanent crops (orchards and vineyards) (Phillips 2006; WWD 2005-2015 crop reports), particularly on the western, non-drainage impaired portion of the district (Phillips 2006). Phillips (2006) estimated that acreage of permanent crops in the Fresno County portion of the SLU has increased nearly eightfold between 1977 and 2000 and nearly fourfold between 1994 and 2000. Most of these permanent crops were planted in the western third of WWD. Annual crop reports from WWD from 2005 – 2015 indicate that permanent crop acreage has nearly doubled since 2005 (from 88,833 acres of trees and vines in 2005 to 176,490 acres in 2015)[6].

In 2007 Cypher *et al.* estimated that there were approximately 5,559 acres of suitable habitat and 20,543 acres of moderately suitable sub-optimal habitat currently available for San Joaquin kit fox in the SLDFR study area. Most of the suitable and most of the sub-optimal San Joaquin kit fox habitats identified in 2007 remained between the western boundary of WWD and Interstate 5. Although orchards may provide slightly better permeability for foraging to kit foxes than row crops (Warrick et al. 2007), management of orchards to reduce rodent damage (e.g., use of anticoagulant baits) could make orchards harmful to kit fox.

According to the WWD annual crop reports, the acreage of fallowed lands has increased in the last four years due to the drought, going from 90,781 acres fallowed in 2012, to 212,846 acres fallowed in 2015[7]. Fallowed lands may provide habitat for the San Joaquin kit fox, particularly if left fallow for more than one year and located near natural lands, but discing of fallowed land and resumed agricultural activities can destroy dens and reduce prey and force kit foxes into unfamiliar areas (Cypher 2006).

Municipal and industrial activities in each of the communities that utilize the contract water have resulted in destruction, modification, or degradation of upland species habitat (SWRCB 1999). Many, but not all of these activities took place prior to implementation of the Act in 1973 and prior

[6] Available at: www.westlandswater.org

[7] Ibid.

to the listing of the species considered in this consultation, and were not subject to the provisions of the Act. In the SLU BA, Reclamation identified approximately 34,860 acres of urban or industrial land uses including transportation corridors, industrial areas, farmsteads and urban/residential areas in the SLU. The largest block of this total (25,290 acres) is the industrial transportation category, which includes the I-5 corridor and other roadways and individual farmsteads.

California Least Tern

The environmental baseline for California least tern in the San Luis Drainage Feature Re-evaluation Biological Opinion (SLDFR BiOp; Service File 06-F-0027) is incorporated by reference. In addition, it has been determined by the Service that there is suitable habitat for California least terns in the action area. As denoted in the spotlight species action plan for the California Least Tern 2010-2014 (USFWS 2009), "(n)esting has also occurred sporadically but increasingly at inland sites in the Bay-Delta and Central Valley." Numerous sitings of California least terns have been documented in the southern San Joaquin Valley in Kings County near WWD. The first record for the Tulare Basin, a single adult, was observed in 1995 at Tulare Lake Drainage District's North Evaporation Basin northwest of Corcoran. The first Central Valley breeding record was from Kings County near Kettleman City. A second breeding site was recorded in Kings County in 1999, a third at Tulare Lake Drainage District's (TLDD) Hacienda Evaporation Basin in 2003 and 2004, and breeding has continued in the county with one pair at Westlake Farms South evaporation pond near Kettleman City fledging a single chick in 2009 and a pair of chicks in 2010 (Conard, 2009; Marschalek, 2011). The evaporation ponds where least terns have nested are proximate to big surface water canals (the Blakely canal and the Cohn Levee for Westlake Farms South and the Homeland and Liberty Farms Canals and South Wilbur flood area for TLDD's Hacienda ponds) (Pers. comm. J. Seay, HT Harvey and Associates, February 25, 2014). Although no least tern nesting has been documented within WWD, the Service believes that the California least tern is reasonably certain to occur within the action area because of records of the animal within dispersal distance of the action area and the biology and ecology of the species.

As described in the BA for this action and information provided by the Central Valley Regional Water Quality Control Board (CVRWQCB; Pers. comm. A. Toto, 2010) there are at least two evaporation basins in the vicinity of WWD that receive at least some agricultural drainage water originating from WWD: Stone Land Company (~210 acres) and Westlake Farms North(~260 acres). Avian monitoring reports submitted to the Central Valley Regional Water Board for the Stone Land Company (years 2003-3 and 2004-5; Palmer 2004, 2005) and Westlake Farms North (years 2011-12; HT Harvey and Associates 2012, 2013) evaporation ponds, documented no sitings of least terns. There is a third site at Lemoore Naval Air Station that disposes of at least some drainage water originating from WWD with sewage water in an evaporation basin (~90 acres). California least terns have been documented at the evaporation basins at Lemoore Naval Air Station, but are believed to be feeding elsewhere as the ponds are too saline to support fish (Pers. comm. J. Seay, HT Harvey and Associates, February 25, 2014). Further, selenium concentrations at the Lemoore evaporation ponds have been consistently below 2 µg/L, and as a result, the Regional Water Board revised Lemoore's Monitoring and Reporting Program associated with Waste Discharge Requirements Order R5-2002-0062 to revise avian monitoring requirements to dead bird monitoring only (W.W. Gross, CVRWQCB, *in litt.* 2012).

The San Luis Drain is approximately 85 miles long. Of that, 28 miles are used by the GBP to convey drainage to a six-mile stretch of Mud Slough (North) before the slough reaches the San Joaquin River at a location 3 miles upstream of the river's confluence with the Merced River. Approximately 55 miles of the SLD is within WWD and is no longer actively used to convey drainage water. However, sections of this unused portion of the SLD contain standing water. The

source of this water is shallow contaminated groundwater, which enters the SLD by means of one-way valves that were installed to prevent groundwater pressure from compromising the integrity of the SLD. The USGS (Presser and Luoma, 2006, Appendix E) quantified the amount of sediment in the full 85 miles of the SLD as 177,900 cubic yards ranging from 5 to 190 ppm selenium on a dry weight basis, with selenium concentrations in water from the SLD in WWD ranging from 330-430 ppb (from Presser and Barnes 1985). It is unknown what wildlife use the SLD, or if the SLD is used by federally-listed species such as the California least tern. However, the Service believes that the tern is reasonably likely to use wetted portions of the SLD because 1) they are known to forage in canals and may nest on levees or other open areas within the SLD Right of Way, 2) there are records of breeding in Kings County, and 3) portions of the SLD have mosquitofish (see GBP BiOp). The potential is very high for selenium to bioaccumulate in the food chain organisms residing in or foraging from the SLD.

