

# RECLAMATION

*Managing Water in the West*

## **Environmental Assessment**

# **Agreement for the Reimbursement of Pumping Costs between the United States and the State of California for Refuge Water Supplies at Wildlife Areas**

EA Number 14-34-MP



U.S. Department of the Interior  
Bureau of Reclamation  
Mid-Pacific Regional Office  
Sacramento, CA

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## **Mission Statements**

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

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

# Table of Contents

<b>1.0</b>	<b>Introduction.....</b>	<b>1</b>
1.1	Background.....	1
1.2	Need for the Proposed Action.....	3
<b>2.0</b>	<b>Proposed Action and Alternatives.....</b>	<b>3</b>
2.1	No Action Alternative.....	3
2.2	Proposed Action.....	4
2.3	Environmental Protection Measures and Commitments.....	7
<b>3.0</b>	<b>Affected Environment and Environmental Consequences .....</b>	<b>7</b>
3.1	Resources Not Analyzed in Detail.....	7
3.2	Water and Hydrogeologic Resources.....	8
3.2.1	Affected Environment.....	8
3.2.2	No Action.....	9
3.2.3	Proposed Action.....	9
3.3	Biological Resources .....	11
3.3.1	Affected Environment.....	11
3.3.2	No Action.....	13
3.3.3	Proposed Action.....	13
3.4	Cumulative Impacts .....	14
<b>4.0</b>	<b>Consultation and Coordination .....</b>	<b>14</b>
<b>5.0</b>	<b>References.....</b>	<b>15</b>

## List of Tables

Table 1	Proposed Action Details for Groundwater Wells and Lift Pumps
Table 2	Existing Water Quality Data for Proposed Action
Table 3	Potentially Occurring Special-status Species in the Proposed Action Area

## List of Appendices

Appendix 1	Water Quality Monitoring Plan
Appendix 2	Hydrogeologic Monitoring Plan

## List of Acronyms and Abbreviations

AF	acre-feet
AFY	acre-feet per year or annually
CDFW	California Department of Fish and Wildlife
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
DW	deep well
EA	Environmental Assessment
GRCD	Grassland Resource Conservation District
GWD	Grassland Water District
IL4	Incremental Level 4 water
ITA	Indian Trust Assets
L2	Level 2 water
L4	Level 4 water
LL	Low lift
NHPA	National Historic Preservation Act
Reclamation	Bureau of Reclamation
SLCC	San Luis Canal Company
SOD	South of Delta
USFWS	U.S. Fish and Wildlife Service
WA	Wildlife Area
WCP	Water Conservation Project
WQMP	Water Quality Monitoring Plan

## 1.0 Introduction

The Bureau of Reclamation (Reclamation) proposes entering into the “*Agreement for the Reimbursement of Pumping Costs for Refuge Water Supplies at Department of Fish and Wildlife Region 4 Wildlife Areas between the United States and the State of California*” (Agreement or Proposed Action). This Agreement would reimburse the California Department of Fish and Wildlife (CDFW) for costs associated with: 1) lift pumping refuge surface water supplies to CDFW Wildlife Areas (WAs) and 2) pumping sources of Incremental Level 4 (IL4) water supplies developed at CDFW WAs located in the San Joaquin Valley. The Agreement’s term would be effective from the date of execution through February 29, 2032, approximately 15 years.

### 1.1 Background

Section 3406(d) of the Central Valley Project Improvement Act (CVPIA), Public Law 102-575, Title 34 (1992), authorizes and directs the Secretary of the Interior (Secretary), through Reclamation, to deliver firm water supplies of suitable quality to 19 federal, state, and private wetland habitats, WAs and wildlife refuges (collectively referred to as Refuges) located in the Central Valley. These Refuges include CDFW’s Los Banos, Mendota, and Volta WAs; and the China Island, Salt Slough, and Gadwall Units of the North Grasslands WA. The Gadwall Unit receives CVPIA water supplies as part of the Grassland Resource Conservation District (GRCD).

