FINAL ENVIRONMENTAL ASSESSMENT (11-049)

THREE DELTA DIVISION AND FIVE SAN LUIS UNIT WATER SERVICE INTERIM RENEWAL CONTRACTS 2012-2014

Appendix E
U.S. Fish and Wildlife Service Concurrence Memo for the City of Tracy Interim Renewal Contracts

February 2012

United States Department of the Interior

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

In Reply Refer To:
08ESMF00-2012-I-0233

24 February 2012

Memorandum

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

Daniel Russell

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

Subject: Informal Consultation on City of Tracy Interim Water Contract Renewal, 2012-2014

This memorandum transmits the U.S. Fish and Wildlife Service's (Service) concurrence with the U.S. Bureau of Reclamation's (Reclamation) November 15, 2011, determination that the proposed 2-year interim renewal water contracts for the City of Tracy (Proposed Action) for the contract period March 1, 2012 through February 29, 2014, may affect, but are not likely to adversely affect (NLAA) the federally-listed San Joaquin kit fox (*Vulpes macrotis mutica).* A description of the interim contracts covered by this consultation is presented in Table 1. The Proposed Action will continue two existing interim renewal contracts for the City of Tracy, with only minor administrative changes to the contract provisions to update the previous interim renewal contracts for the new contract period. No changes to the City of Tracy contract service area or water deliveries are part of the Proposed Action. Central Valley Project (CVP) water deliveries under the two proposed City of Tracy interim renewal contracts can only be used within each designated contract service area depicted in Figure 1.

This response is provided pursuant to section 7(a)(2) of the Endangered Species Act of 1973 (Act) (16 U.S.C. 1531 *et seq.*), and in accordance with the regulations governing interagency consultations (50 CFR §402). We received your November 15, 2011 request for reinitiation of consultation under the Act and Biological Evaluation (BE) for the Proposed Action on November 21, 2011. A Draft Environmental Assessment for the Proposed Action was made available for public comment on December 12, 2011 (available at: http://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=38786).

This informal consultation is a reinitiation and amendment of previous consultations on interim renewal contracts that included these City of Tracy contracts, and those consultations are included here by reference (Service File Nos., 04-F-0360, 06-F-0070, 08-F-0944-1 and -2). This amendment to our consultation on City of Tracy interim contracts addresses the effects of the

proposed renewal of the contracts described in Table 1 for a 2 year period from March 1, 2012 to February 29, 2014, as established in Section 3404(c) of the Central Valley Project Improvement Act (CVPIA). The water will be used within the City of Tracy contract service area as shown in Figure 1 (Action Area), for agricultural, municipal, and industrial purposes, and will not exceed water allocations determined by existing CVP operations criteria. Interim CVP water contract renewals are consistent with the tiered implementation of the CVPIA, as described in the biological opinion on Implementation of the CVPIA (Service File No., 1-1-98-F-0124).

Table 1. City of Tracy Interim Water Contracts, Contract Quantities and Expiration Dates.

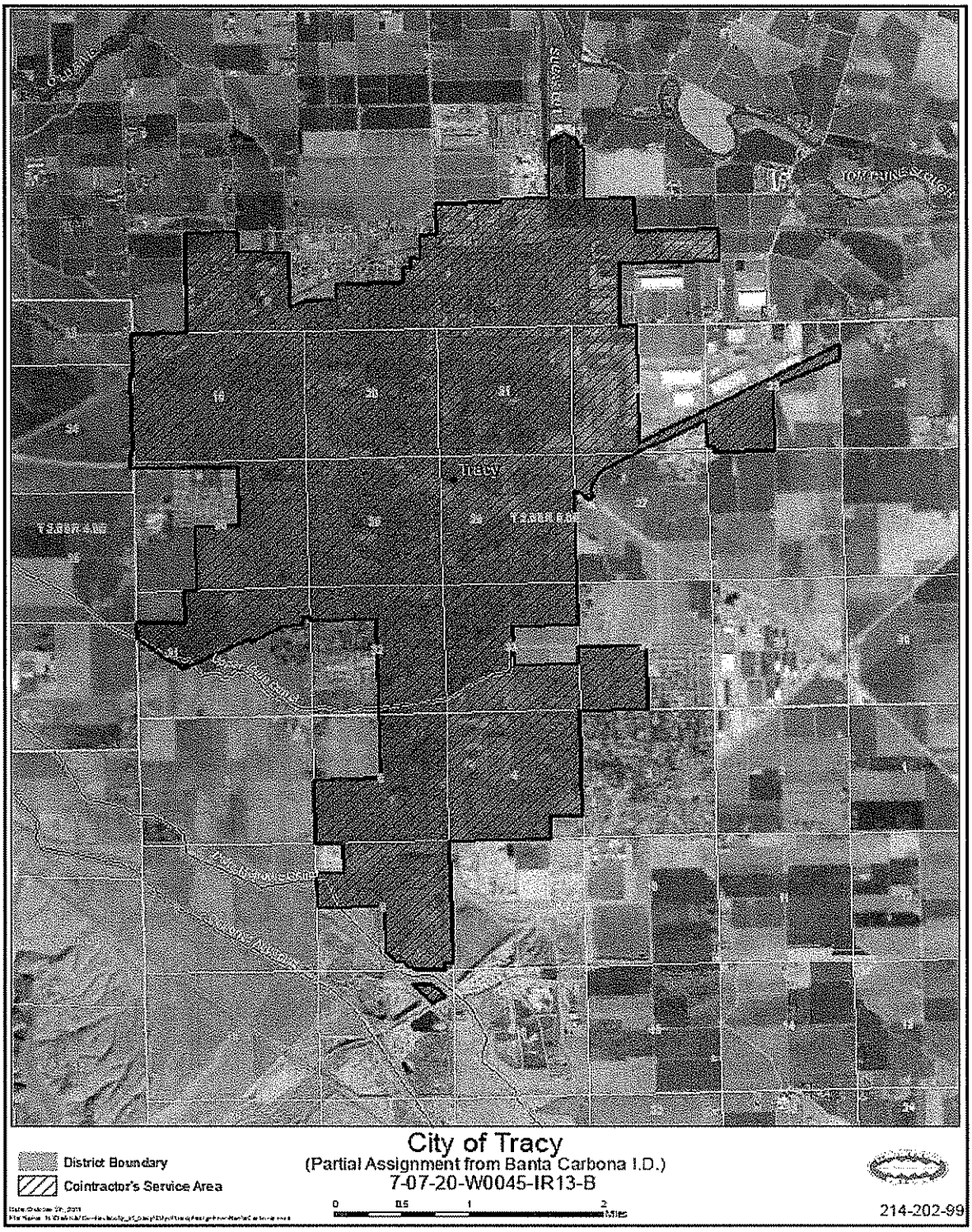
Contractor	Contract Number	Contract Quantity (acre-feet)	Expiration of Existing Interim Renewal Contract
DELTA DIVISION CONTRACTS			
City of Tracy (partial assignment from West Side Irrigation District)	14-06-200-4305A-IR12-B	2,500[1]	2/29/2012
City of Tracy (partial assignment from Banta-Carbona Irrigation District)	7-07-20-W0045-IR12-B	5,000	2/29/2012

As was noted in the BE for this project, the renewal of the City of Tracy's interim contracts # 14-06-200-4305A-IR12-B and #7-07-20-W0045-IR12-B will be used to support additional urban growth in the City of Tracy. These contracts were assigned from Banta Carbona Irrigation District and West Side Irrigation District to the City of Tracy in 2003. Reclamation has completed compliance under the Act through the Service's April 15, 2003 biological opinion on these water contract assignments (Service File No. 03-F-0128). As established in the 2003 biological opinion on the water assignments, the effects of this water delivered to the City of Tracy, together with the effects of interdependent actions, have been addressed in the Intra-Service Biological and Conference Opinion on the issuance of an incidental take permit for implementation of the San Joaquin Multi-Species Conservation Plan (SJMSCP; Service File No., 00-F-231) pursuant to section 10(a)(1)(B) of the Act and in accordance with section 7 of the Act for a period of fifty years. The permit expires in the year 2051. Because the Action Area is located solely within the SJMSCP's section 10(a)(1)(B) incidental take permit area, effects to federally listed species associated with the renewal of these two interim contracts to the City of Tracy is covered by the section 10(a)(1)(B) permit issued to the City of Tracy.

Our concurrence with the NLAA determination concludes consultation for this action. Therefore, unless new information reveals effects of the proposed action that may affect listed species in a manner or to an extent not considered, no further action pursuant to the Act is necessary. If you have questions or concerns regarding this action, please contact Daniel Russell, Thomas Leeman or Joy Winckel at the letterhead address or at (916) 414-6600.

Chief, Resources Management Division, U.S. Bureau of Reclamation

Figure 1. City of Tracy Contract Service Area Boundary.