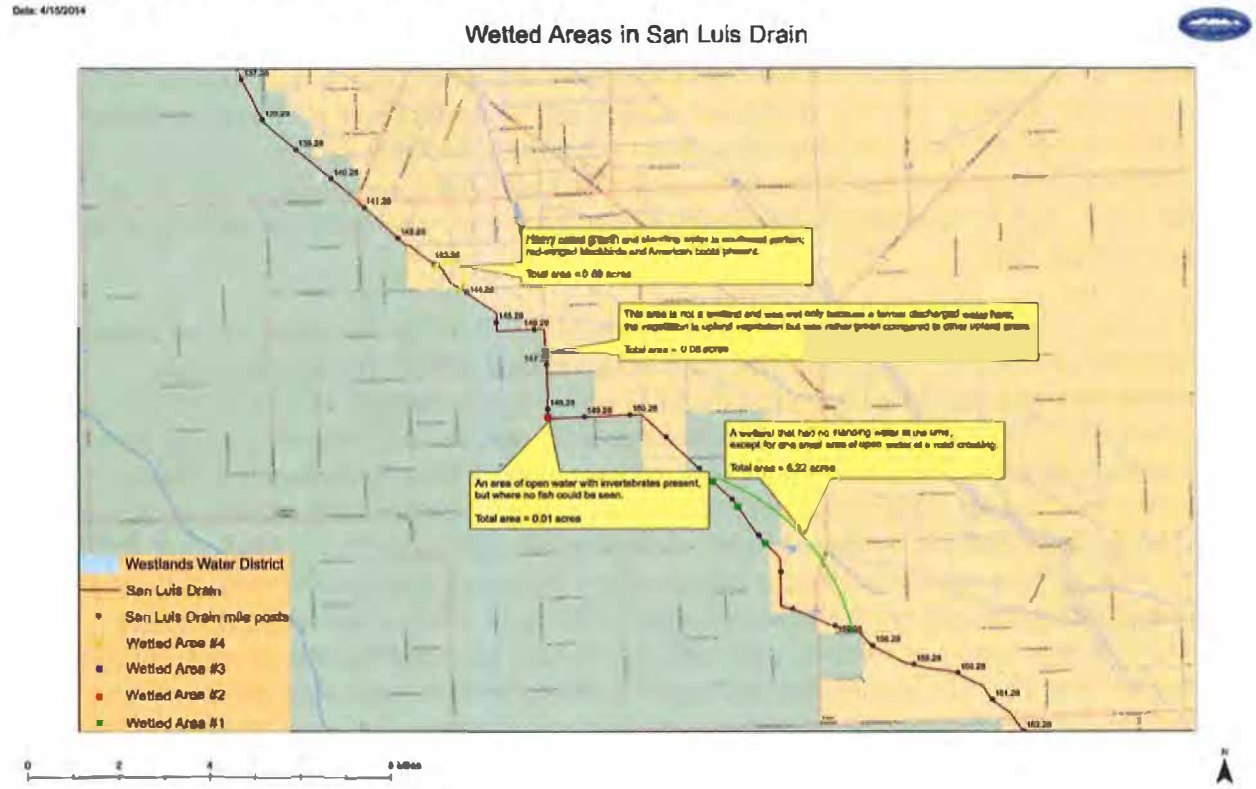
As part of the previous IRC BiOp for WWD (Service File 14-F-0035), Reclamation was required to map wetted areas along the SLD where it runs through or near WWD. In mid-April 2014, Reclamation surveyed the entire stretch of the SLD where it runs through or next to WWD. All wetted areas were documented and mapped (see Figure 2), and the information was sent to the Service in a memo dated December 18, 2014. Least tern experts from Reclamation's Denver Technical Service Center subsequently visited these wetted areas and determined that no nesting habitat was present, and that foraging habitat was limited at most to the SLD at that time. During the 2014 season, these areas only became drier and no new wetted areas were found. A trained Reclamation biologist surveyed all the wetted areas of the SLD every other week, alternating between a visit near sunset one week, and a visit near sunrise the next. Six surveys were conducted, beginning on May 28, 2014, and ending on August 6, 2014. No least terns were observed. Avian species observed were the western burrowing owl, killdeer, mourning dove, red-winged blackbird, mallard, American coot, great egret, and great blue heron. The red-winged blackbirds were associated with the stretch from milepost 143.28 to 144.28 of the SLD, which had a thick growth of cattails, and the coots, ducks, egrets, and herons were associated with a ditch full of open water that runs parallel to the stretch from milepost 143.28 to 144.28. The ditch conveys irrigation water and lies within the James Irrigation District, near the eastern boundary with WWD. If least terns were to use the survey area, this ditch would provide the most likely foraging habitat, due to the open water. Although no suitable foraging habitat was found in 2014 along the SLD, a wildlife biologist from Reclamation's Denver Technical Service Center did recommend that surveys for suitable least tern habitat be conducted, at the start of each breeding season (D. Moore, USBR, *in litt.*, 2014).
Due to the extraordinary continued drought conditions in 2015, surveys for least terns in WWD were cancelled (with the Service's approval). This was due to inspections of the SLD in June of 2015 by Reclamation that found no wetted areas larger than a small puddle. Nonetheless, in wetter years, California least terns may occur within the action area because of observation records of this species within dispersal distance of the action area and the biology and ecology of the species.

Giant Garter Snake

The environmental baseline for the giant garter snake in the GBP BiOp is incorporated here by reference. The GBP BiOp included an updated Status of the Species and Environmental Baseline on the threatened giant garter snake (*Thamnophis gigas*) in the Grasslands marshes and Mendota Pool vicinity. The Service found that the garter snake has been adversely affected by water management actions (i.e. water transfers/exchanges, and ground water pumping, which have contributed to changes in cropping patterns), limited availability of summer water habitat (e.g., level 4 refuge water supplies) and by degradation of water quality in the San Joaquin Valley. The GBP BiOp indicated that under current conditions in the Grasslands marshes water supply channels, *"dietary selenium concentrations in the South Grasslands still pose a risk to growth, reproduction and survival of giant garter snakes.*

Further, contamination in the food chain in the North Grasslands, specifically Mud Slough (North) could preclude re-establishment of the snake in the vicinity of this waterway." The current baseline of the garter snake in the

Figure 2. Wetted Areas in San Luis Drain



Grasslands marshes and Mendota Pool vicinity was determined to be experiencing significantly declining numbers, and reduced reproduction and distribution through this portion of its range. Water quality in the Grassland marshes supply channels continues to be impacted by selenium. Since the onset of the second Use Agreement of the San Luis Drain (Use Agreement) for the GBP in September 2001, there have been consistent short-term pulses of selenium inputs into the Grasslands marshes water supply channels that have resulted in exceedences of the 2 µg/L monthly mean selenium objective (USBR *et al.*, GBP Monthly Monitoring Reports). Sources of ongoing selenium contamination in Grassland marshes include (1) unregulated and unmonitored discharges of agricultural subsurface drainwater from nearby farmland into local ditches and canals that feed into the Grassland marshes; (2) and large storm events that can overwhelm the GBP channel, requiring that uncontrollable storm runoff be diverted into wetland supply channels (Beckon *et al.* 2007; Paveglio and Kilbride 2007; Eppinger and Chilcott 2002). Typically, these exceedences of 2 µg/L are associated with heavy rainfall events, occur in the spring of each year (usually in March and/or April), but can also occur during periods of low flow in the wetland supply channels.

Recent, notable highly-elevated selenium concentrations in Grassland marshes supply channels were documented in the GBP monthly monitoring reports for Station K, Agatha Canal of 26.4 µg/L on August 10, 2009, and Station J, Camp 13 Ditch of 50 µg/L on April 16, 2012. In addition, data from the GBP show that from January 2008 through September 2013, selenium levels above 2 µg/L were documented in weekly water samples in the Grassland wetland supply channels 22 times in Camp13 Ditch (GBP Station J), 17 times in Agatha Canal (GBP Station K), and 43 times in the San Luis Canal (GBP Station L2) (USBR *et al.*, GBP Monthly Monitoring Reports). The State Water

Resources Control Board continues to list the Grassland Marshes as impaired on the 303(d) list for selenium[8].

The available body of scientific evidence supports a chronic criterion of 2 µg/L for the protection of sensitive taxa of fish and wildlife. In the absence of site-specific and species-specific data regarding the sensitivity of particular species and/or populations, a criterion of at most 2 µg/L is required to assure adequate protection of threatened and endangered species of fish and wildlife (USFWS and NMFS 2000).

Weekly surface water quality monitoring in the south Grasslands has been a feature of the Grassland Bypass Project monitoring program for almost 20 years. The weekly monitoring data has not only been important in documenting improvement of water quality in the wetland channels with the implementation of the GBP, but also in tracking compliance with the selenium Total Maximum Daily Load (TMDL) for the Grasslands Marshes (CVRWQCB 2000) and the 2 µg/L monthly mean selenium objective for the Grassland wetland supply channels. However, weekly water quality sampling of Stations L2 and M2 ceased being reported in the GBP monthly monitoring reports after September 2013. In addition, Stations J and K were not reported for selenium in 2014 and 2015 in the GBP monthly monitoring reports, when flows were less than 20 cubic feet per second (cfs) in those channels. The presumption in the monitoring reports is that if flows are below 20 cfs in Stations J and K, then there is no water being delivered to the Grassland Marshes. Whether or not water reaches the Grassland Marshes, the wetland channels at these monitoring sites could still provide habitat to the giant garter snake even if flows are below 20 cfs in those channels. Reclamation has decided to restart weekly water quality monitoring of sites J and K and will be working with the Irrigated Lands Coalition to ensure adequate monitoring of sites L2 and M2 (pers. comm. Chris Eacock, USBR, July 31, 2015). The last recorded observation of an individual garter snake in the south Grasslands was at Agatha Canal near Poso Drain (Hansen 2007).

Effects of the Action

Effects Overview

This section includes a general overview of the effects to listed species or their habitats that are related to the use of the CVP water supply in the service areas under the proposed 24-month IRCs. It is assumed that all conservation measures and environmental commitments described in the Project Description of this biological opinion will be implemented in the manner and schedule described previously in this document. We anticipate that effects will be similar in scope and significance as those analyzed in our recent evaluations of the previous IRCs (Service File Nos. 14-F-0035, 12-F-0256, 08-F-0538, 06-F-0070, 04-F-0360, 02-F-0070, and 00-F-0056), GBP (09-F-1036) and in the programmatic biological opinion on implementation of the CVPIA (Service File 98-F-0124). Impacts associated with Reclamation's implementation of drainage service for the SLU (including WWD) were considered in a biological opinion on SLDFR (Service File 06-F-0027).