CVPIA identifies two refuge water types, Level 2 (L2) and Level 4 (L4) for delivery to the Refuges. Section 3406(d)(1) of the Act directs the Secretary, through Reclamation, to provide water supplies to the Refuges in accordance with L2 of the “Dependable Water Supply Needs” table for those habitat areas as set forth in the *Report on Refuge Water Supply Investigations* (Refuge Water Supply Report) (Reclamation, 1989) and two-thirds of the water supply needed for full habitat development for those habitat areas identified in the *San Joaquin Basin Action Plan/Kesterson Mitigation Plan* (Interior, 1989). These reports describe water needs and delivery requirements for each wetland habitat area to accomplish the stated refuge management objectives. In the Refuge Water Supply Report, L2 represents the average annual historical water supplies received by these Refuges between 1975 through 1984, and L4 identifies the water supplies needed for full development of the Refuges for optimal habitat benefits. L2 water is provided primarily from Central Valley Project (CVP) water supplies.

Section 3406 (d)(2) directs the Secretary, through Reclamation, to supplement those quantities of water (L2 water supplies) provided under Section 3406 (d)(1) to full L4 quantities of the “Dependable Water Supply Needs” table for those habitat areas as set forth in the Refuge Water Supply Report and the full water supply needed for full habitat development for those habitat areas identified in the *San Joaquin Basin Action Plan/Kesterson Mitigation Plan*. The quantities of water required to supplement the L2 supplies represent the difference between the L2 allocation and L4 allocation, and must be acquired through voluntary measures, including water conservation, purchase, and conjunctive use, which do not require involuntary reallocations of CVP yield. The difference between L2 and full L4 water quantities is referred to as Incremental Level 4 (IL4). Historically, IL4 water has been primarily acquired from willing sellers on the open market. Reclamation has also acquired groundwater as part of its annual IL4 supplies. The

amount of IL4 water acquired varies from year to year, depending on annual hydrology, water availability, water market pricing, and available funding, which contribute to constraints that have limited Reclamation's ability to annually provide the full quantities of IL4 supplies to the Refuges. Reclamation continues to explore options for new sources of IL4 water supplies to augment limited available annual quantities.

Reclamation is responsible for delivering CVPIA water supplies to the Refuges' boundaries for their internal distribution. The delivery of L4 external surface water supplies for use by the WAs requires the conveyance of external surface water and lift pumping of external surface water deliveries due to elevation differences between the point of delivery and internal WA water distribution systems. CDFW owns and operates lift pumps and pump stations necessary to complete the initial delivery of CVPIA external surface water supplies to the boundaries of the Los Banos, Mendota and Volta WAs and the China Island Unit of the North Grasslands WA, including lifting water to reach the elevations of the respective WA's internal distribution systems. CDFW has operated these pumps to meet the stated purpose since CVPIA was enacted in October 1992 and incurs costs associated with the operation and maintenance of these lift pumps and pump stations.

CDFW owns several groundwater wells located on the WAs. CDFW also operates the Ruth Lake Water Conservation Project (Ruth Lake WCP) located on the Los Banos WA. In late 2010, development of the Ruth Lake WCP was completed with the purpose of recirculating return flows from the Boundary Drain. The Boundary Drain is a waterway that was converted from a slough channel to an agricultural drain in the 1940s. This waterway carries operational spill and irrigation drainage water from San Luis Canal Company (SLCC) (aka Henry Miller Reclamation District) lands through Los Banos WA and eventually to Salt Slough. This water is essentially abandoned as it leaves SLCC. CDFW has utilized this water to augment Los Banos WA water supplies for optimal management when full L4 water supplies have not been available. CDFW lift pumps water from the Boundary Drain and delivers this water via pipeline to internal conveyance/ditch systems or to Ruth Lake, located on the west side of Los Banos WA. From Ruth Lake these water supplies are used directly for wetland units adjacent to Ruth Lake. These water supplies also have the potential to be pumped from Ruth Lake into the San Luis Canal where the water can be conveyed to the northwest portion of Los Banos WA or to other Refuges served through the San Luis Canal. The San Luis Canal runs adjacent to the west boundary of the Los Banos WA. The San Luis Canal is one of the primary conveyance canals within Grassland Water District's boundaries – not to be confused with the major San Luis Canal that ultimately becomes the California Aqueduct geographically located much further west of the Proposed Action.