FINAL ENVIRONMENTAL ASSESSMENT (11-049)

THREE DELTA DIVISION AND FIVE SAN LUIS UNIT WATER SERVICE INTERIM RENEWAL CONTRACTS 2012-2014

Appendix F
U.S. Fish and Wildlife Service Biological Opinion for One Delta Division and Five San Luis Unit Interim Renewal Contracts

February 2012

United States Department of the Interior
FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

In reply refer to:
08ESMF00-2012-F-0256-1

FEB 29 2012

Memorandum

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

From: for Field Supervisor, Sacramento Fish and Wildlife Office, U. S. Fish and Wildlife Service, Sacramento, California

Subject: Consultation on One Delta and Five San Luis Unit Water Service Interim Renewal Contracts 2012 – 2014 (EA-11-049) for a Two-Year Period from March 1, 2012 through February 28, 2014.

This is in response to the request from the U.S. Bureau of Reclamation (Reclamation) for consultation with the U.S. Fish and Wildlife Service (Service) dated November 22, 2011, on the potential effects to listed species from the execution of Interim Renewal Contracts (IRC) for two-years beginning on March 1, 2012 and ending February 28, 2014, for Westlands Water District (WD). Your request was received in our office on November 29, 2011. This document represents the Service's biological opinion on the effects of the action on the federally-listed as endangered San Joaquin kit fox (*Vulpes macrotis mutica*), California least tern (*Sterna antillarum browni)*, blunt-nosed leopard lizard (*Gambelia silus)*, San Joaquin woolly-threads (*Monolopia congdonii)* and the Federally-listed as threatened giant garter snake (*Thamnophis gigas)*. Critical habitat has not been designated for any of the species considered in this opinion. This response has been prepared pursuant to section 7(a)(2) of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 *et seq.*), and in accordance with the regulations governing interagency consultations (50 CFR §402).

Introduction

This biological opinion is a reinitiation of the Service's *February 29, 2000* Biological Opinion (BO) on IRCs (Service File No. 00-F-0056), and our consultations of *February 27, 2002* (Service File No., 02-F-0070), *February 27, 2004* (Service File No., 04-F-0360), *February 28, 2006* (Service File No., 06-F-0070), *December 15, 2008* (Service File No. 08-F-0538-1), *December 22, 2009* (Service File No. 08-I-0538-2) and of *February 26, 2010* (Service File No.

08-F-0538-3). This consultation addresses the effects of the proposed renewal of six IRCs in the San Luis Unit (SLU) and Delta Division of the Central Valley Project (CVP), which are being established in accordance with Section 3401(c) of the Central Valley Project Improvement Act (CVPIA) for a maximum period of 2 years. The water delivered for these interim contracts 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 NMFS and Service for the effects of the continued long-term operation of the CVP and State Water Project (SWP) (OCAP). Interim CVP water contract renewals are consistent with the tiered implementation of the CVPIA, as described in the Biological Opinion on Implementation of the CVPIA (Service File No. 98-F-0124).

The Service has considered the amount and the described intended use of the water that contract number 14-06-200-3365A-IR12-B for the Delta Division 3-way assignment from Mercy Springs Water District (MSWD) which includes the contractors Pajaro Valley Water management Agency (PVWMA), Santa Clara Valley Water District (SCVWD) and Westlands Water District Distribution District #1 (DD#1). Based on the on the described information provided by Reclamation, the Service has determined that contract number 14-06-200-3365A-IR12-B is not likely to adversely affect federally-listed species.

The Biological Assessment (BA) that Reclamation has provided for the proposed action makes the determination that the proposed action will adversely affect all the federally-listed species considered in this BO. The Service has reviewed and considered the conservation measures that Reclamation has proposed and implemented to minimize adverse effects of continued water delivery under the IRCs, including the assurance that Reclamation will 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 (see Conservation Measures from Previous IRC Consultations). 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. Based on these conservation measures and assurances, the Service determines that the proposed action, as described, is not likely to adversely affect the San Joaquin kit fox, the blunt-nosed leopard lizard, and the San Joaquin wooly-threads.

Consultation History

In November 2000, the Service issued a Biological Opinion on the Implementation of the Central Valley Project Improvement Act (CVPIA) and Continued Operation and Maintenance of the Central Valley Project (CVPIA BO) (Service 2000). The CVPIA BO addressed both the overall operation and maintenance of the CVP and implementation of the CVPIA. Because the CVPIA BO is a programmatic document, subsequent site-specific evaluations are being prepared to analyze the effects of implementing specific actions of the CVPIA on listed species, and the Interim water service contract renewals are an action requiring site-specific evaluation.

Reclamation and the Service also continue to consult on several other large-scale projects within the San Joaquin Valley and the Delta that may affect listed species. The results of these other consultations are or will be BOs that stand on their own. These BOs are also listed below.

Where applicable, the Service file numbers are in parentheses and species addressed in each are provided for additional information.

April 5, 2000: Reclamation provides a memo to the Service regarding the status of Coordination with California Department of Pesticide Regulation (CDPR) in a joint effort to provide endangered species information to pesticide users consistent with conservation measure *2a.* of the 2000 Interim Contract Renewal (IRC) Biological Opinion.

December 12, 2000: The Service submits an insufficiency memo to Reclamation regarding initiation of formal consultation for the long term contract renewal (LTCR) of contracts in the Delta Mendota Canal (DMC) Unit of the CVP. The memo includes a review of status and compliance with the IRC Biological Opinion of 2000.

January 30, 2001: Request from Reclamation to the Service initiating formal consultation for interim CVP water service contracts for the period of February 2001 to February 2002.

February 5, 2001: Reclamation provides to the Service a copy of the Draft Supplemental EA for the Renewal of Interim Water Service Contracts through February 28, 2002, CVP, California, and the draft Finding of No Significant Impact (FONSI) dated February 2, 2001.

February 28, 2001: Reclamation seeks concurrence (via memo) of the Service that the partial assignment of the Mercy Springs CVP contract will not adversely affect any listed species under the jurisdiction of the Service.

February 28, 2001: The Service extends for 1-year until February 28, 2002, the 2000 IRC Biological Opinion and concurs with Reclamation's conclusion that the delivery of the partial assignment of CVP contract water from Mercy Springs WD to the Santa Clara Valley WD and Westlands WD (Mercy Springs partial assignment) for use of up to 6,260 acre-feet of CVP water for 1 year from March 1, 2001 to February 28, 2002, is not likely to adversely affect federally listed species.

June 19, 2001: The Service submits a memo to Reclamation regarding concerns over exceedences of selenium levels in wetland water supply channels in the Grasslands Area, and how actions that Reclamation undertakes may influence these exceedences. The memo asked Reclamation to determine if reinitiation of the Interim contract biological opinion was warranted, and further asked Reclamation take steps to correct these selenium issues before initiating consultation with the Service on LTCR for the DMC Unit, or an additional IRC.

June 27, 2001: Letters to the Service from the Board of Supervisors, County of Santa Clara and from Board of Directors, Santa Clara Valley WD which includes commitments on the part of Santa Clara County to participate in the 1) preparation of a multi-species HCP/NCCP with the goal of completing a final HCP/NCCP and submitting an application for incidental take permits within 5 years; and, 2) establish an interim process that will keep conservation and recovery options open for affected species, and to ensure County compliance with ESA and the California ESA with regard to the issuance of discretionary permits, excluding agricultural activities, where Federal jurisdiction applies, during the period prior to approval of the HCP.

October 19, 2001: Memo from Reclamation advising the Service that Reclamation is developing a proposed action of executing IRCs for a period of 2 years, from 2002 to 2004.

November 19, 2001: Reclamation submits a memo to the Service requesting initiation of informal consultation with the Service on IRCs for the period from March 1, 2002 through February 29, 2004.

December 18, 2001: The Service receives a memo from Reclamation dated December 14, 2001 providing supplemental information for the IRC consultation.

December 19, 2001: The Service submits a memo to Reclamation requesting additional information and requesting that Reclamation initiate formal consultation on IRCs.

January 17, 2002: The Service submits a memo responding to Reclamation's request to initiate formal consultation, and requesting additional information status of implementation of conservation measures/terms and conditions of the IRC biological opinion of 2000.

January 31, 2002: Reclamation submits a memo to the Service responding to the Service's January 17, 2002 for additional information on IRCs.

February 7, 2002: Reclamation and the Service meet to discuss conservation measures proposed by the Service to be added to the project description of the IRC biological opinion.

February 20, 2002: Reclamation provides a written response to the Service regarding the Service's proposed conservation measures to be added to the project description of the biological opinion of IRCs.

November 6, 2003: Reclamation requests initiation on 59 IRCs for the period March 1, 2004, through February 28, 2006.

January 8, 2004: Service receives amended information for interim contractor City of Shasta Lake dated December 23, 2003.

February 19, 2004: Service receives supplemental information regarding presence of critical habitat, Natural Diversity Database records, and other baseline information for interim contractors.

July 19, 2004: Service receives memo from Reclamation's Regional Environmental Officer on consultation parameters related to full contractual entitlement for LTCRs

September 14, 2004: Service receives Reclamation's submittal of a BA and request for formal consultation for the LTCR of South Central California Area Office (SCCAO) Water contracts for the SLU unit.

November 3, 2004: Reclamation requests formal reinitiation of consultation on OCAP to address critical habitat issues and effects on delta smelt.

November 24, 2004: Service issues an insufficiency memorandum outlining lack of information and requesting additional information from SCCAO on SLU LTCR consultation.