Direct Effects

We address the effects of future implementation of IRCs, including the effects of interrelated and interdependent actions, as effects of the Federal action, not as part of the environmental baseline. There will be no direct effects to listed species associated with the proposed execution of the interim contracts considered in this biological opinion for the 24 month period beginning March 1, 2016,

[8] See http://www.waterboards.ca.gov/water_issues/programs/tmdl/2012state_ir_reports/01657.shtml#20472.

through February 28, 2018. The proposed Federal action will continue deliveries of water to WWD, as well as the Delta Division 3-way IRC allocated to SCVWD. No construction of new facilities, installation of new structures, or modification of existing facilities is required or planned. Delivery of Federal water from the six IRCs considered in this consultation, and from the contractors to the individual water users, will maintain the patterns of land use described above in the **Environmental Baseline**. Execution of the IRC's is the action that allows for the delivery of the Federal CVP water, and thus any effects anticipated would be indirect, rather than direct.

Indirect Effects
Indirect effects are effects caused by or result from the proposed action, will occur later in time, and are reasonably certain to occur, and would not occur "but for" the project. Indirect effects may also occur outside of the area directly affected by the action.

California Least Tern
Least terns are piscivorous, which places them at risk from waterborne contaminants that can enter the food web and bioaccumulate in their prey. Evaporation basins create artificial aquatic ecosystems, in which some semblance of an aquatic food web can develop in the selenium-contaminated drainwater. Depending on the salinity of the water, these large holding ponds may support a variety of aquatic micro- and macro-invertebrates, as well as some species of salinity-tolerant fish. As evaporation basins are generally not connected in any way to natural aquatic systems, any fish present in these ponds are either intentionally or accidentally introduced. Due to the highly bioaccumulative nature of selenium and the preternaturally high selenium concentrations found in evaporation basin water, any aquatic organisms living in these ponds are likely to develop high selenium body burdens. Similarly, any higher trophic level species that feeds on an evaporation basin's aquatic organisms is also likely to develop high body burdens, with the consequent risk for adverse effects of selenium toxicity.

The California least tern is one of three recognized geographic subspecies; the other two being from the Atlantic and Gulf coasts of the United States, and the West Indies (*S. a. antillarum*) or from the interior United States (*S. a. athalassos*) (Thompson *et al.* 1997). At the species level, least terns are known to be primarily piscivorous, but will also consume insects and aquatic crustaceans such as shrimp (Thompson *et al.* 1997).

Observations of nesting California least terns from around the Tulare Basin evaporation ponds suggests that these birds maintain their piscivorous behavior, even in the presence of abundant aquatic macro-invertebrates. California least terns were first noticed nesting around these evaporation ponds in 1998, with one known pair setting up a nest and producing a clutch of eggs (Pers. comm. J. Seay, HT Harvey and Associates, 2006). Since that time, least terns have continued to nest around these ponds in subsequent years, with the highest number of known nest pairs (3) occurring in 1999. The foraging behavior of these nesting terns has been observed each year, and the only food items ever seen were fish captured from open drainwater canals, nearby flood control reservoirs, and evaporation ponds. The types of fish captured and their origin in the drainage canals could not be readily determined, but at least one fish from the silversides family (Antheridae) was dropped by a foraging least tern and identified by a biologist, and *Gambusia* were known to have been established in canals by local mosquito abatement personnel (Pers. comm.. J. Seay, HT Harvey and Associates, 2006).

As described in the **Environmental Baseline**, there are three evaporation basins in the vicinity of WWD known to receive at least some drainage originating from WWD. Sections of the 55 miles of the SLD in WWD contain standing water originating from the adjacent shallow groundwater

aquifer. Information regarding water quality and food-chain contamination at these evaporation basins or from the SLD was not provided for this consultation. California least terns are known to prey on mosquitofish (Thompson *et al.* 1997), and sections of the SLD have mosquitofish (see GBP BiOp). Due to the highly bioaccumulative nature of selenium and other pollutants that may be present in the agricultural drainwater (*e.g.*, methylmercury), any least terns foraging from such a prey base are likely to be exposed to these contaminants. As denoted in the BA for this action, in the absence of data, it is presumed that selenium contamination is likely to occur in a small number of least terns foraging at drainage evaporation ponds or from the SLD receiving at least some drainage water from WWD. Affected individuals would experience impaired reproduction, including nest failure and production of deformed young. The numbers of terns using the action area for foraging and nesting is expected to be low; the Service anticipates that not more than one nest per year would occur within the action area and could be adversely affected by drainage contamination from the SLD during the two-year duration of these IRCs.

We anticipate biological effects similar to those observed at Kesterson Reservoir in the 1980s could occur to least terns if exposed to drainage water originating from WWD. Kesterson Reservoir was an evaporation basin that received agricultural drainage conveyed through the SLD from WWD in the early to mid-1980s. Kesterson received drainage water containing 330 µg/L selenium over several years. Selenium concentrations at Kesterson Reservoir ranged from 20-110 mg/kg in benthic and water-column invertebrates, 170 mg/kg in mosquitofish (whole body), and about 10-70 mg/kg in bird eggs. About 40 percent of nests of ducks and other waterbirds contained one or more dead or deformed embryos and four species of waterbirds (American avocet, black-necked stilt, eared grebe, and American coot) experienced complete reproductive failure. Some adult birds also died, and many of these showed alopecia (loss of feathers), a classic symptom of acute selenium poisoning (Ohlendorf et al. 1986; Presser and Ohlendorf 1987; Ohlendorf et al. 1988; Ohlendorf 1989; Moore et al. 1990; Saiki and Ogle 1995; USDOI 1998).

Giant Garter Snake

Giant garter snakes in the Grasslands marshes may be subject to harm as a result of contamination from subsurface downslope movement of shallow groundwater originating in WWD. Although WWD does not discharge subsurface drainage directly to surface water channels or the San Joaquin River, several Reclamation NEPA documents (i.e., San Luis Drainage Feature Re-evaluation Final Environmental Impact Statement [SLDFR FEIS,USBR 2006a]; Draft Supplemental EIS SLU Long Term Contract Renewals [SLU DSEIS,USBR 2006b]; Broadview Water Contract Assignment Project Draft EA [Broadview DEA, USBR 2004b] have documented there is a hydraulic connection of shallow groundwater contamination originating in WWD to downslope lands that do discharge to surface waters.

The SLDFR FEIS included a regional groundwater flow model for the SLDFR project area (which included agricultural lands in the SLU, Delta Mendota Canal Unit, and San Joaquin Exchange Contractors service areas) developed by Hydrofocus Inc. The SLDFR FEIS noted on page 6-26 that, "*Using the groundwater-flow model results, horizontal groundwater velocities were estimated at about 500 feet/year in the upper 50 feet of the saturated zone for the 1-foot/year seepage rate. Therefore, in 44 years groundwater with high salinity and constituent concentrations could travel about 20,000 feet downgradient from the evaporation basins. Results suggested significant water level increases could affect crop root zone salinity within 3,500 feet of the evaporation basins...*" The SLU DSEIS found that, "*The Westlands Subarea has no drainage discharge to the receiving waters of the State, therefore it is not directly affected by the current salinity and boron TMDL which limits discharge into the San Joaquin River. However, these actions have an indirect impact on the hydrology of the Basin owing to regional groundwater flow from Westlands into the Grasslands subarea...*" Further, the Broadview DEA (Reclamation 2004b) noted on page 4-2 that, "*...the Proposed Action would reduce*

the quantity of drainage water currently being discharged from the BWD [Broadview WD] to the San Joaquin River by approximately 2,600 acre-feet or 70 percent of water per year (Summers Engineering, 2003). More specifically, by fallowing the BWD lands and not applying CVP water for irrigation, the estimated reduction in drain water discharge from existing conditions (approximately 3,700 acre feet per year [afy]), will be reduced by approximately 1,100 afy. Most of these resulting flows are likely attributable to sub-surface flows originating from up-gradient locations to the south and west..." and on page 4-12 that, "*Although irrigated agriculture would be discontinued within the BWD, under-land flow of groundwater from up-gradient locations would still contribute to drain water within BWD drainage canals.*" In other words, the Broadview DEA estimated that about a third of the subsurface drainage below Broadview WD originated outside and upslope of district boundaries via lateral flow from agricultural lands in the south and west (i.e., WWD).