GWD conveys CVPIA water supplies to several state and federal refuges and to the GRCD. GWD operates and maintains certain reaches of the San Luis Canal, through easements, utilized in the conveyance of these CVPIA water supplies.

IL4 water supplies acquired by Reclamation for Refuges located south-of-Delta (SOD) in the San Joaquin Valley are accounted for in a collective pool, referred to as the SOD IL4 Pool. The three CVPIA Refuge-managing agencies (CDFW, U.S. Fish & Wildlife Service, and GWD) developed a percentage allocation for each of the agencies in determining how to distribute the aggregate water supplies in the SOD IL4 Pool between their respective SOD Refuges. As

additional IL4 water is acquired for SOD refuges, the SOD IL4 Pool's collective quantity expands thereby resulting in an increased benefit to all SOD Refuges through the delivery of these water supplies during the water year. CDFW has proposed operating their groundwater wells and the Ruth Lake WCP to develop another source of IL4 water supplies to augment the SOD IL4 Pool for reimbursement by Reclamation of CDFW's operating costs.

## **1.2 Need for the Proposed Action**

The need for the Proposed Action is to: 1) continue delivery of CVPIA surface water supplies to CDFW WAs' boundaries through Reclamation's reimbursement of lift pumping costs; and 2) develop new IL4 water supplies to benefit SOD Refuges. Surface water supplies include both Central Valley Project (CVP) water and non-CVP water. The developed IL4 water (groundwater and surface water sources) would augment the SOD IL4 Pool's annual water supplies available for allocation to San Joaquin Valley Refuges.

## **2.0 Proposed Action and Alternatives**

### **2.1 No Action Alternative**

Under the No Action Alternative, Reclamation would not reimburse CDFW for lift pumping costs of CVPIA refuge surface water supplies or costs related to developing IL4 water supplies at the WAs. CDFW's current budget does not provide for costs to develop IL4 water supplies at the WAs, nor is there any funding identified for this purpose in projected budgets over the next few years. Thus, no IL4 water supplies would be developed at the WAs, resulting in reduced quantities of IL4 water supplies available to SOD Refuges to provide for optimal habitat management. Diminished CDFW "wildlife restoration fund" budgets have already resulted in CDFW foregoing several irrigations of L2 water supplies to certain impoundments at the Volta WA in Water Year 2013. This was a result of lack of sufficient CDFW funding to cover lift pumping costs associated with the necessary lift pumping of full quantities of L2 surface water supplies needed at Volta WA. The CDFW wildlife restoration fund has been known to fluctuate quite radically. At this time, future CDFW wildlife restoration fund budgets are unknown, but it is anticipated these budgets will follow a pattern similar to the last several years of decreasing and/or static funding amounts.

Under the No Action Alternative, CDFW may likely have to reduce further irrigations of L2 supplies at several or all of its SOD WAs. Reduced irrigations may reasonably include a portion of the limited IL4 water supplies allocated from the SOD IL4 Pool. And under this alternative, Reclamation would not meet its obligations under CVPIA Section 3406(d)(1) in delivering full L2 supplies to the Refuges; and under Section 3406(d)(2) in advancing its goal of delivering greater quantities of IL4 water supplies to SOD Refuges. CDFW WAs may be restricted to taking less than full L2 supplies until an alternative funding source could be secured; and SOD Refuges including CDFW WAs would receive less IL4 water supplies.

## 2.2 Proposed Action

Reclamation proposes to reimburse CDFW through the Agreement for the costs associated with operation and maintenance of CDFW's lift pumps and pump stations required to complete the initial conveyance of CVPIA surface water supplies for use by the Los Banos, Mendota, and Volta WAs and the China Island Unit of the North Grasslands WA. Reclamation would reimburse CDFW for costs to pump groundwater developed on the WAs and for the recirculation lift pumping of water through the Ruth Lake WCP, providing another source of IL4 supplies for SOD Refuges. In critically dry years when Refuge L2 allocations are reduced below 100%, this groundwater and recirculated surface water could be used to augment limited L2 supplies on the WAs.