February 15, 2005: Biological Opinion (05-F-0055), delta smelt and critical habitat.

May 19 and September 27, 2005: Reclamation provides additional information (and requests that consultation be initiated in their September 27 memorandum) for SLU LTCR consultation.

January 12, 2006: Service issues a no jeopardy biological opinion to Reclamation for long term renewal of CVP water service contracts for El Dorado Irrigation District (Service File No. 04-F-0489).

January 13, 2006: Reclamation initiates consultation on interim renewal of 18 CVP water service contracts for the period of March 1, 2006 through February 29, 2008.

January 19, 2006: Service concurs that long term renewal of the CVP water service contract for San Juan Water District is not likely to adversely affect listed species (Service File Number 04-I-1821).

February 28, 2006: Service receives supplemental information on each 2006 IRC indicating the contract's "purpose of use", the interim contract's existing "water shortage reliability", and states the year each 2006 interim contract's "purpose of use" became mixed Ag and M&I.

July 6, 2006: Reclamation requests that the Service reinitiate consultation on delta smelt.

May 2007: Draft EA, "San Luis Unit Water Service Interim Renewal Contracts— 2008- 2011."

July 17, 2007: Reclamation requests initiation of formal consultation pursuant to section 7(a) of the ESA, for the execution of 26-month IRCs.

August 20, 2007: Service responds to request for formal consultation with an insufficiency memo (07-I-1405), identifying additional information needs.

October 25, 2007: Reclamation responds to information request (via email) with the requested additional information.

December 18, 2007: Consultation on the IRCs with Westlands WD, CDFG, and the Cities of Avenal, Coalinga, and Huron.

December 15, 2008: Formal ESA Consultation on the Proposed Coordinated Operations of the Central Valley Project (CVP) and State Water Project (SWP) (OCAP Opinion).

December 15, 2008: Reclamation submits a memo to the Service provisionally accepting the Reasonable and Prudent Alternative (RPA) developed by the Service and included in the Biological Opinion on the effects of the continued long-term operation of the Central Valley Project (CVP) and State Water Project (SWP) (OCAP Opinion).

December 22, 2008: Consultation on the IRCs in the San Luis WD and Panoche WD.

September 15, 2009: The Service receives a memo from Reclamation requesting ESA consultation on CVP Interim contracts.

January 8, 2010: Reclamation Releases Draft Environmental Assessment (EA) and *Finding of No Significant Impact* (FONSI) "San Luis Unit Water Service Interim Renewal Contacts 2010-2013" and Draft EA and FONSI "Renewal of Cross Valley Interim Water Service Contracts and Delta/San Felipe Division Contracts through February 29, 2012."

August 18, 2011: The Service again receives a memo from Reclamation requesting ESA consultation on CVP Interim contracts.

October 4, 2011: The Service sends a response, requesting information pertaining to the previous consultation, and requesting further information regarding effects to Federally listed species for the current consultation request.

November 29, 2011: The Service receives a memo from Reclamation requesting ESA consultation and a Biological Assessment on CVP Interim contracts.

Relationship of the Proposed Action to Other Reclamation Actions

The relationship of the proposed action to other Reclamation actions was described in the February 26, 2010, consultation for Interim Renewal of the San Luis Unit water service contracts.

BIOLOGICAL OPINION

Preamble

The Service's consultations on the LTRCs addressed the diversion 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 CVPIA and ESA consultation requirements). In other words, the contracts address a demand (among other demands) for CVP water and the OCAP consultation addresses how the CVP projects are operated to meet those demands. There is a clear linkage between contract renewals and the operation of the CVP. These linkages must, and are being addressed in separate but parallel individual consultations to ensure that all effects on listed species and designated critical habitat are being identified and consulted on.

The Service is working with Reclamation's SCCAO to accumulate the information necessary to evaluate the effects of LTRCs for the City of Tracy in the DMC Unit and the San Felipe Division which includes the San Benito County WD and the Santa Clara Valley WD. The Service is also working with SCCAO to conclude the consultation on the LTRCs for the eight SLU contractors.

Our approach to water contract consultations is that the environmental baseline represents environmental conditions/species' status prior to the renewal of the contract; impacts of future water deliveries are not part of the environmental baseline. The direct; interrelated and interdependent actions; indirect effects; and cumulative effects of the action are determined based on the effects of water deliveries over the Interim contract period, including continuation of any ongoing actions. In short, we view them as effects from a proposed Federal action that have not undergone section 7 consultation.

Direct effects – We intend to address the effects of future implementation of Interim contracts, including the effects of interrelated and interdependent actions, as effects of the Federal action, not as part of the environmental baseline. The jeopardy analysis will compare the environmental baseline that exists at the time of the Federal action to the adverse effects of the Federal action projected into the future, starting at the time the Federal action is taken, including the effects of interrelated and interdependent actions.

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. Indirect effects may also occur outside of the area directly affected by the action. Indirect effects to listed species or suitable habitat has likely occurred as a result of the delivery of CVP water to the individual water districts or municipalities during the life of the existing water delivery contract. Many of these activities took place prior to implementation of the ESA in 1973 and prior to the listing of the species listed below and were not subject to the provisions of the ESA. Land use decisions subsequent to that time have continued to result in adverse effects to the species and suitable habitat and have not been authorized incidental take under section 9 or 10 of the ESA.

Description of the Proposed Action

The Proposed Action evaluated in this BO is the execution of six interim renewal water service contracts between Reclamation and the contractors listed in Table 1, for a two-year period from March 1, 2012, through February 28, 2014. Westlands WD's main contract (14-06-200-495A-IR2) is currently on its second interim renewal contract. The Proposed Action would be their third.

The Proposed Action would continue these existing interim renewal contracts, with only minor administrative changes to the contract provisions to update the previous interim renewal contracts for the new contract period. In the event that a new long-term water contract is executed, that interim renewal contract would then expire.

No changes to the contractors' service areas or water deliveries are part of the Proposed Action. Central Valley Project (CVP) water deliveries under the IRCs can only be used within each designated contract service area (Figure 1). The contract service area for the proposed interim renewal contracts have not changed from the existing interim renewal contracts. The proposed interim renewal contract quantities (Table 1) remain the same as in the existing interim renewal contracts. Water can be delivered under the interim renewal contracts 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 2010 interim renewal contracts analyzed within EA-09-101 and EA-09-126 (Reclamation 2010a and 2010b) are incorporated by reference into the Proposed Action.

The six interim water service contracts contain provisions that allow for adjustments resulting from court decisions, new laws, and from changes in regulatory requirements imposed through re-consultations. Accordingly, to the extent that additional restrictions are imposed on CVP operations to protect threatened or endangered species, those restrictions would be implemented in the administration of the six interim water service contracts considered in this BO. As a result, by their express terms the interim renewal contracts analyzed herein would conform to any applicable requirements lawfully imposed under the Federal ESA or other applicable environmental laws.

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.

Table 1 Contracts, Contract Entitlements and Purpose of Use

Contractor	Contract number	Contract Entitlement (AF)	Purpose of Use
DELTA DIVISION			
PVMWA, Westlands WD DD#1, SCVWD (3-way assignment from MSWD)	14-06-200-3365A-IR12-B	6,260	Ag or M&I
SAN LUIS UNIT			
Westlands Water District	14-06-200-495A-IR2	1,150,000	Ag or M&I
Westlands Water District DD#1 (full assignment from Centinella Water District)	7-07-20-W0055-IR12-B	2,500	Ag or M&I
Westlands Water District DD #1 (full assignment from Widren Water District)	14-06-200-8018-IR12-B	2,990	Ag or M&I
Westlands Water District DD #1 (full assignment from Broadview Water District)	14-06-200-8092-IR12	27,000	Ag or M&I
Westlands Water District DD #2 (partial assignment from MSWD)	14-06-200-3365A-IR12-C	4,198	Ag or M&I

On June 5, 1963, Westlands WD 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 Westlands WD began in 1968.

In 1999, Reclamation stated that the estimated average long-term supply for Westlands WD was 70 percent of its water supply contract, or about 805,000 acre-feet per year. Prior to 1990, its average CVP water supply, including interim CVP water when it was available, was about 1,250,000 acre-feet per year, and associated groundwater pumping in the district averaged about 150,000 acre-feet per year. The needs analysis completed by Reclamation in July 2000 estimated that the unmet demand in Westlands WD for 2025 would be about 74,287 acre-feet per year.

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

Effects of contract water deliveries under the subject contracts within the Westlands WD have been addressed in 2000, 2002, and 2004 BOs issued by the Service on interim renewal of CVP contracts. No new species have been listed, or critical habitat designated, within this water district since the 2004 BO.

Santa Clara Valley Water District

SCVWD includes all of Santa Clara County. The CVP place of use, however, does not include the entire county. Although water is commingled, CVP water can only be applied in the CVP place of use and the SCVWD must show they have needs for the water within the CVP place of use (N. Gruenhagen, Reclamation, pers. comm. 2006). As a result, analyses in the BA are based on use of water within the CVP place of use within SCVWD.