The SWRCB in their Water Rights Decision 1641 (SWRCB 2000) identified lands within the SLU, which contribute to drainage water contamination to the San Joaquin River, "*...the SWRCB finds that the actions of the CVP are the principal cause of the salinity concentrations exceeding the objectives at Vernalis. The salinity problem at Vernalis is the result of saline discharges to the river, principally from irrigated agriculture, combined with low flows in the river due to upstream development. The source of much of the saline discharge to the San Joaquin River is from lands on the west side of the San Joaquin Valley which are irrigated with water provided from the Delta by the CVP, primarily through the Delta-Mendota Canal and the San Luis Unit.*" Oppenheimer and Groeber (2004) in a draft staff report for the Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Salt and Boron Discharges into the Lower San Joaquin River, noted the following with respect to WWD effects to San Joaquin River water quality: *"The Grassland Subarea contains some of most [sic] salt-affected lands in the LSJR watershed. This subarea is also the largest contributor of salt to the LSJR (approximately 37% of the LSJR's mean annual salt load). Previous studies indicate that shallow groundwater in the LSJR watershed is of the poorest quality (highest salinity) in the Grassland Subarea (SJVDP, 1990). The Grassland Subarea drains approximately 1,370 square miles on the west side of the LSJR in portions of Merced, Stanislaus, and Fresno Counties. This subarea includes the Mud Slough, Salt Slough, and Los Banos Creek watersheds. The eastern boundary of this subarea is generally formed by the LSJR between the Merced River confluence and the Mendota Dam. The Grassland Subarea extends across the LSJR, into the east side of the San Joaquin Valley, to include the lands within the Columbia Canal Company [and including the Northern Portion of Westlands Water District]."*

In addition, Steve Deverel of Hydrofocus Inc., in written testimony for the SWRCB Bay-Delta Water Rights Hearing in 1998, described the effect of the shallow drainage problem upslope of the Firebaugh Canal WD and Central California Irrigation District (primarily in WWD) on drainage conditions within these districts (Deverel 1998). Relevant excerpts are provided below:

> *"I have also been asked if I could quantify the load of salinity and selenium that enters along this boundary by downslope migration compared to the drainage load leaving Firebaugh Canal Water District as an example. Downslope migration does not explain all of the load but a part of it is from this shallow downslope flow, in the range of 20 to 40%..."*
>
> *"...Elevations of groundwater in saturated areas in upslope areas are higher than elevation [sic] in lower areas. Although a particular particle of Water will take many years to migrate, in saturated soils pressure is very quickly transmitted to areas of lesser pressure. That is what is happening here. Pressure transmitted from high areas to low areas as an example will cause poor quality Water to show up in surface drain and be counted as load. A particle of poor quality Water may have originated from farming the downslope areas or migrated in the shallow geological features from farming the downslope areas or migrated in the shallow geological features from upslope, but the pressure causes it to rise into the tile drainage and surface drain and flow out."*

"Pumping decreased substantially during the 1950's and 1960's as surface water was delivered and groundwater water levels rose. This rise in the groundwater levels continues to occur and has caused increases in pressures in downslope areas which have contributed to drainage flows."

A comprehensive analysis of the effects of drainwater contamination to giant garter snake in the Grasslands marshes was provided in the GBP BiOp and is incorporated here by reference. The Service concluded in the GBP BiOp that *"under current baseline conditions, dietary selenium concentrations in the South Grasslands still poses a risk to growth, reproduction and survival of giant garter snakes. Further, contamination in the food chain in the North Grasslands, specifically Mud Slough (North) could preclude re-establishment of the snake in the vicinity of this waterway."*

Given the fact that giant garter snakes forage on fish and tadpoles, and these taxa are the most selenium-impacted of the biota sampled in the south Grasslands marshes, it is reasonable to conclude that the giant garter snake is likely adversely affected by selenium in their diet. Among vertebrates, reproductive toxicity is one of the most sensitive endpoints; however birds and fish seem to have substantially lower thresholds for reproductive toxicity than placental mammals (USDOI 1998). Selenium is first and foremost a reproductive toxicant (both a gonadotoxicant and a teratogen); the degree of reproductive damage determines whether populations are adversely affected (Luoma and Presser 2009). It is assumed that for reptiles (such as the giant garter snake) reproductive impairment is among the most sensitive response variables to selenium contamination (USDOI 1998). Therefore, adverse effects to giant garter snakes from dietary exposure to selenium in the aquatic food chain of the south Grasslands marshes are likely to take the form of impaired reproduction.

As denoted in the BA for this action, drainage contamination from WWD likely contributes to degraded downstream water quality in the Grasslands wetland supply channels. Westlands WD's contribution to selenium contamination in the Grasslands wetland supply channels and the San Joaquin River associated with IRC CVP deliveries may adversely affect the giant garter snake during the two year life of the project.

These degraded habitat conditions, in the form of elevated selenium concentrations in water and biota, periodically reach levels that are reasonably likely to result in adverse effects to any giant garter snakes that could be present at those times. However, these degraded habitat conditions likely result from multiple contaminant sources, and at the present time there is no way to determine the magnitude of the contribution resulting from the IRCs. To the extent that giant garter snakes are present during the times when selenium concentrations are elevated, they could be exposed through contaminated prey items.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

Numerous activities continue to result in loss and degradation of habitat used by listed threatened and endangered species in the action area for this consultation. Habitat loss and degradation affecting both animals and plants continues as a result of urbanization, oil and gas development, road and utility right-of-way management, flood control projects, livestock grazing, and continued agricultural expansion. Listed animal species also are affected by poisoning, shooting, increased

predation associated with human development, and reduction of food sources. All of these non-Federal activities are expected to continue to adversely affect listed species in the action area.

Conversion of land for agricultural purposes continues to be the most critical threat to listed species. Although the increment of habitat loss attributable to urban development appears to be increasing, these activities remain less significant than agriculture for most species. Agricultural conversion is generally not subject to any environmental review and is not directly monitored or regulated. In addition, CVP water is used for groundwater recharge by some districts in the San Joaquin Valley. Such recharge may allow nearby landowners to pump groundwater for uses that may affect listed species.

Cumulative effects on many species are severe enough to substantially reduce the likelihood of long-term survival and recovery of these species. The IRCs and ongoing CVP operations contribute to the threat to these species.

Many of the private actions that will occur as an indirect effect of receiving CVP contract supply would also occur without the Federal water deliveries. Those actions that will occur without Federal water deliveries from the proposed action will result in cumulative effects.

Other cumulative effects include those that result from installation of renewable energy projects. By the end of 2011, Pacific Gas & Electric had completed three solar projects on 328 acres of drainage-impaired lands in WWD, and scheduled three additional solar projects for 2012. Additionally there are 14 solar projects planned on privately owned lands within WWD, and seventeen solar projects planned by private-owned companies on WWD owned lands. Among them is a proposed state-of-the-art solar farm on 24,000 acres of retired farmland in the southeastern portion of WWD. The privately-owned project, known as the Westlands Solar Park, is expected to be completed by 2025 and will generate up to 2.4 gigawatts of solar power, greater energy potential than the combined output of several large nuclear power plants[9].

Conclusion

California least tern - After reviewing the current status of the California least tern, the environmental baseline for the action area, the effects of the renewal of these IRCs, and the cumulative effects, it is the Service's biological opinion that the action, as proposed is not likely to jeopardize the continued existence of the California least tern. The Service reached this conclusion because the project-related effects to the species, when added to the environmental baseline and analyzed in consideration of all potential cumulative effects, will not rise to the level of precluding recovery or reducing the likelihood of survival of the species based on the following: (1) implementation of conservation measures and environmental commitments provided in the project description, (2) the short duration of the IRCs, and (3) CVP water allocations in the recent past.

Giant Garter Snake - After reviewing the current status of the giant garter snake, the environmental baseline for the action area, the effects of the renewal of these IRCs, and the cumulative effects, it is the Service's biological opinion that the action, as proposed is not likely to jeopardize the continued existence of the giant garter snake. The Service reached this conclusion because the project-related effects to the species, when added to the environmental baseline and analyzed in consideration of all

[9] http://wwd.ca.gov/resource-management/land-management/

potential cumulative effects, will not rise to the level of precluding recovery or reducing the likelihood of survival of the species. Adverse effects to snakes are likely manifested from the fractional contribution of the IRCs to degraded habitat conditions in the Grassland marshes, and the magnitude of them would not be likely to reduce appreciably the likelihood of both the survival and recovery of giant garter snake.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by FWS regulations at 50 CFR 17.3 as an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the same regulations as an act which actually kills or injures wildlife. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavior patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.
The measures described below are non-discretionary, and must be undertaken by Reclamation so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. Reclamation has a continuing duty to regulate the activity covered by this incidental take statement. If Reclamation (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Reclamation must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement. [50 CFR §402.14(i)(3)].