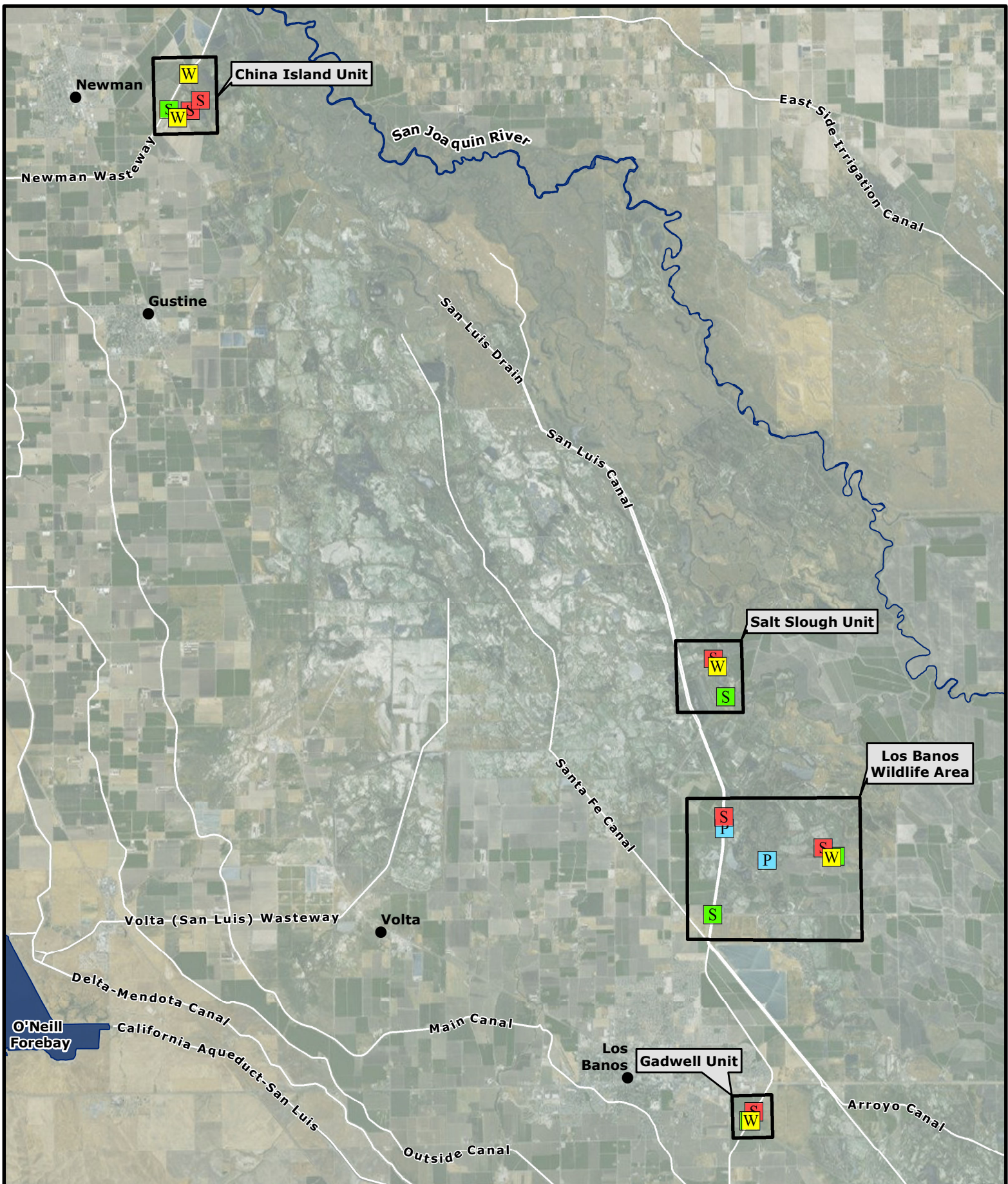
CDFW would continue to operate lift pumps and pump stations necessary to complete the initial delivery of CVPIA external surface water supplies to the boundaries of the Los Banos, Mendota, and Volta WAs and the China Island Unit of the North Grasslands WA, including lifting water to reach the elevations of the respective WA's internal distribution systems.