Included in the 2002, 2004, 2006, 2008, 2010, and this interim renewal is the delivery of water from the partial assignment of Mercy Springs WD in the DMC Unit to Westlands WD Distribution District #1 (DD#1), and SCVWD. Mercy Springs WD assigned 6,260 acre-feet of its CVP Contract to the Pajaro Valley Water Management Agency, Westlands WD DD #1, and the SCVWD in 1999. In conjunction with this Partial Assignment, Pajaro Valley Water Management Agency, SCVWD and Westlands WD DD #1 executed the "Agreement Relating to Partial Assignment of Water Service Contract" (Related Agreement).

Generally, the Related Agreement allows SCVWD and Westlands WD DD#1 to take delivery of the water on an interim basis unless and until the Pajaro Valley Water Management Agency is eventually ready to take delivery of the CVP water for beneficial use in its service area. Pajaro Valley Water Management Agency could begin to take delivery in year 10 of the contract (2009), but for purposes of this project description, Pajaro Valley Water Management Agency is assumed to take water after year 20 of the assignment. According to the contract, …"during the first Ten (10) years following the effective date of this Agreement, the total quantity of the water delivered to Santa Clara shall not exceed Twenty-five (25) percent of the total Subject Water Supply provided by Reclamation during said Ten (10) year period,…" No water was delivered to SCVWD under this contract in water year 2004 or 2005.

The proposed action does not include an analysis of the construction of a conveyance structure or effects of the delivery of CVP water to Pajaro Valley Water Management Agency's service area. The Pajaro Valley Water Management Agency currently has no infrastructure to divert and convey CVP water to its water service area, and will not have that capability at any time during the 2-year interim period. As a result, Pajaro Valley Water Management Agency will not be further addressed in this BO.

The County of Santa Clara; Valley Transportation Authority, SCVWD, and the cities of San Jose, Morgan Hill, and Gilroy (Local Partners) are developing the Santa Clara Valley Habitat Conservation Plan/Natural Community Conservation Plan (SCVHP). A second Administrative Draft was completed in June 2009, and a public review draft was released in late 2010. The Local Partners hope to obtain both ESA and NCCP permits in 2012. Due to both funding and scheduling issues, the SCVWD, with concurrence from the original HCP/NCCP Local Partners, agreed in February 2010 to remove fish (*Oncorhynchus mykiss*, *Oncorhynchus tschawytscha*, and *Lampetra tridentata*) from the proposed covered species list. The SCVWD Board is currently negotiating reduction in its cost share of the SCVHP, as a result of this decision. The SCVHP includes most of the District PMP (see Relationship of the Proposed Action to Other Reclamation Actions).

Although fish have been removed from the covered species list of the SCVHP, the SCVWD plans to continue its concurrent efforts on a separate but related HCP, referred to as the 3 Creeks

HCP (3C HCP). The 3C HCP study area greatly overlaps with the SCVHP proposed permit area, however, it includes the Stevens Creek Watershed, which is not covered under the SCVHP. The 3C HCP is the sole endeavor of the SCVWD, in response to a Draft Settlement Agreement regarding its water rights on Coyote, Guadalupe, and Steven's Creeks.

The purpose of the proposed action is to execute one Delta Division and five San Luis Unit interim renewal contracts beginning March 1, 2012, ending February 28, 2014, for WWD as required by, and to further implement CVPIA Section 3404(c). Execution of these six interim renewal contracts will provide the contractual relationship for the continued delivery of CVP water to the contractor pending execution of the long-term renewal contracts.

Interim renewal contracts are needed to provide the mechanism for the continued beneficial use of the water developed and managed by the CVP and for the continued reimbursement to the federal government for costs related to the construction and operation of the CVP by the five contractors. Additionally, CVP water is essential to continue agricultural production and municipal viability for these contractors.

Figure 1 Overview of the Proposed Action Area.

Conservation Measures from Previous IRC Consultations

As described in previous IRC consultations, Reclamation developed and implemented a short-term conservation program for IRC 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).

For purposes of this BO, the following assumptions are made:

A. Execution of each interim renewal contract is considered to be a separate action;

B. A two year interim renewal period is considered in the analysis, though contracts may be renewed for a shorter period.

C. The contracts would be renewed with existing contract quantities as reflected in Table 1;

D. Reclamation would continue to comply with commitments made or requirements imposed by applicable environmental documents, such as existing BOs, including any

obligations imposed on Reclamation resulting from re-consultations. Reclamation commits to the continued implementation of the conservation actions that were included in the programmatic consultation on the implementation of the CVPIA and Continued O&M of the CVP (98-F-0124, November 21, 2000); and

E. Reclamation would implement its obligations resulting from Court Orders issued in actions challenging applicable Biological Opinions that take effect during the interim renewal period.

In addition, Article 3(b) of the existing Interim renewal contracts includes mutual and dependent covenants mutually agreed upon by the parties, related to Water to be Made Available and Delivered to the Contractor as follows, "The Contractor shall utilize the Project Water made available to it pursuant to this interim renewal contract in accordance with all applicable requirements of any Biological Opinion addressing the execution of this interim renewal contract developed pursuant to section 7 of the ESA of 1973 as amended, and in accordance with environmental documentation as may be required for specific activities, including conversion of Irrigation Water to M&I Water." Part of the Service and Reclamation strategy to ensure compliance with the ESA includes a commitment for Reclamation to "provide necessary information to the Service's SFWO Endangered Species Division in situations where a determination of *no affect* [*sic*] has been made, sufficiently in advance, to enable the Service's review. Reclamation actions subject to this requirement include conversion of Irrigation Water to M&I water (CVPIA programmatic biological opinion, p. 2-70, Service File no. 1-1-98-F-0124).

Water will be delivered to the interim water service contractors in quantities up to the contract totals. These 2012 interim renewal contract quantities remain the same as in the existing water service contracts.

No changes to district boundaries are part of the proposed action. Reclamation will consult with or notify the Service (as appropriate) on future inclusions and exclusions to any interim renewal contract service-area boundaries to determine if any inclusions or annexations affect listed species.

No water transfers are part of the proposed action. Appropriate environmental compliance and section 7 consultations will be completed for any other requests from interim contractors for Reclamation approval of CVP water transfers.

Warren Act contracts for conveyance of non-federal water using federal facilities are not part of the proposed action. The Mendota Pool Pumpers Exchange Agreement and other non-Central Valley Project Waters that are pumped into the Mendota Pool are also not part of the proposed action.

Potential impacts arising from future assignments of water are also not included in the proposed action. They are separate independent actions and require their own NEPA and ESA compliance.

Changes to the existing Operations and Criteria and Plan (OCAP) were addressed in our February 15, 2005 biological opinion (Service File No. 1-1-05-F-0055) and are discussed below in the **Environmental Baseline**. Consultation on OCAP was reinitiated on July 6, 2006, as a result of the listing of the distinct population segment of the North American green sturgeon by National Marine Fisheries Service.

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 and no jeopardy findings. As such, the failing of any key assumption should be considered reason for reinitiating consultation IRCs. The Service assumes the following:

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 and this determination is essential to the conclusions made within regarding the overall effects of the proposed action. If this fundamental assumption is violated, or is not valid, then the effects analysis and conclusion of this BO will need to be reviewed, prompting reinitiation of this BO.

The County of Santa Clara; Valley Transportation Authority, Santa Clara Valley WD, and the cities of San Jose, Morgan Hill, and Gilroy (Local Partners) are developing the Santa Clara Valley Habitat Conservation Plan/Natural Community Conservation Plan (SCVHP) (http://www.scv-habitatplan.org/www/default.aspx). A second Administrative Draft was completed in June 2009, and a public review draft is anticipated in September 2010. The Local Partners hope to obtain both ESA and NCCP permits by early 2011. Due to both funding and scheduling issues, the Santa Clara Valley WD, with concurrence from the original HCP/NCCP Local Partners, agreed in February 2010 to removed fish (*Oncorhynchus mykiss*, *Oncorhynchus tschawytscha*, and *Lampetra tridentata*) from the proposed covered species list. The Santa Clara Valley WD Board is currently negotiating reduction in its cost share of the SCVHP, as a result of this decision.

Although fish have been removed from the covered species list of the SCVHP, the Santa Clara WD plans to continue its concurrent efforts on a separate but related HCP, referred to as the 3 Creeks HCP (3C HCP). The 3C HCP study area greatly overlaps with the SCVHP proposed permit area, however, it includes the Stevens Creek Watershed, which is not covered under the SCVHP. The 3C HCP is the sole endeavor of the Santa Clara WD, in response to a Draft Settlement Agreement regarding its water rights on Coyote, Guadalupe, and Steven's Creeks.

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 O&M of the CVP (November 21, 2000, Service File No., 98-F-0124), the Friant LTRCs (Service File No., 01-F-0027) and the Grassland Bypass Project (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;

b. implementation of the Central Valley Habitat Monitoring Program's Land Use Monitoring and Reporting;

c. CVP Conservation Program and CVPIA B(1)(other) Habitat Restoration Program.

We assume the proposed action will be implemented as described in the Description of the Proposed Action section, above, and any documentation referenced in that section, such as appendices or attached documents.