Amount or Extent of Take

California least tern
California least terns that forage in wetted portions of the SLD in or adjacent to WWD are likely to be adversely affected by the 2-year renewal of these IRCs. Incidental take of the California least tern is expected to be in the form of killing or harming of individual birds, resulting from agricultural drainage contamination of food items consumed by the terns. Based on the low numbers of California least terns currently expected to occur in the action area, the Service anticipates that the number of California least terns that would be taken is low and would not exceed one (1) California least tern nest confirmed annually to be killed, be harmed, or have produced failed to hatch eggs, resulting from selenium contamination.

Giant garter snake
The Service anticipates that incidental take of the giant garter snake will be difficult to detect or quantify because (1) the snakes are secretive and notoriously sensitive to human activities, (2) and individual snakes are difficult to detect unless they are observed, undisturbed, at a distance. Giant garter snake habitat is present in the action area. The number of giant garter snakes using the action area is unknown, and data for estimating the number present in the action area is not available;

however, the number of giant garter snakes using the action area is expected to be small. There is a risk of harm (i.e., impaired growth, reproduction and survival) as a result of degradation (selenium contamination) of suitable habitat. We have no ability to measure or even estimate the adverse effect of selenium from all sources, and no way to estimate the contribution of these IRCs. Since we cannot quantify the number of individual giant garter snakes that we anticipate will be subject to this incidental take, we therefore quantify the anticipated incidental take in terms of reduced fitness in any snakes that may encounter elevated levels of selenium in the Grassland wetland supply channels and associated wetlands.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take from the 2-year renewal of these IRCs is not likely to result in jeopardy to the California least tern or the giant garter snake.

Reasonable and Prudent Measures

Incidental take resulting from exposure to drainage contamination originating from WWD's IRCs shall be reduced through the following reasonable and prudent measures:

1. All conservation measures denoted in this BiOp shall be fully implemented and adhered to.
2. Minimize the incidental take of California least terns resulting from terns foraging on selenium-contaminated prey in wetted sections of the SLD that receive contaminated groundwater from WWD.
3. Minimize the incidental take of giant garter snakes resulting from selenium exposure originating in part from WWD subsurface drainage (an indirect effect of WWD's IRCs) during the period covered by this consultation, in the Grasslands Ecological Area (including wetland supply channels and associated wetland habitat receiving water from those channels).

Terms & Conditions

1. During this 2-year IRC period, Reclamation shall continue to quantify the amount of wetted area in the SLD within or adjacent to WWD.

2. In order to monitor whether the amount or extent of incidental take anticipated from implementation of the proposed project is approached during the 2-year IRC period, Reclamation shall adhere to the following monitoring requirements:

   a. Continue implementation of a bird survey program on and around the wetted portions of the SLD within or adjacent to WWD to determine the presence or absence of California least terns. Surveys shall be conducted by a qualified, Service-approved avian biologist or ecologist, and should be initially conducted on a bi-weekly basis from approximately one month prior to the typical arrival time for reproductive adults until the end of typical least tern chick fledging period. After the fledging period, surveys shall be conducted on a weekly basis for one month in order to observe any terns that may be attempting a second nest. Any documented least tern sighting shall trigger an increased monitoring protocol, with parameters dependent on the when the sighting occurred.

   b. If least terns are sighted during the typical breeding period, detailed censuses for nesting terns on the SLD and adjacent Right of Way shall be conducted in addition to the initial

surveys described in 2a, above. Any least tern nests found shall be monitored for reproductive success, following Service-approved protocols. Any fail-to-hatch eggs will be collected, examined to determine egg status, and analyzed for total selenium by a Service-approved laboratory.

3. In order to monitor whether the amount or extent of incidental take anticipated from implementation of the project is approached or exceeded, Reclamation shall adhere to the following reporting requirements. Should this anticipated amount or extent of incidental take be exceeded, Reclamation must immediately reinitiate formal consultation as per 50 CFR 402.16. Reclamation shall provide annual reports by the end of the calendar year, documenting the results of monitoring conducted for California least tern.

4. Reclamation and the Service will continue to work together to implement existing conservation programs such as CVPIA's Habitat Restoration Program (HRP) or the CVP Conservation Program (CVPCP) to implement recovery actions for the giant garter snake[10]:

5. Reclamation will include the water quality data from the monitoring of sites J and K in the GBP monthly, quarterly, and annual reports.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service recommends the following actions:

Implement actions that benefit the recovery needs of the giant garter snake. Reclamation should work with the Service and California Department of Fish and Wildlife to create, enhance and restore additional stable perennial (including summer) wetland habitat for giant garter snakes in the San Joaquin Valley so that they are less vulnerable to reductions in rice production in the vicinity of Grasslands marshes and Mendota Pool. Provision of clean, reliable, level 4 refuge water supplies could provide additional permanent wetland habitat that would benefit giant garter snakes in furtherance of recovery objectives for the species in the San Joaquin Valley. The CVPIA HRP and the CVPCP, conservation grant programs, may be appropriate for such work.

Reclamation should assist the Service in the implementation of recovery actions in the Draft Recovery Plan for the Giant Garter Snake (USFWS 2015). Priority 1 Recovery Actions from these plans include the following:

a. Protect habitat on private lands in the North and South Grasslands marshes for giant garter snakes;

b. Protect habitat on private lands in the Mendota area for giant garter snakes;

c. Develop/update and implement water management plans as required by CVPIA for Mendota, China Island, Los Banos, and Volta WAs for giant garter snakes[11].

[10] See http://ecos.fws.gov/docs/recovery_plan/20151211_GGS%20Revised%20Draft%20Recovery%20Plan.pdf

Adopt a policy that maximizes land retirement (through all appropriate means) on drainage-impaired lands. To avoid and minimize risks and effects to listed species in the San Joaquin Valley, Reclamation should consider retiring from irrigation all drainage impaired lands in the SLU. This approach would maximize the elimination of drainage at its source and avoid associated adverse effects from drainage contamination in drainage reuse areas, in the Grasslands marshes, Mud Slough (North) and the San Joaquin River. The Service in the Coordination Act Report for the SLDFR recommended full land retirement of the 379,000 acres identified as drainage impaired lands in the SLDFR EIS, would be the best all-around solution to the agricultural drainage problem. It would maximize avoidance of adverse environmental effects (both lethal and sublethal), and help resolve the drainage problem in a balanced resource management approach. This land retirement alternative is compatible with CALFED and CVPIA goals and objectives by reducing project water demand, increasing available supplies, enhancing fish and wildlife habitat, and reducing contaminants reaching the Delta. It is an approach that appears most compatible with both the Service and Reclamation's respective missions, since the goal is to find a drainage solution for the study area which includes measures to preserve, protect, restore, and enhance fish and wildlife resources affected by water deliveries to the SLU (USFWS 2006b).

Develop a plan to address selenium contamination in the Grasslands Marshes. As currently envisioned, the GBP project facilities will not be designed to capture and treat drainage generated from: (a) drainage contaminated runoff associated with heavy rainfall events, and (b) and lands to the north of the GBP that still discharge drainage into the Grassland wetland supply channels within the (e.g., Poso and Almond Drain areas). Reclamation should develop and implement a plan on how to meet selenium objectives in the Grassland wetland supply channels. Compliance with these water quality objectives will likely benefit giant garter snake which forage in these waters.

Determine effects of selenium and mercury on giant garter snake. Reclamation, together with the Service and other appropriate agencies, should implement a study on the effects of contaminants (specifically selenium and mercury) on giant garter snake surrogate species within the Grassland wetlands, Grassland wetlands supply channels, and Mud Slough (North).

Develop a selenium budget for the San Joaquin River, Delta. Reclamation, together with the Service and other appropriate agencies, should complete the studies necessary to develop a selenium budget and to determine the sources, fate and impact of all selenium discharges in the San Joaquin River and Delta. This budget would include all presently impaired downstream water bodies used by listed species (e.g., giant garter snake, delta smelt, California clapper rail) including Mud Slough (North), the San Joaquin River, and the North Bay (e.g., Suisun Bay) and Sacramento-San Joaquin Delta.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species and their habitats, the Service request notification of the implementation of any conservation recommendations and, in particular, if and when there are future consultations requests for IRCs and LTCR.