CDFW would operate up to 6 groundwater wells and the Ruth Lake WCP to produce IL4 water supplies. Water pumped through these facilities would be discharged into the San Luis Canal or into internal WA distribution systems, with some facilities providing for both discharge options. The groundwater wells are located at the Los Banos WA; and China Island, Salt Slough, and Gadwall Units of the North Grasslands WA. The Ruth Lake WCP is located on the Los Banos WA. Table 1 lists the groundwater wells and Ruth Lake WCP lift pumps along with providing discharge points; well depth; pump horsepower; and estimated pumping volume for both average-to-normal hydrologic years and dry-to-critically dry hydrologic years. Water discharged into the San Luis Canal would be conveyed to Refuges served through the San Luis Canal. These water supplies would only be discharged into the San Luis Canal when there is demand by the Refuges and sufficient carriage water in the canal.

The Ruth Lake WCP would be operated during the time frame of approximately March through August, and provides the option of discharging water supplies into the San Luis Canal or the Los Banos WA's internal distribution system. Water is initially pumped via Low Lift #12 from the Boundary Drain and delivered into Ruth Lake for storage. These water supplies can then be pumped into San Luis Canal for conveyance to other Refuges, or pumped from Ruth Lake into the Los Banos WA's internal distribution system.

A water quality monitoring plan (WQMP), referred to as the *CDFW Region 4 Wildlife Areas CVPIA Water Development Project*, will be implemented for the developed water supplies (Appendix 1). Groundwater and return flows pumped from the Boundary Drain would be monitored in accordance with the WQMP, and pumping would be curtailed, maintained or accelerated on an adaptive management basis. Implementation of the WQMP would ensure that pumping and conveyance of these developed water supplies would not impact existing water supplies or water quality. The map on the next page shows the location of all Proposed Action features.





# CDFW R-4 Wildlife Areas Water Development Project General Vicinity Map

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**Table 1 Proposed Action Details for Groundwater Wells and Lift Pumps**

Wildlife Area	Pump	Depth (Feet)	Discharge Point	Estimated Maximum Production		Used Only in Critical Dry Years
				Acre-Feet Average/Normal Hydrologic Year	Acre-Feet Dry/Critically Dry Hydrologic Year	
Los Banos (Ruth Lake WCP)	Los Banos WA Low Lift (LL) Pump 12 1/	NA	Internal	4,000	2,000	No
	Los Banos WA LL Pump 12 and Los Banos WA LL Pump 13 1/	NA	San Luis Canal			
Los Banos	Los Banos WA Deep Well (DW) 1	572	San Luis Canal or Internal	1,200	2,160	No
Los Banos	Los Banos WA DW 2	480	Internal	1,200	2,280	No
North Grasslands - Salt Slough Unit	Salt Slough Unit DW 1	510	Internal	0	2,160	Yes
North Grasslands - China Island Unit	China Island Unit DW 1	Unknown	Internal/J Lateral	3,600	3,600	No
North Grasslands - China Island Unit	China Island Unit DW 4	260	Internal/J Lateral	2,160	2,160	No
North Grasslands - Gadwall Unit	Gadwall Unit DW 1	275	San Luis Canal or Internal	2,160	2,160	No
Total				14,320	16,520	

1/ Los Banos WA Low Lift (LL) Pumps 12 and 13 are both required to move the same water. Los Banos WA LL Pump 12 moves water internally from the Boundary Drain into Ruth Lake WCP. Los Banos WA LL Pump 13 will pump water from Ruth Lake WCP and discharge into the San Luis Canal.

## **2.3 Environmental Protection Measures and Commitments**

A WQMP will be implemented for the Proposed Action (Appendix 1). Groundwater and return flows pumped from the Boundary Drain would be monitored in accordance with the WQMP, and pumping would be curtailed, maintained or accelerated on an adaptive management basis. Implementation of the WQMP would ensure that pumping and conveyance of water under the Proposed Action would not impact existing water supplies or water quality.

## **3.0 Affected Environment and Environmental Consequences**

### **3.1 Resources Not Analyzed in Detail**

Effects on several environmental resources were examined and found to be minor. For the reasons noted below, the following resources were eliminated from further review in this EA.