We assume Reclamation will consult on actions interrelated with this consultation, including but not limited to operations and maintenance, exchanges, assignments, transfers, conveyance, and management of flood waters (215 water, etc.), and other actions described in the Introduction as being under simultaneous consultation with this action, including requesting concurrence for any determination that an action is not likely to adversely affect listed species or critical habitat. Reclamation has completed consultation on operations and maintenance of Reclamation water conveyance facilities as described in the Environmental Baseline.

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. We assume Reclamation will initiate consultation under section 7 of the ESA on any infrastructure modifications or other actions which result in modification of the current delivery regime.

Analytical Framework for the Jeopardy Analysis

In accordance with policy and regulation, the jeopardy analyses in this Biological Opinion rely on four components: (1) the Status of the Species, which evaluates the species' 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 species in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (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 species; and (4) Cumulative Effects, which evaluates the effects of future, non-Federal activities in the action area on the giant garter snake, San Joaquin kit fox, blunt-nosed

leopard lizard, California least tern, and San Joaquin woolly-threads.

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 species' 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, San Joaquin kit fox, blunt-nosed leopard lizard, and California least tern and the role of the action area in the survival and recovery of these species 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.

Action Area

The action area includes all areas to be directly or indirectly affected by the Federal action and not merely the immediate areas involved in the Proposed Action [50 C.F.R. §402.02 and 402.14(h)(2)]. 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 Sacramento – San Joaquin Delta (Delta) as the source for the water delivered to meet these CVP contracts, and the canals and waterways that return the agricultural runoff and subsurface drainage flows from agricultural lands within and down slope of the SLU back to the San Joaquin River. For this reason, the action area includes the San Joaquin River to the estuary for aquatic species. The estuary was selected for aquatic species, as there is some evidence that contaminant loading may be detectable and significant to that point. The effect of water exports from the Delta on protected species are addressed separately (see **Coordinated Long-Term Operation of the CVP and SWP in the Relationship of the Proposed Action to Other Reclamation Actions section**).

Specifically, the action area includes the CVP Service Areas of the SLU contractors and SCVWD. The Westlands WD 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, Westlands WD purchased 9,100 acres of lands previously owned by Broadview WD and these lands are now considered part of Westlands WD (Reclamation 2009). Santa Clara Valley Water District, 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.

Status of the Species

<u>California Least Tern</u>
See most recent 5-year review, September 2006

<u>Giant Garter Snake</u>

See most recent 5-year review, September 2006
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.

This section provides updates to baseline information relevant to the listed species considered in this consultation. More detailed information regarding species distribution, biology and conservation needs can be found in the Recovery Plan for Upland Species of the San Joaquin Valley, California (USFWS 1998a); Recovery Plan for Serpentine Soil Species of the San Francisco Bay Area (USFWS 1998b); Final and the Draft Recovery Plan for Vernal Pool Ecosystems of California and Southern Oregon (USFWS 2004); and the Service's 5-Year Reviews for San Joaquin kit fox (USFWS 2010a); blunt-nosed leopard lizard (USFWS 2007c); and giant garter snake (USFWS 2006).

The environmental baseline for a portion of the action area considered in this BO, the surface waters in the Grasslands and San Joaquin River, was recently updated in the Grassland Bypass Project BO for 2010 – 2019 (GBP Opinion) (Service File No. 09-F-1036), and is incorporated here by reference. Further, the environmental baseline for the San Joaquin kit fox and the giant garter snake were updated in the GBP Opinion, and as the action area for this IRC consultation is consistent with the action area for the GBP BO, these species' baselines are incorporated here by reference as well. The environmental baseline for California least tern in the SLDFR Opinion (Service File No. 06-F-0027) is incorporated in part 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 supported by direct observations of least terns foraging at the sewage ponds at Lemore NAS in 1997 and 1998. While currently, no least tern nesting has been documented within the project area, the action area contains habitat suitable for foraging, resting, movement, and other essential behaviors. Therefore, 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.

A summary of Reclamation actions in this BO action area was compiled in the 2006 BO on IRC's (Service File No. 06-F-0070) and is also incorporated here by reference. The environmental baseline includes the ESA consultations completed for the renewal of other long-term water contracts including the DMC Unit (Service File No. 04-I- 0707), Friant and Cross Valley Division (01-F-0027), and consultations related to the operation and maintenance activities for Reclamation's South Central California Area Office (Service File No. 04-F-0368). Other unrelated Federal actions affecting the species or their critical habitat that have completed consultation are also included as part of the baseline.

The baseline condition for interim contract renewal assumes that any drainage service provided to the SLU be consistent with the project description and assumptions in the SLDFR BO. Any drainage management implemented in a manner not considered in the SLDFR BO will need to undergo separate section 7 consultation.

Land use patterns within the SLU

The BA for LTRC for the SLU (USBR 2004), Reclamation estimated that about 14 percent of the SLU'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 SLU. 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 2004).

The SLU BA estimated that in 2004, about one half of the SLU'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 2004).

Since the 2004 BA for SLU long term contract renewals, there has been a trend toward an increasing proportion of Westlands WD planted in permanent crops (orchards and vineyards) (Phillips 2006b; Westlands Water District 2004-2009), particularly on the western, non-drainage impaired portion of the district (Phillips 2006b). 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 Westlands WD. Annual crop reports from Westlands WD from 2005 – 2009 (available at: www.westlandswater.org) indicate that permanent crop acreage has continued to increase since 2005. Further, although there was a slight decrease in producing nut-bearing trees in 2009, the overall acreage of permanent crops in Westlands WD increased. 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 SLDFRE 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 Westlands WD and Interstate 5. The kit fox is the only listed species addressed in this biological opinion that may at times utilize crop lands to any extent.

Municipal and industrial activities in each of the communities that utilize the contract water have resulted in destruction, modification, or degradation of habitat used by San Joaquin kit fox, blunt-nosed leopard lizard, California jewel flower, and San Joaquin woolly-threads (SWRCB 1999). Many, but not all of these activities took place prior to implementation of the ESA in

1973 and prior to the listing of the species considered in this BO, and were not subject to the provisions of the ESA. Reclamation (Reclamation 2004a) 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.

There are at least two evaporation basins in the vicinity of Westlands WD that receive at least some drainage originating from Westlands WD (Stone Land Company and Westlake Farms North).

There is a third site at Lemoore NAS that disposes of at least some drainage water originating from Westlands WD with sewage water in an evaporation basin. In addition, one evaporation basin in or near Westlands WD was converted to an integrated on-farm drainage management system that utilizes salt tolerant crops to evaporate and dispose of drainage water from lands in Westlands (Britz) (Reclamation, 2011).

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 and groundwater accretions in the San Luis Drain can 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 drainage holding features may support a variety of aquatic micro- and macro-invertebrates, as well as some species of salinity tolerant fish. As the section of the San Luis Drain in Westlands WD and evaporation basins in the District 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 subsurface agricultural drainwater in Westlands WD, any aquatic organisms living in these ponds or the San Luis Drain are likely to develop high selenium body burdens. Similarly, any higher trophic level species that feeds on these drainwater-impacted aquatic organisms is also likely to develop high body burdens, with the consequent risk for adverse effects of selenium toxicity.

The San Luis Drain is approximately 85 miles long. Of that, 28 miles are used by the GBP to convey drainage to Mud Slough North. Approximately 55 miles of the Drain is within Westlands WD and is no longer actively used to convey drainage water. However, this unused portion of the Drain may contain standing water. The source of this water is shallow contaminated groundwater which enters the Drain by means of one way valves that were installed in the Drain to prevent groundwater pressure from compromising the integrity of the canal. The Drain is not fenced, and could be accessible to mosquito abatement district's efforts to plant mosquito fish. The USGS (Presser and Luoma, 2006, Appendix E) quantified the amount of sediment in the full 85 miles of the San Luis Drain as 177,900 cubic yards ranging from 5 to 190 ppm dry weight, with selenium concentrations in water from the Drain in Westlands ranging from 330-430 ppb (from Presser and Barnes 1985). It is unknown what wildlife use the San Luis Drain, or if the Drain is used by federally listed species such as the California least tern. However, the potential is very high for selenium to bioaccumulate in the food chain organisms residing in the Drain.

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 BO 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. 08-F-0538, 06-F-0070, 04-F-0360, 02-F-0070, and 00-F-0056), Grassland Bypass Project (09- 1036) and in the programmatic biological opinion on implementation of the CVPIA (Service file no. 98-F-0124). Impacts associated with implementation of drainage service for the SLU (including Westlands WD) were considered in the biological opinion on SLDFR (Service file no. 06-F-0027). Any changes to drainage service not considered in the SLDFR Opinion will require separate section 7 consultation.

Conservation measures

Essential to the findings below are Reclamation's past and continuing conservation efforts to recover listed species through the Central Valley Improvement Act (b)(1)(other) and Central Valley Project Conservation Program. These programs have provided funding for habitat acquisition and management, surveys, and research that have contributed to the recovery of numerous listed species that have been adversely affected by the Central Valley Project.

Direct Effects

There will be no direct effects to listed species associated with the proposed execution of the interim contracts considered in this BO for the 24 month period beginning March 1, 2012, through February 28, 2014. O&M of CVP water conveyance facilities, which can be considered interdependent actions, were analyzed under separate consultations as described in the non-jeopardy biological opinions (see **Environmental Baseline**).