[11] Refuges that entered into water supply contracts with Reclamation, as a result of the CVPIA and subsequent Department of the Interior administrative review process, are required to prepare Refuge Water Management Plans. See: http://www.usbr.gov/mp/watershare/documents/2010_refuge/2010_refuge_criteria.pdf

REINITIATION – CLOSING STATEMENT

This concludes formal consultation on the six IRCs. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

If you have any questions on the biological opinion, please contact Thomas Leeman, Chief, San Joaquin Valley Division, at the letterhead address or at (916) 414-6544.

Attachment:

cc:
Shauna McDonald, U.S. Bureau of Reclamation, Fresno, CA
Chris Eacock, U.S. Bureau of Reclamation, Fresno, CA
Eugenia McNaughton, U.S. Environmental Protection Agency, San Francisco, CA
Theresa Presser, U.S. Geological Survey, Menlo Park, CA
Kim Forrest, U.S. Fish and Wildlife Service, San Luis NWRC, Los Banos, CA
Sue McConnell , Central Valley Regional Water Quality Control Board, Rancho Cordova, CA
David Sholes, Central Valley Regional Water Quality Control Board, Fresno, CA
Julie Vance, California Department of Fish and Wildlife, Fresno, CA
Rick Ortega, Grassland Water District, Los Banos, CA

Literature Cited

Beckon, W. N., Maurer, T. C., & Detwiler, S. J. 2007. *Selenium in the Ecosystem of the Grassland Area of the San Joaquin Valley: Has the Problem been Fixed?* U.S. Fish and Wildlife Service, California/Nevada Operations Office, Sacramento, CA.

(CDWR) California Department of Water Resources. 2004. Land use data, Geographic information systems data. Division of Planning and Local Assistance, CDWR, Sacramento, CA.

Chilcott, J. and R. Schnagl. April 1, 2008. *Central Valley Selenium Control Program. Presentation to the North Bay Selenium Advisory Committee Meeting.* Central Valley Regional Water Quality Control Board, Central Valley Region, Sacramento, CA. 69 pp. Available at: http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/seleniumtmdl.shtml

Conard, C. 2009. First Nesting Record by the Least Tern in Sacramento County. Central Valley Bird Club Bulletin 12(3): 63-71.

Cypher, B. L., S. E. Phillips, and P. A. Kelly. 2007. Habitat suitability and potential corridors for San Joaquin kit fox in the San Luis Unit, Fresno, Kings, and Merced Counties, California. Prepared for the U.S. Bureau of Reclamation, South-Central California Area Office, and the U.S. Fish and Wildlife Service, Endangered Species Program, Fresno, CA.

Deverel, S. 1998. Written Testimony for the SWRCB Bay-Delta Water Rights Hearing, Phase 5. San Joaquin Exchange Contractor's, Exhibit 5(a), 37 pp.

Eppinger and Chilcott. (2002). *Review of Selenium Concentrations in Wetlands Water Supply Channels in the Grassland Watershed (Water Years 1999 and 2000).* Staff Report of the California Environmental Protection Agency, Regional Water Quality Control Board, Central Valley Region, Sacramento, CA, 31 pp. Available at: http://www.swrcb.ca.gov/rwqcb5/water_issues/water_quality_studies/SJR9900.pdf

HT Hatvey and Associates. 2013. Westlake Farms Inc. Biannual Wildlife Monitoring Report, April 1, 2012-September 30, 2012. Prepared for Westlake Farms Inc., Stratford, CA, 25 pp.

_____ 2012. Westlake Farms Inc. Biannual Wildlife Monitoring Report, October 14, 2012-March 30, 2012. Prepared for Westlake Farms Inc., Stratford, CA, 8 pp.

Luoma, S.N., and T.S. Presser. 2009. *Emerging Opportunities in Management of Selenium Contamination.* Environ. Sci. & Technol. 43 (22): 8483–8487.

Marschalek, D.A. 2011. California Least Tern Breeding Survey 2010. California Department of Fish and Game, South Coast Region, San Diego, CA. 72 pp.

Moore, S.B., J. Winckel, S.J. Detwiler, S.A. Klasing, P.A. Gaul, N.R. Kanim, B.E. Kesser, A.B. DeBevec, K. Beardsley, and L.K. Puckett. 1990. *Fish and Wildlife Resources and Agricultural Drainage in the San Joaquin Valley, California.* Volume II: Sections 4-6. Prepared by the San Joaquin Valley Drainage Program, Sacramento, CA.

Ohlendorf, H.M. 1989. Bioaccumulation and effects of selenium in wildlife. In: L.W. Jacobs, ed., *Selenium in agriculture and the environment.* American Society of Agronomy and Soil Science Society of America, Madison, Wisconsin. Special Publication 23, p. 133-177.

Ohlendorf, H.M., D.J. Hoffman, M.K. Saiki, and T.W. Aldrich. 1986. Embryonic mortality and abnormalities of aquatic birds: Apparent impacts of selenium from irrigation drainwater. The Science of the Total Environment, 52:49-63.

Ohlendorf, H.M., R.L. Hothem, and T.W. Aldrich. 1988. Bioaccumulation of selenium by snakes and frogs in the San Joaquin Valley, California. Copeia 1988(3):704-710.

Oppenheimer, E.I. and L.F. Groeber. 2004. Amendments to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Salt and Boron Discharges into the Lower San Joaquin River. Draft Final Staff Report of the Central Valley Regional Water Quality Control Board, San Joaquin River TMDL Unit, Sacramento, CA, 121 pp. Available at: http://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/vernalis_salt_boron/index.shtml

Palmer, T.K. 2005. Wildlife Monitoring Program No. 98-229, Annual Report (October 1, 2004-September 30, 2005). Prepared for Stone Land Company, Stratford, CA, 30 pp.

_____ 2004. Wildlife Monitoring Program No. 98-229, Annual Report (October 1, 2003-September 30, 2004). Prepared for Stone Land Company, Stratford, CA, 32 pp.

Paveglio, F.L., and K.M. Kilbride. 2007. *Selenium in Aquatic Birds from Central California.* J. Wildl. Manage. 71(8): 2550-2555.

Phillips, S.E. 2006. In Progress Draft Environmental Baseline of the San Luis Unit Fresno, Kings and Merced Counties, California. California State University-Stanislaus, Endangered Species Recovery Program, Fresno, CA, 22 pp.

Presser, T.S., and I. Barnes. 1985. Dissolved constituents including selenium in the vicinity of the Kesterson National Wildlife Refuge and the west Grassland, Fresno and Merced Counties, California. U.S. Geological Survey Water- Resources Investigations Report 85-4220, 73 pp.

Presser, T.S. and S. N. Luoma. 2006. *Forecasting Selenium Discharges to the San Francisco Bay-Delta Estuary: Ecological Effects of a Proposed San Luis Drain Extension.* U.S. Geological Survey Open-File Report 00-416, 196 pp. Available at: http://pubs.usgs.gov/pp/p1646/

Presser, T.S., and H.M. Ohlendorf. 1987. Biogeochemical cycling of selenium in the San Joaquin Valley, California, USA. *Environ. Manage.* 11:805-821.

Saiki, M.K., and R.S. Ogle. 1995. Evidence of impaired reproduction by western mosquitofish inhabiting seleniferous agricultural drainwater. *Trans. Am. Fish. Soc.* 124:578-587.

(SWRCB) California State Water Resources Control Board. (1999). Final Environmental Impact Report for the Consolidated and Conformed Place of Use. Prepared by CH2MHill, Sacramento for SWRCB, Sacramento, CA for the Petitioner the U.S. Bureau of Reclamation, Sacramento, CA, 2 Chapters and 3 Appendices.

_____ 2000. *Revised Water Right Decision 1641*. State Water Resources Control Board, California Environmental Protection Agency, Sacramento, CA. March 15, 2000. Available on the internet at: http://www.waterrights.ca.gov/hearings/Decisions/WRD1641.PDF. Accessed March 31, 2009.

Thompson, B.C., J.A. Jackson, J. Burger, L.A. Hill, E.M. Kirsch, and J.L. Atwood. Least Tern (*Sterna antillarum*). 1997. The Birds of North America 290: 1-32.

(USBR) U.S. Bureau of Reclamation. 2004a. Central Valley Project West San Joaquin Division, San Luis Unit, Biological Assessment Long-Term Water Service Contract Renewal. South Central California Area Office, Fresno, CA, 126 Pages.

_____ 2004b. Broadview Water Contract Assignment Project Environmental Assessment/Draft Finding of No Significant Impact. Prepared by Environmental Science Associates for USBR, South Central California Area Office, Fresno, California, 4 chapters and 3 appendices.