#### **Cultural Resources**

This is the type of undertaking that does not have the potential to cause effects to historic properties, should such properties be present, pursuant to the National Historic Preservation Act (NHPA) Section 106 regulations codified at 36 CFR § 800.3(a)(1). Reclamation has no further obligations under NHPA Section 106, pursuant to 36 CFR § 800.3(a)(1).

#### **Indian Trust Assets**

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

#### **Indian Sacred Sites**

Sacred sites are defined in Executive Order 13007 (May 24, 1996) as "any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site." The Proposed Action would not be located on or impact federal lands and therefore would not affect any Indian sacred sites on federal lands.

#### **Environmental Justice**

Executive Order 12898 requires each Federal agency to identify and address disproportionately high and adverse human health or environmental effects, including social and economic effects of its program, policies, and activities on minority populations and low-income populations. Since there would be no impact to any populations, there would be no adverse human health or environmental effects to minority or low-income populations as a result of the Proposed Action.



## 3.2 Water and Hydrogeologic Resources

### 3.2.1 Affected Environment

North Grasslands, Volta, Mendota, and Los Banos WAs prepare annual refuge water management plans that identify habitat management efforts for the coming year. The refuge water management plans follow the Wildlife Area Habitat Committee guidelines for specific habitat management. In addition, the WAs are also guided by the San Joaquin Basin Action Plan.

Reclamation will be monitoring water quality in and around the Los Banos WA, and at well heads of groundwater wells located on the China Island, Gadwall and Salt Slough Units of the North Grasslands WA in accordance with the attached WQMP (Appendix 1). Reclamation is responsible for implementing a WQMP for IL4 water developed by CDFW pursuant to the Agreement. The water quality objectives and criteria (including Action Limits/Quality Thresholds) are described and detailed in the attached WQMP.

Groundwater to be monitored during this Proposed Action will be developed from Los Banos WA Deep Wells 1 and 2, Gadwall Unit Deep Well 1, Salt Slough Unit Deep Well 1, and China Island Unit Deep Wells 1 and 4 to determine if these water supplies are of suitable quality as CVPIA supplies for use on the WAs. In addition, groundwater from Los Banos WA Deep Well 1 and Gadwall Unit Deep Well 1 will be monitored to determine if the developed groundwater is of suitable quality to discharge into the San Luis Canal for delivery to CVPIA Refuges without impacting the quality of existing surface water supplies in the San Luis Canal. Both Los Banos Deep Well 1 and Gadwall Unit Deep Well 1 have the flexibility to either discharge into the respective WA's internal distribution system or discharge into the San Luis Canal.

Existing water quality data for these groundwater wells and for surface water from the Boundary Drain is shown in Table 2 below.

Table 2. Surface and well water quality results from Los Banos Wildlife Area (WA) and Units of the North Grasslands WA.

	Groundwater Wells							Surface
	China Island WA			Los Banos WA	Los Banos WA	Gadwell Unit	Salt Slough Unit	Los Banos WA
	DW 1	DW 1	DW 4	DW 2	DW 1	DW 1	DW 1	Boundary Drain
Date	3/1/07	9/4/14	6/30/14	9/4/14	9/4/14	9/4/14	6/30/14	2012 average
Conductivity (µS/cm) (Field)	1130	1666	1665	1800	3365	530	1630	
Conductivity (µmhos/cm) (Lab)	1240							1353
Total Dissolved Solids (mg/l)	824	1000	570	1100	2100	330.0	1100.0	
Boron (B) (mg/l)	0.38	0.59	0.31	2.4	3.6	0.6	2.5	0.6
Selenium (Se) (ug/l)	<2.0	2.3	2.2	<0.4	<0.4	1.4	0.8	

#### *Land Subsidence*

Land subsidence is caused by subsurface movement of earth materials. Principal causes of subsidence within the San Joaquin Valley include: aquifer compaction due to groundwater pumping, hydrocompaction caused by application of water to dry soils, and oil mining. Large withdrawals of groundwater within the San Joaquin Valley between the 1920s and 1960s for agricultural irrigation caused significant overdraft within the central west side of the valley and most of the southern valley causing substantial land subsidence within those areas. Importation

of surface water from the CVP and State Water Project in the 1970s decreased the rate of groundwater withdrawal allowing aquifer levels to recover subsequently reducing subsidence rates. Recently, groundwater pumping rates have increased throughout the San Joaquin Valley due to regulatory and drought-related curtailments placed on water deliveries from the CVP and State Water Project, resulting in water level declines and renewed compaction.