The proposed Federal action will continue deliveries of water to Westlands WD, as well as the portion of the Mercy Springs three-way assignment allocated to Santa Clara Valley WD. No construction of new facilities, installation of new structures, or modification of existing facilities is required or planned. Delivery of Federal water to these six contractors, 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, are reasonably certain to occur, and would not occur "but for" the project. The indirect effects of executing the IRCs are explained below.

Conversions of native habitat to agricultural use may occur as a result of, or related to Federal water deliveries. The use of CVP water in the past destroyed, modified, fragmented, or degraded habitat for the species addressed in this BO (see Status of the Species and Environmental Baseline). The conservation measures from previous IRC consultations, specifically to ensure that project water is not used in whole or in part to facilitate the conversion of existing natural habitat to agricultural or other purposes should preclude the conversion of existing natural habitat.

Subsurface Drainage Disposal

As described in the **Environmental Baseline**, there are potentially three evaporation basins in the vicinity of Westlands WD that receive at least some drainage originating from Westlands WD. In addition, portions of the San Luis Drain in Westlands WD 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 San Luis Drain was not made available by Reclamation for this consultation. Therefore, in the absence of data, it is presumed that selenium contamination and adverse effects are likely to occur to a small number of least terns foraging at drainage evaporation ponds receiving at least some drainage water from Westlands WD or from the San Luis Drain. Drainage disposal may adversely affect the California least tern during the two-year duration of the Proposed Action (as addressed in the previous IRCs BO).

Shallow Contaminated Groundwater in Westlands WD

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

The SLDFR FEIS included a regional groundwater flow model for the SLDFR project area (includes 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., Westlands WD).

The SWRCB in their Water Rights Decision 1641 (SWRCB 2000) identified lands within the San Luis Unit contributes 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 Westlands WD effects to San Joaquin River water quality: *"The Grassland Subarea contains some of most 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, Deverel, 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 Westlands) 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 th elevation 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 environmental baseline of the Grassland wetland supply channels (surface waters downstream and downslope of Westlands) and effects of drainwater contamination to giant garter snake is provided in the BO on the Third Use Agreement of the GBP (09-F-1036) and is incorporated here by reference. The Service concluded in the GBP Opinion 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, it is reasonable to conclude that the giant garter snake is likely adversely affected by selenium in their diet from this area. 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 are likely to take the form of impaired reproduction.

Drainage contamination from Westlands WD likely contributes to 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.

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. The discussion of cumulative effects in the 2000 and 2002 biological opinions on interim contracts is incorporated by reference.

Many of the indirect effects of the proposed action related to agricultural use of the CVP contract supply are also cumulative effects because not all reasonably foreseeable future activities that adversely affect listed species are solely attributable to the Federal water supply in districts with multiple sources of water, including Westlands WD. Cumulative effects may occur over the next two years that are the same as those described above in **Effects of the Action.**

Summary of Effects

California least tern

- Likely present in the action area at existing drainage evaporation ponds located within or adjacent to Westlands WD that receive at least some drainage from the District. No new evaporation ponds (not considered in SLDFR) are anticipated during the life of this Interim renewal contract period. Any changes to proposed drainage management, not considered in the SLDFR Opinion will require additional section 7 consultation. Effect determination: May adversely affect.

Giant garter snake

- In the Westlands WD, with the exception of a heavy rainfall occurrence where floodwater causes sheetflow over district lands, there is no surface discharge of subsurface agricultural drainage within or outside district boundaries. Contaminated shallow groundwater in Westlands WD contributes to drainage contamination downslope and out of the district. Drainage impacts to water quality in surface waters of the Grasslands wetlands contributes to adverse effects of an already reduced baseline for the snake. These impacts were analyzed in the Grasslands Bypass Project Biological Opinion, 2009. Effect determination: May adversely affect.

Conclusion

After reviewing the current status of the giant garter snake and California least tern, the environmental baseline for the action area, the effects of the proposed action, 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 these species.

Our conclusion is based on the conservation measures and anticipated commitments provided in the project description, the short duration of the IRCs, CVP water allocations in the recent past as well as for the year 2012.

INCIDENTAL TAKE STATEMENT

We are not able to quantify the amount of incidental take associated with the effects of the CVP water deliveries authorized by the renewal of the proposed IRC's that were described in the

Effects of the Proposed Action. While we have determined that adverse effects to California least tern are reasonably likely to occur associated with subsurface agricultural drainage contamination in evaporation ponds and the San Luis Drain in Westlands WD, we cannot quantify a specific amount or extent of incidental take that is likely to occur in these drainage disposal areas. We believe the amount of take resulting from subsurface drainage contamination is relatively small with regard to our jeopardy analysis for this species; however, because we cannot quantify the amount of take anticipated, we are unable to exempt it from the prohibitions of section 9 of the ESA.

We can neither anticipate nor quantify the amount or type of incidental take associated with the effects of use of the CVP water supply authorized by renewal of the proposed IRC's that were described in **Effects of the Proposed Action.** While we have determined that adverse effects to the giant garter snake are reasonably likely to occur as a result of this proposed action, we cannot quantify a specific amount or extent of incidental take that is likely to occur. Neither can we use a surrogate means to measure incidental take, as the proposed action essentially only contributes some fraction to the overall processes that will result in the anticipated adverse effects. We believe the amount of take resulting from the fractional contribution is relatively small with regard to our jeopardy analysis for these species; however, because we cannot quantify the amount of take anticipated, we are unable to exempt it from the prohibitions of section 9 of the ESA, nor are we able to propose any reasonable and prudent measures to minimize the impact of this potential take.

Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. The term "conservation recommendations" has been defined as suggestions from the Service regarding discretionary measures to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information. The recommendations provided here relate only to the proposed action and do not necessarily represent complete fulfillment of the agency's 7(a)(1) responsibilities for these species. In order for the Service to be kept informed of actions that either minimize or avoid adverse effects or that benefit listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

The Service recommends that Reclamation:

Implement actions that benefit the recovery needs of the giant garter snake: Reclamation should work with the Service and CDFG 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 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 (b)(1)other and the Central Valley Project Conservation Program (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 1999). Priority 1 Recovery Actions from these plans include the following:

a. Protect habitat on private lands in the North and South Grasslands for giant garter snakes;
b. Protect habitat on private lands in the Mendota area for giant garter snakes;
c. Develop/update and implement management plans for Mendota, China Island, Los Banos, and Volta WAs for giant garter snakes; and

Implement actions that benefit the recovery needs of the San Joaquin kit fox: Reclamation should assist the Service in the implementation of recovery actions in the *Recovery Plan for Upland Species in the San Joaquin Valley* (USFWS 1998), including pursuing and funding opportunities that expand and connect existing natural land for San Joaquin kit fox in the Mendota area, Fresno County, with the Ciervo-Panoche Natural Area.

Manage retired lands to benefit listed species recovery needs: In accordance with the conservation measure for "strategic land retirement" in the SLDFR biological opinion, Reclamation and/or the Water Authority should work with landowners, in collaboration with the Service and other local resource agencies, to manage retired lands in a manner that maximizes benefits to listed species such as San Joaquin kit fox. This would allow Reclamation to meet its obligation to comply with section 7(a)(2) for both the SLDFR and San Luis Unit long-term contract renewal consultations. These consultations provide a unique opportunity for Reclamation to collaborate in the resolution of a significant resource issue of the southern San Joaquin Valley selenium contaminated drainage, in a way that furthers important resource management goals of both Reclamation and the Service. There is need for evaluation and development of a broad scale landscape mosaic plan for the San Luis Unit and adjacent areas focusing specifically on habitat restoration and endangered species recovery goals. Such a plan could provide guidance to USDOI and Westlands' management efforts on existing retired lands, and guide the Service and Reclamation on evaluation and implementation of future actions in the area. To accomplish this, Reclamation should establish a team of Service and Reclamation staff to negotiate an acceptable land retirement strategy that would address listed species recovery needs.

Optimize SLDFR land retirement with related efforts to maximize benefit to recovery of threatened and endangered species: The Service recommends that Reclamation begin the planning phase for the objectives to further listed species recovery associated with land retirement as soon as possible. The Service further recommends that Reclamation, jointly with the SFWO, convene a drainage technical team under the larger San Joaquin Valley Recovery Team, and invite other interested parties and stakeholders to coordinate and integrate these recovery objectives in a practical manner with other related actions. As discussed in the Environmental Baseline section of this Opinion, an example of an action potentially related to land retirement is encroachment mitigation, a requirement of the SWRCB in their Decision D-1641 (dated March 2000). In D-1641 the SWRCB required in-kind mitigation for encroachment due to the application of CVP water outside the water rights permitted Place of Use for the CVP. As of this date, about 22,000 acres of alkali scrub habitat have yet to be acquired for this mitigation requirement. All of the encroachment of alkali scrub occurred within the San Luis Unit (primarily Westlands) and within the SLDFR project area. The SWRCB D-1641 directed

Reclamation to complete this mitigation within ten years of the date of the Decision. Restoration of some of the drainage-impaired retired lands could be used to fulfill this mitigation requirement and could provide habitat that would support listed species such as San Joaquin kit fox.
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 San Luis Unit. 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 Grassland wetland channels, Mud Slough (North) and the San Joaquin River. The Service in the Coordination Act Report for the SLDFR recommended that lands producing drainwater exceeding threshold levels for agricultural toxicants should either be retired from irrigated agriculture or the drainwater be disposed of in a manner that avoids wildlife contact, such as deep-well injection or treatment to render the drainage harmless to the environment (USFWS 2006b).