_____ 2006a. Final Environmental Impact Statement, San Luis Drainage Feature Reevaluation. Section Six, Groundwater Resources. Mid-Pacific Region, Sacramento, CA, 45 pp. Available at: http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=61

_____ 2006b. Draft Supplemental Environmental Impact Statement, San Luis Unit Long Term Contract Renewals. USBR, South Central California Office, Fresno, CA, 9 pp. and 3 appendices. Available at: http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=63

_____ 2010. Consolidated Place of Use Habitat Mitigation Plan and Monitoring and Reporting Program. Prepared for the State Water Resources Control Board by USBR, Mid-Pacific Regional Office, Sacramento CA, 20 pp. and appendices.

_____ 2015. Delta-Mendota Canal Water Quality Monitoring Program. Report of Flows, Concentrations and Loads of Salts and Selenium, April – June 2015. U.S. Bureau of Reclamation, Mid-Pacific Region, Sacramento, CA, 40 pp.

(USBR *et al.*) United States Bureau of Reclamation, Central Valley Regional Water Quality Control Board, U.S. Fish and Wildlife Service, California Department of Fish and Game, San Luis & Delta-Mendota Water Authority, U.S. Environmental Protection Agency, and U.S. Geological Survey. (September 2009 to June 2015). *Grassland Bypass Project Monthly Reports.* U.S. Bureau of Reclamation, Mid-Pacific Region, Sacramento, CA. Compiled and distributed by San Francisco Estuary Institute and available at: http://www.sfei.org/gbp/reports/monthly

(USDOI) United States Department of the Interior - Bureau of Reclamation/Fish and Wildlife Service/Geological Survey/Bureau of Indian Affairs. (1998). *Guidelines for Interpretation of the Biological Effects of Selected Constituents in Biota, Water, and Sediment.* National Irrigation Water Quality Program Information Report No. 3. Bureau of Reclamation, Denver, CO. 198 pp. Available at: http://www.usbr.gov/niwqp/guidelines/index.html

(USFWS) United States Fish and Wildlife Service. 1999. *Draft recovery plan for the giant garter snake (Thamnophis gigas).* U.S. Fish and Wildlife Service, Portland, OR. 192 pp.

_____ 2006a. California least tern (*Sternula antillarum browni*) 5-Year Review. Available at: http://ecos.fws.gov/docs/five_year_review/doc775.pdf

_____ 2006b. *San Luis Drainage Feature Re-evaluation Fish and Wildlife Coordination Act Report.* U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office, Sacramento, CA, 73 pp.

_____ 2009. California least tern Spotlight Species Action Plan. Available at: http://ecos.fws.gov/docs/action_plans/doc3164.pdf

_____ 2012. Giant Garter Snake (*Thamnophis gigas*) 5-Year Review. Available at: http://ecos.fws.gov/docs/five_year_review/doc4009.pdf.

In litteris

Gross, Warren. 2012. Letter from CVRWQCB, Fresno, to Scott Tarbox, Lemoore Naval Air Station, updating wildlife monitoring requirements in Waste Discharge Requirements Order R5-2002-0062. March 9, 2012.

Moore, S. Davis. 2014. Memorandum from USBR Technical Service Center, Denver, to Shauna McDonald, USBR South Central California Area Office, Fresno. May 5, 2014.

Personal Communications

Eacock, M.C.S. July 28, 2015. Project Manager/Soil Scientist, U.S. Bureau of Reclamation, Fresno, CA.

Eacock, M.C.S. July 31, 2015. Project Manager/Soil Scientist, U.S. Bureau of Reclamation, Fresno, CA.

Seay, J. 2006. Senior Ecologist, HT Harvey and Associates, Fresno, CA.

Seay, J. 2014. Senior Ecologist, HT Harvey and Associates, Fresno, CA.

Toto, A.L. 2010. Water Resources Engineer, CVRWQCB, Fresno, CA.

Appendix A. Federally threatened and endangered species and/or critical habitat potentially within the Action Area that Reclamation has determined would not be affected by the proposed action.

Common Name	Scientific Name	Federal Status	Critical Habitat
Alameda whipsnake,	*Masticophis lateralis euryxanthus*	Endangered	Designated
bay checkerspot butterfly	Euphydryas editha bayensis	Threatened	Designated
beach layia	*Layia carnosa*	Endangered	None
Buena Vista Lake shrew	*Sorex ornatus relictus*	Endangered	Designated
California clapper rail	*Rallus longirostris obsoletus*	Endangered	None
California condor	*Gymnogyps californianus*	Endangered	Designated
California jewelflower	*Caulanthus californicus*	Endangered	None
California red-legged frog	*Rana draytonii*	Threatened	Designated
California sea blite	*Suaeda californica*	Endangered	None
California tiger salamander	*Ambystoma californiense*	Threatened	Designated
clover lupine	*Lupinus tidestromii*	Endangered	None
Conservancy fairy shrimp	*Branchinecta conservatio*	Endangered	Designated
Contra Costa goldfields	*Lasthenia conjugens*	Endangered	Designated
coyote ceanothus	*Ceanothus ferrisae*	Endangered	None
delta smelt	*Hypomesus transpacificus*	Threatened	Designated
Fisher	*Martes pennanti*	Proposed Threatened	N/A
fountain thistle	*Cirsium fontinale var. fontinale*	Endangered	None
Fresno kangaroo rat	*Dipodomys nitratoides exilis*	Endangered	Designated
giant kangaroo rat	*Dipodomys ingens*	Endangered	None
Greene's tuctoria	*Tuctoria greenei*	Endangered	Designated
hairy Orcutt grass	*Orcuttia pilosa*	Endangered	Designated
Hartweg's golden sunburst	*Pseudobahia bahiifolia*	Endangered	None
Hickman's potentilla	*Potentilla hickmanii*	Endangered	None
Hoover's spurge	*Chamaesyce hooveri*	Threatened	Designated
Keck's checker-mallow (=checkerbloom)	*Sidalcea keckii*	Endangered	Designated
Kern primrose sphinx moth	*Euproserpinus euterpe*	Threatened	

Common Name	Scientific Name	Federal Status	Critical Habitat
Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*	Threatened	None
least Bell's vireo	*Vireo bellii pusillus*	Endangered	Designated
longhorn fairy shrimp	*Branchinecta longiantenna*	Endangered	Designated
marbled murrelet	*Brachyramphus marmoratus*	Threatened	Designated
Marin dwarf-flax	*Hesperolinon congestum*	Threatened	None
Mariposa pussy-paws	*Calyptridium pulchellum*	Threatened	None
Menzies's wallflower	*Erysimum menziesii* (includes spp. *yadonii*)	Endangered	None
Metcalf Canyon jewelflower	*Streptanthus albidus* spp. *albidus*	Endangered	None
mountain yellow-legged frog	*Rana muscosa*	Proposed	Proposed
Owens pupfish	*Cyprinodon radiosus*	Endangered	None
Owens tui chub	*Gila bicolor snyderi*	Endangered	Designated
Paiute cutthroat trout	*Oncorhynchus clarki seleniris*	Threatened	None
palmate-bracted bird's-beak	*Cordylanthus palmatus*	Endangered	None
robust spineflower	*Chorizanthe robusta* var. *robusta*	Endangered	Designated
salt marsh harvest mouse	*Reithrodontomys raviventris*	Endangered	None
San Benito evening-primrose	*Camissonia benitensis*	Threatened	None
San Francisco garter snake	*Thamnophis sirtalis tetrataenia*	Endangered	None
San Joaquin adobe sunburst	*Pseudobahia peirsonii*	Threatened	None
San Mateo thornmint	*Acanthomintha duttonii*	Endangered	None
San Mateo woolly sunflower	*Eriophyllum latilobum*	Endangered	None
Santa Clara Valley dudleya	*Dudleya setchellii*	Endangered	None
San Joaquin Valley Orcutt grass	*Orcuttia inaequalis*	Endangered	Designated
showy Indian clover	*Trifolium amoenum*	Endangered	None
Sierra Nevada bighorn sheep	*Ovis canadensis californiana*	Endangered	Designated
Sierra Nevada yellow-legged frog	*Rana sierrae*	Proposed	Proposed
succulent owl's-clover	*Castilleja campestris* ssp. *succulenta*	Threatened	Designated
Tiburon paintbrush	*Castilleja affinis* ssp. *neglecta*	Endangered	None

Common Name	Scientific Name	Federal Status	Critical Habitat
tidewater goby	*Eucyclogobius newberryi*	Endangered	Designated
Tipton kangaroo rat	*Dipodomys nitratoides nitratoides*	Endangered	None
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	Threatened	Designated
vernal pool fairy shrimp	*Branchinecta lynchi*	Threatened	Designated
vernal pool tadpole shrimp	*Lepidurus packardi*	Endangered	Designated
western snowy plover	*Charadrius alexandrinus nivosus*	Threatened	Designated
western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	Proposed	None
Yosemite toad	*Bufo canorus*	Proposed	Proposed

Appendix B.
Summarized Environmental Commitments from the CVPIA Biological Opinion (Service File 98-F-0124) and previous IRC consultations that are Relevant to the SLU and Delta Division 3-Way IRCs

Conservation Measures from Previous IRC Consultations
As described in previous IRC consultations, Reclamation developed and implemented a short-term conservation program for IRC CVP Service Areas. The proposed action includes a commitment to develop and implement a long-term program to address the overall effects of the continued operation of the CVP on listed, proposed, and candidate species, and a short-term program to minimize the adverse effects on these species in any areas affected by CVP water deliveries, other than those effects addressed here.