In 2013, the U.S. Geological Survey (USGS), in cooperation with Reclamation and the San Luis and Delta-Mendota Water Authority, published a Scientific Investigations Report (Sneed, 2013) which assessed land subsidence and water levels in the vicinity of the Delta-Mendota Canal (DMC) from 2003-2010. Analysis of land surface deformation determined that the northern portion of the DMC was relatively stable between 2003-2010 but that the area around Checks 15-21 (below O'Neill Forebay to the Mendota Pool) was part of a large area of subsidence located south of the town of El Nido, indicating a shift northeast of the area of maximum subsidence previously recorded for 1926-1970. The area affected by 0.07 feet or more of subsidence extended about 50 miles west-east, from Check 17 of the DMC to the town of Madera, and 25 miles north-south, from near Merced to near Mendota. Maximum subsidence was at least 1.8 feet during 2008–2010. However, based on stable water levels in shallow wells within this area, it was determined that subsidence was not caused by groundwater-level-induced stresses in the shallow or intermediate zones (unconfined zones) but likely originated below the Corcoran Clay (confined zone).

Various entities, including Reclamation, USGS, California Department of Water Resources, San Luis and Delta-Mendota Water Authority, and the San Joaquin River Exchange Contractors have been monitoring subsidence trends within the Central Valley. In 2011, Reclamation established the San Joaquin River Restoration Program (SJRRP) Geodetic Control Network to begin monitoring subsidence with the SJRRP Restoration Area. Subsidence in the SJRRP Restoration Area has been conducted biannually since 2011. In addition, due to significant subsidence rates along the flood control bypasses that parallel the San Joaquin River (some localized areas showing rates of more than 1 foot per year), DWR has collected levee survey data to help further refine the estimated annual rates along the levees of the flood bypasses.

### **3.2.2 No Action**

Under the No Action Alternative, the WAs could not accept full L2 supplies as a result of constrained budgets limiting the volume of surface water lift pumped due to operational costs, reducing impoundment irrigations. Reduced irrigations may reasonably include a portion of the limited IL4 water supplies allocated from the SOD IL4 Pool. No IL4 water supplies would be developed at the WAs to augment the SOD IL4 Pool, resulting in reduced quantities of IL4 water supplies available to SOD Refuges to provide for optimal habitat management.

### **3.2.3 Proposed Action**

Table 1 provides details of the groundwater wells and Ruth Lake WCP lift pumps and associated water pumping development for the Proposed Action. In an average/normal hydrologic year up to approximately 14,320 acre-feet (AF) could be developed. In a dry/critically dry hydrologic year up to approximately 16,520 AF could be developed. It is unlikely that these estimated “up-

to” AF amounts will be developed in any given year. The Proposed Action would result in no substantial change or impact to CVP operations, nor would it result in any change to Delta projected pumping by the CVP. The acquired water would be delivered to the WAs using existing conveyance facilities. Implementation of the Proposed Action’s WQMP (Appendix 1) would ensure that pumping and conveyance of water under this Proposed Action would not impact existing water supplies or water quality. The Proposed Action would not adversely impact water conveyance facilities or activities within the WAs.

Groundwater levels and the water quality of the water pumped from the wells to be used will be monitored pursuant to the WQMP. If any samples exceed the thresholds outlined in the attached WQMP, measures will be taken to ensure that water quality conditions within the Proposed Action area are not adversely impacted. If the water quality standards cannot be met, Reclamation and CDFW would identify and agree on an appropriate course of action. Delivery of the water to WAs will occur in accordance with applicable Refuge water supply contract terms and conditions and will be used to supplement existing supplies. The water would not be used for putting previously untitled or native lands into production or to support any other changes in current land use, and would only support existing land uses and practices. Thus, no adverse impacts to water resources are anticipated.