Expand focus of the SLDFR Mitigation Work Group to include listed species issues.
If USDOI moves forward with implementation of the SLDFR ROD, as recent filings in Federal court would indicate, Reclamation should expand the mitigation work group to address listed species issues of SLDFR planning that has yet be completed. SLDFR issues that have been deferred until a later date include: the preparation of mitigation monitoring and adaptive management plans; full discussion of risks associated with reuse facilities, mitigation and contingency measures; final siting and management planning for project facilities (including mitigation wetlands); and detailed cost estimation and framing of the feasibility analysis.

Ensure a funding source is available to pay for contingencies. Reclamation and the Water Authority should ensure that adequate funding is available for contingencies or adaptive management specific to listed species that arises over the period the GBP Extension is implemented. Such contingencies could include detailed contaminant monitoring to establish risk to San Joaquin kit fox use at reuse areas, or mitigation measures such as fencing of reuse areas or provision of clean wetland compensation habitat for migratory bird impacts at the SJRIP drainage reuse area. Reclamation should estimate and request adequate funding for contingencies that may be needed during the project life in the SLDFR feasibility and budgeting processes. Reclamation should also have contingency funding sources identified (such as acquisition of performance bonds) to enable immediate action to halt adverse effects if stepwise deterrence proves ineffective and prevent prolonged risk to listed species during a reinitiated consultation.

Ensure adequate funding for and quality of water supply for mitigation wetlands.
If USDOI moves forward with implementation of the SLDFR ROD, as recent filings in Federal court would indicate, to maximize benefit to listed species such as giant garter snake, Reclamation should seek allocation of firm, clean, contract water supply for mitigation wetlands. Sources of such water include reverse osmosis treated drainwater, water freed-up by land retirement, or CVP water contract assignments.

Include compliance with 2 µg/L selenium in Grassland wetland water supplies as a GBP performance criterion. 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, (b) the DMC sumps and check drains that discharge highly contaminated drainage water into the DMC, (c) and lands to the north of the GDA that still discharge drainage into the Grassland wetland supply channels within the (e.g., Poso and Almond Drain areas). Reclamation should consider including compliance with water quality objectives in the Grasslands wetland channels as a performance criteria. Reclamation should also 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.

Monitor and assess the effects of SJRECWA 10-year Transfer Program on water quality and giant garter snake populations in Mud and Salt Sloughs: Reclamation should monitor and assess the effect of reduced flow in Mud and Salt Slough from the SJRECWA 10-Year Transfer program on waterborne selenium concentrations and giant garter snake populations. This is an issue of emerging significance in the environmental baseline for Reclamation actions in this part of the San Joaquin Valley.

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. 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.

REINITIATION

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 questions regarding the proposed Interim Renewal of Water Service Contracts consultation, please contact Kenneth Sanchez at (916) 414-6620.

Attachments:
Figure 2 Westlands Water District
Figure 3 Distribution District #1 and Pajaro Valley Water Management Area
Figure 4 Distribution District #2

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Saslaw, Larry. (2007). Electronic mail from Field Manager, Bureau of Land Management, Bakersfield, California to Karen Leyse, Recovery Branch, Endangered Species Division, Sacramento Fish and Wildlife Office, U.S. Fish and Wildlife Service, Sacramento, CA.

Vance, Julie. (2006). Electronic mail regarding native habitat being disked in Kings County from Environmental Scientist, Permitting and Regionwide Conservation Planning, California Dept. Fish and Game, Fresno, California, to Susan P. Jones, Chief, San Joaquin Valley Branch, Endangered Species Division, U.S. Fish and Wildlife Service, Sacramento, CA.

Williams, D.F. (1989). Letter to R. Schlorff, CDFG, Sacramento, CA.

Williams, Pam. (2006). Electronic mail from Refuge Biologist, Kern National Wildlife Refuge Complex, Delano, California to Joseph Terry, Biologist, San Joaquin Valley Branch, Endangered Species Division, Sacramento Fish and Wildlife Office, U.S. Fish and Wildlife Service, Sacramento, California.

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Wylie, Glenn, D.(2006) Electronic mail on observations of river otter predation on giant garter snakes from Research Biologist, U.S. Geological Survey, Western Ecological Research Center, Dixon, CA, to Elizabeth Warne, Recovery Biologist, Sacramento Fish and Wildlife Office, U.S. Fish and Wildlife Service, Sacramento, CA.

Personal Communications

Clark, L. (2008). Fort Hunter Liggett Military Reservation, California, provided information on the status of the kit fox at the facility. December 8, 2008.

Coolahan, C. (2009). USDA APHIS State Director, Wildlife Services, Sacramento, CA. Provided information on predator and rodent control materials currently authorized for use by APHIS within the range of the San Joaquin kit fox. January 22, 2009.

Cypher, B. (2008). Researcher/Wildlife Biologist, Endangered Species Recovery Program. California State University-Stanislaus (Bakersfield). Provided information on the recovery strategy for the kit fox, on the fox's status in core and satellite areas, and on research activities to Karen Leyse, Fish and Wildlife Biologist, U.S. Fish and Wildlife, Sacramento Field Office. August 19, 2008, Bakersfield, CA.

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Golden, N. (2008). USFWS, Division of Environmental Quality, Arlington, VA. Provided information on status of Informal Consultation with the USEPA on Second Generation

Anticoagulant Rodenticides.

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Hansen, G. (1991). Consulting Herpetologist, Sacramento, CA.

Hansen, G. (1998). Consulting Herpetologist, Sacramento, CA.

Hansen, E. (2008). Consulting Environmental Biologist, Sacramento, CA. Provided information on population trends, threats, and recommendations for future actions.

Kelly, P. (2000). Endangered Species Recovery Program, Fresno, pers. comm. to P. White, Fish and Wildlife Service, Sacramento, April 6, 2000.

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Moore, M. L. (2008). Provided information on kit fox at Camp Roberts to Karen Leyse, Fish and Wildlife Biologist, SFWO, USFWS, Sacramento, California. June, 2008.

Roberts, J. (2006). Director, The Natomas Basin Conservancy.

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Vance, J. (2007). Wildlife Biologist. California Department of Fish and Game. Fresno, California.

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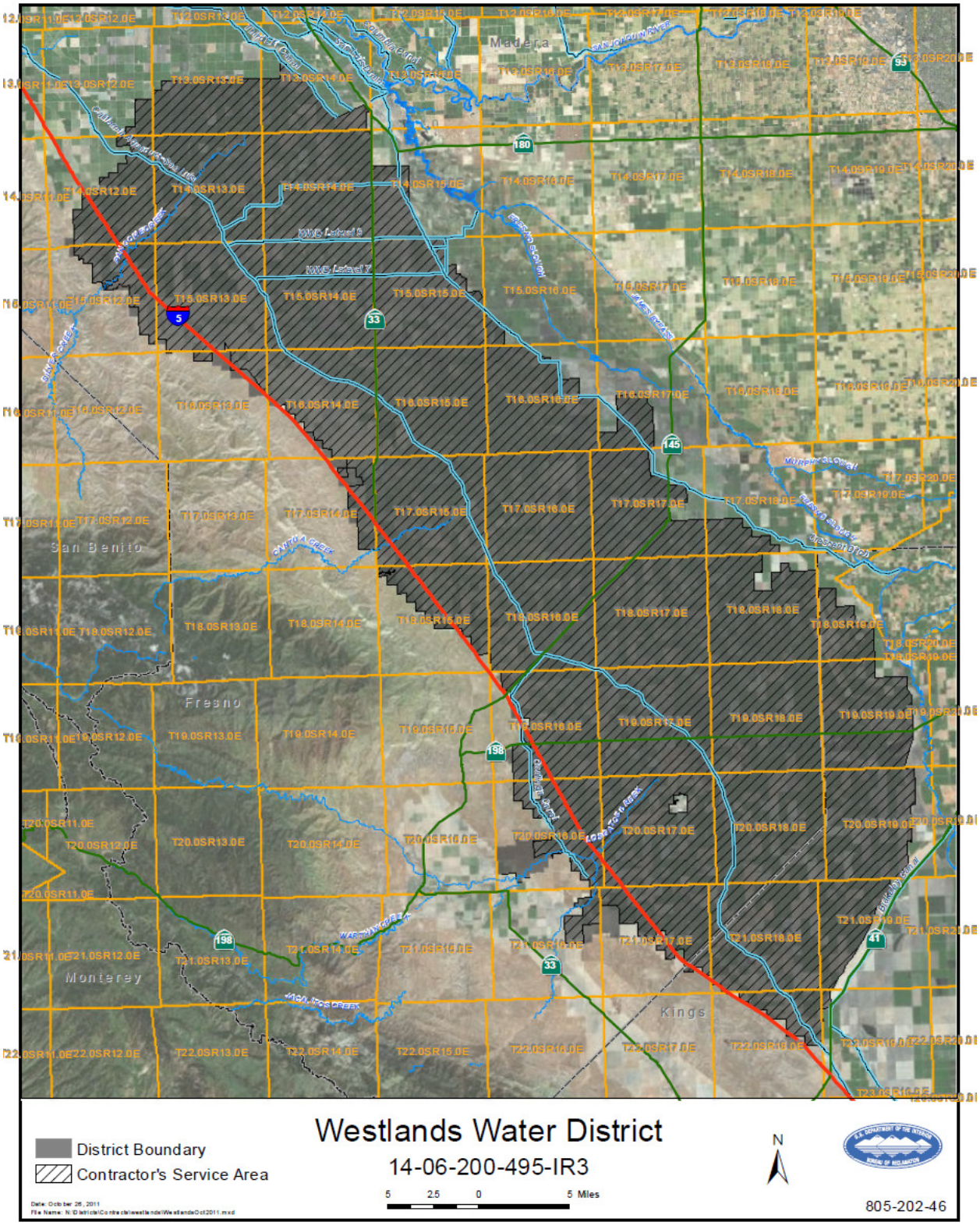
Madera
San Benito
Fresno
Monterey
Kings
District Boundary
Contractor's Service Area
Westlands Water District
14-06-200-495-IR3
5 2.5 0 5 Miles
N
805-202-46