The short-term program to minimize adverse effects of continued water delivery under the IRCs included the following measures:

1(a) Notify districts regarding ESA requirements (Completed);
1(b) Develop information on distribution and habitat of listed, proposed and candidate species (Ongoing);
1(c) Map and distribute information in 1(b) above (Ongoing);
1(d) Monitor land use changes and ongoing activities to ensure project water is not used in a manner that adversely affects listed, proposed or candidate species. Coordinate with the Service on any activities adversely affecting these sensitive species (Ongoing);
2(a) Work with the Service, CDPR and others to develop guidelines and information assessing the effects of pesticides on listed, proposed and candidate species (Completed);
2(b) Develop and distribute guidance on construction and maintenance activities (Completed);
2(c) Review District water conservation plans (Completed);
2(d) Amend criteria for water conservation plans (Completed);
3(a) Identify lands critical to listed and proposed species (Ongoing);
3(b) Identify land and water use activities critically impacting listed and proposed species (Ongoing);
3(c) Develop and implement critical need plan (Ongoing);
4 Develop a long-term program to address overall effects of the CVP and Implementation of the CVPIA (Ongoing).

2000 CVPIA BiOp
B. Commitments Associated with Long-term Renewal[12] of CVP Water Service Contracts

1. Long-term contracts will be renewed, and Reclamation will complete tiered site specific consultations with the Service. No CVP water will be delivered or applied outside current contract service areas until either formal or informal consultation, as appropriate, is complete. Once formal site specific consultation has occurred that is in compliance with this opinion, it is assumed that changes in land-use practices, and impacts to listed and proposed species, in the districts have been addressed.

[12] These apply to IRCs as well.

4. Reclamation and the Service will write a joint letter to the water districts, any member agencies, Planning Departments of cities or counties within the districts using CVP water, and other responsible parties regarding requirements under the ESA. The letter will include: (1) a discussion of Reclamation's need to ensure that CVP water is not used in a manner which could jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated *critical habitat*, and (2) an explanation of the prohibitions described under Section 9 of the ESA in regard to *take*. The letter will discuss the appropriate protection measures as described here and in subsequent contract renewal consultation and will be completed within 60 days of execution of long-term contracts.[13]

5. Conservation strategies will be in place for the districts or areas receiving CVP water. The types of strategies that could be accepted are: *Habitat Conservation Planning* as described in section 10(a) of the ESA; programmatic land management actions that include protection of listed and proposed species; requirements resulting from site specific Section 7 consultation; or an expansion of the existing CVP Conservation Program that adequately compensates for the direct and indirect effects of increased water delivery to an area.[14]

6. Reclamation will, subsequent to a determination of *may affect* to listed species and/or adverse modification to designated *critical habitat* in consultation with the Service's Sacramento Fish and Wildlife Office (SFWO) Endangered Species Division, consult on all Federal actions that result in changes in purpose of use for CVP water contracts, including changes from Agriculture to Agriculture/Municipal and Industrial purposes.

7. The Service and Reclamation will work together to convey information to the water districts, and individual water users (as appropriate), on listed species needs. Reclamation will establish an outreach and education program, in collaboration with the Service, to help water users integrate implementation of the CVPIA and requirements of the contract renewal process as it relates to the ESA [Act].[15]

8. Interior will work closely with the water users, providing them maps of listed species habitats within their service-areas and guiding them through the consultation process to address site specific effects. Reclamation may encourage CVP contractors to complete HCPs encompassing the affected areas.

10. Reclamation and CVP contractors will comply with all applicable opinions related to the CVP. Flow standards that form the environmental baseline of the 1995 OCAP biological opinion will be met, and Reclamation will take no discretionary actions (e.g. new contracts, contract amendments, facility construction) that would incrementally increase diversions and alter hydrologic and environmental conditions in the Delta until any required consultation is reinitiated and completed.

11. Contractors are required to conform with any applicable provisions of any biological opinions addressing contract renewal so as to prohibit the use of CVP water that results in unauthorized *take* or conversion of wildland habitat determined to have the potential to be occupied by listed species, or violation of any terms of the contracts pertaining to the conservation of listed species. All contracts (or related biological opinions) will also stipulate Reclamation will not undertake any discretionary action allowing the delivery of CVP water to native habitat for listed species depicted on the maps attached to the 18-month notices unless clearance pursuant to the ESA has been obtained from the Service.

[13] Letters were already sent to CVCs and Friant Contractors, but an Environmental Commitment Program form would be used for the IRCs that would inform districts of the required commitments.

[14] This would take the form of "requirements resulting from site specific Section 7 consultation" in this case.

[15] Addressed by Reclamation's Environmental Commitment Program form.

13. Reclamation will make certain that applicable measures to ensure ESA compliance for the renewal of CVP water service contracts are provided within the text of new and/or amended long-term water contracts and related actions.
14. Reclamation will provide information related to proposed new water assignments of Project water to the Service's SFWO Endangered Species Division prior to execution of the assignment.

F. Commitments Associated with Conservation Programs
Comprehensive Mapping and *Land Use Monitoring and Reporting Program*

- Monitoring will be used to assess the condition and impacts of Reclamation actions on listed species. Reclamation and the Service are actively developing a monitoring strategy based on the comprehensive mapping program. The land cover database for year 2000, described in Phase III, will be revisited every 5 years for monitoring purposes.
- The Comprehensive Mapping Program will be implemented immediately to test and track, for the purpose of validating over the life of the project, the assumptions made in this biological opinion that the baselines of the species in Appendix B are stable or increasing.
- For any species affected by the CVP that are continuing to decline, the Service and Reclamation will immediately assess critical needs for the species and determine whether it is appropriate to expand the Conservation Program or implement other *conservation measures.* Any native habitat converted to agricultural or municipal/industrial use within the water service area without prior biological surveys, as required by Reclamation prior to the delivery of Reclamation water, will be evaluated to determine what mitigation measures will be required.

I. Service and Reclamation Strategy Statement to Ensure Compliance with the Endangered Species Act

7. CVP or CVPIA actions or parts of actions, which *may affect* listed species or for which there is not enough information available to estimate *take* or make a *not likely to adversely affect* determination, will receive future tiered analysis and consultation. Reclamation or the Service will provide to the Service's SFWO Endangered Species Division, dependent on lead agency status, clear descriptions of proposed CVP or CVPIA actions, specific areas that may be affected directly or indirectly by these actions, the manner in which the actions *may affect* any listed species or designated *critical habitat*, and other relevant reports and information. Reclamation and the Service will also identify any and all interrelated and interdependent actions and measures related to the proposed CVP or CVPIA action. In those situations where the lead agency, or the Service's SFWO Endangered Species Division, determines that an action *may affect* listed species or may adversely modify designated *critical habitat*, Reclamation and/or the Service will initiate informal or formal consultation as appropriate.

8. Reclamation and the Service will work together to develop means to more effectively facilitate ESA compliance through the coordination of activities and commitments discussed in this Project Description. This coordination will include establishment of a process within 3 months of this biological opinion that will provide necessary information to the Service's SFWO Endangered Species Division in situations where a determination of *no affect* has been made, sufficiently in advance, to enable the Service's review.

13. Reclamation will establish a tracking program to assure conditions necessary for compliance with ESA are met within areas affected by the delivery of CVP water. Where Reclamation and/or the Service believe there are *adverse affects* on listed species, a conservation strategy will be required to be in place for the district or area to receive the contract water. The types of strategies that could be

accepted are: *Habitat Conservation Planning*, as described in Section 10(a) of the ESA; requirements resulting from a Section 7 consultation, programmatic land management actions that include protection of listed and proposed species, implementation of site specific *conservation measures*, or an expansion of the existing CVP Conservation Program that adequately compensates for the direct and indirect effects of increased water delivery to an area. Other actions that include components of the above strategies could also be accepted.