Figure 2 Westlands Water District

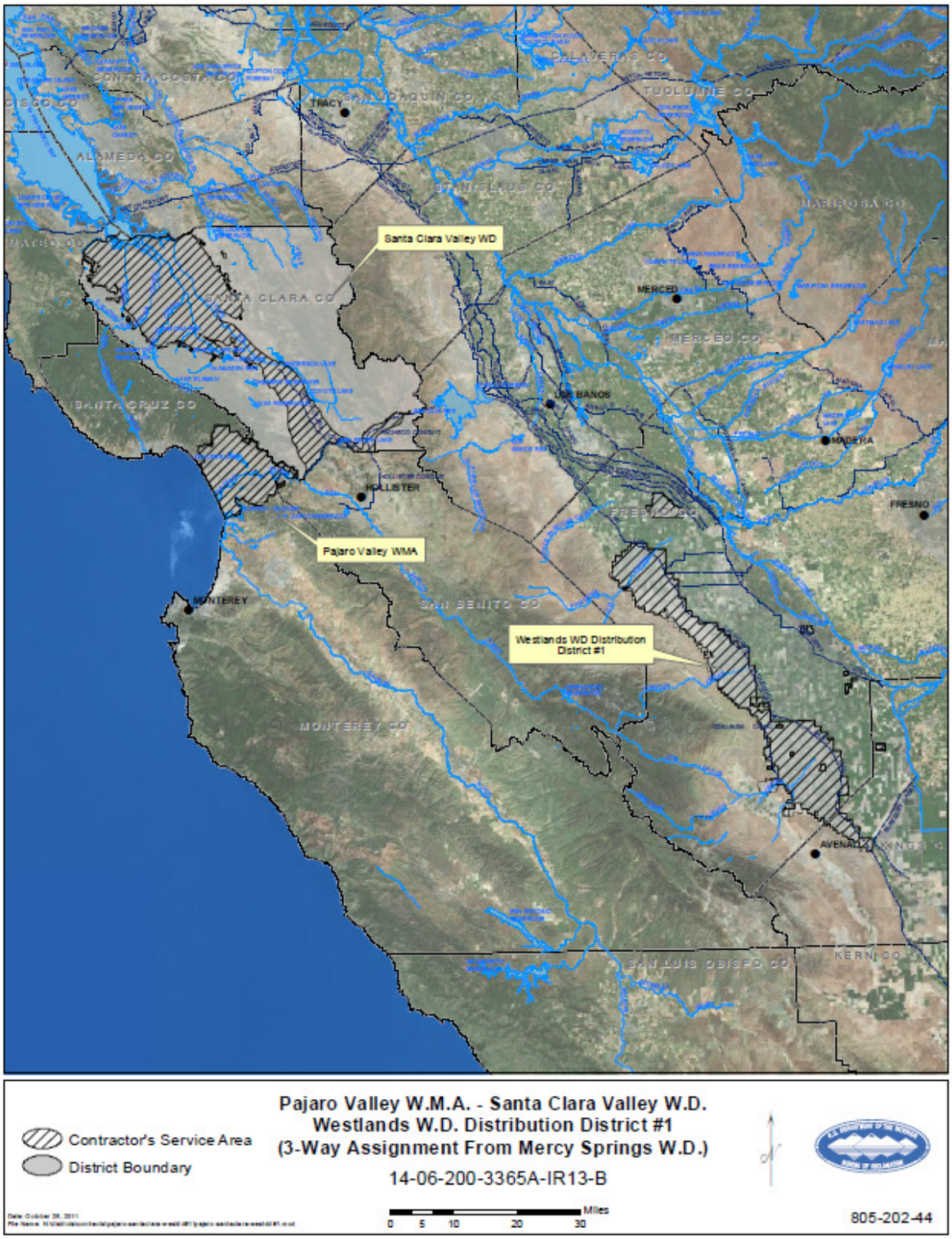

Figure 3 Distribution District #1 and Pajaro Valley Water Management Area

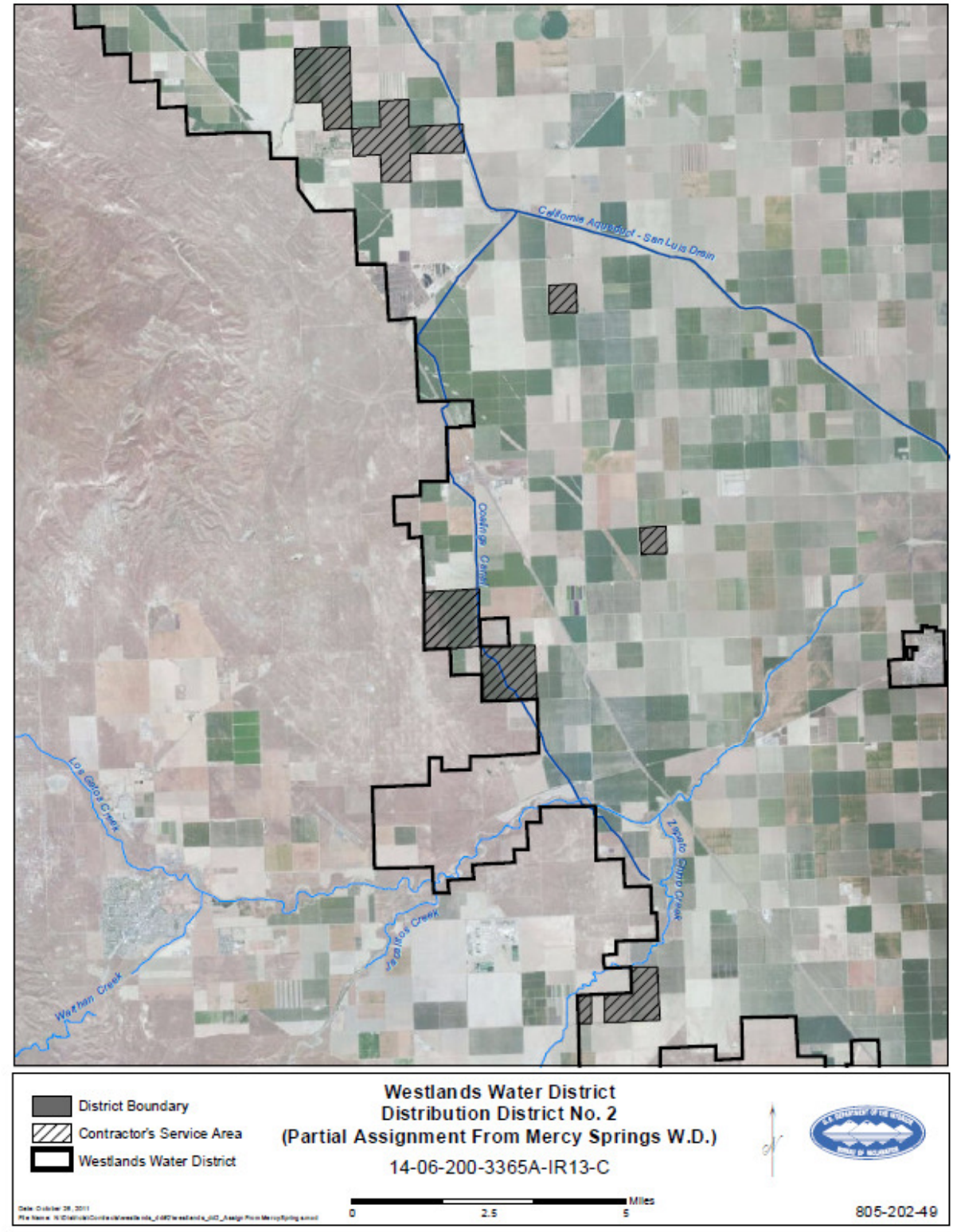

Figure 4 Distribution District #2