After the close of the public comment period, further consideration was given to the water quality of the 6 original proposed wells. Reclamation identified boron as one of the key constituents for water quality monitoring in support of groundwater pumping under the Proposed Action. The WQMP was revised to include monitoring for boron and was revised to include an adaptive management process. In order to meet water delivery objectives in certain years an adaptive management plan will be executed between the parties involved in this Proposed Action. The adaptive management process identifies that CDFW and Reclamation will coordinate, develop and agree upon a plan to provide revised standards and sampling schedules.

The Proposed Action will also involve monitoring in accordance with the Hydrogeologic Monitoring Plan titled *Hydrogeologic Monitoring for the CDFW R-4 Wildlife Areas Water Development Project Groundwater Level and Subsidence Monitoring Plan* (Appendix 2). An adaptive management process will be utilized to ensure that the monitoring for the Proposed Action achieves the Proposed Action objectives and pumping can continue annually without causing cumulative adverse impacts to the local aquifer or land surface elevation. The process should follow the guidance provided in “Adaptive Management: The U.S. Department of Interior Technical Guide” (Williams, 2009). This document can be found at <http://www.doi.gov/initiatives/AdaptiveManagement/documents.html>.

By May 30 after the first Contract Water Year (beginning March 1 and continuing through the last day of February of the following year) of groundwater pumping, CDFW and Reclamation shall complete a project management plan to clarify and formalize the monitoring/reporting tasks and schedule. The plan will include explicit and measurable management objectives for future years. The plan may also address any issues related to flow meter calibration certification updates, and any issues related to collecting flow meter values. Each year, Reclamation and CDFW will review the previous year’s monitoring data to determine if water level or subsidence problems have occurred or may occur if pumping continues. If it is determined that continued pumping in some or all of the wells will lead to adverse irreversible impacts or third party

impacts, CDFW will cease pumping under the Proposed Action and both parties to the agreement shall identify and agree on an appropriate course of action.

## 3.3 Biological Resources

### 3.3.1 Affected Environment

Refuges are managed for wetlands and other habitat types for wildlife foraging, nesting, and cover. Water use on refuges varies by depth, timing, and duration depending on the refuge habitat types being managed and the biological requirements of wildlife. The timing, speed, and duration of drawdowns and flooding have important effects on plant and invertebrate composition, production, and wildlife use as well as the control of problem vegetation and disease outbreaks. The application of additional water is necessary during off-season irrigation for key forage species, seepage, evaporation, evapotranspiration, salt balance, and other factors.

The following State of California WAs are included in the Proposed Action:

**Los Banos WA:** Purchased in 1929, Los Banos WA was the first of a series of waterfowl refuges established throughout the state to manage habitat for wintering waterfowl. Expanded from its original 3,000 acres to its current approximate 5,586 acres, there are now approximately 5,068 acres of various habitat: wetland habitat which includes lakes, sloughs and managed marsh; upland habitat; and pasture. Western pond turtles, raccoons, striped skunks, beaver and muskrats, as well as over 200 species of birds are among the many animals found here.

#### *North Grasslands WA*

The following units from the North Grasslands WA are included in the Proposed Action:

**China Island Unit:** The 3,315-acre China Island Unit borders the San Joaquin River southwest of the confluence with the Merced River. The unit consists of approximately 1,036 acres of managed wetlands and 1,243 acres of natural floodplain, and also contains some Valley oak woodland/riparian habitat that is used by a variety of wildlife. In addition, there are managed uplands which provide habitat for geese, including the federally listed Aleutian Canada goose, and sandhill cranes. The China Island Unit, along with the Salt Slough Unit, was a part of the initial purchase of new lands to implement the San Joaquin Basin Action Plan/Kesterson Mitigation Plan. The State of California acquired both of these units in 1990 and managed them collectively as the North Grasslands Wildlife Area

**Gadwall Unit:** The 1,750-acre Gadwall Unit is located south of Highway 152, approximately two miles east of the city of Los Banos. CDFW manages the unit as part of the North Grasslands WA. This unit primarily consists of managed wetlands and a small amount of upland habitat. A portion of Mud Slough also passes through the southern end of the property.

**Salt Slough Unit:** The 2,241-acre Salt Slough Unit is located on the west side of Salt Slough, adjacent to San Luis NWR and Los Banos WA. As described for the China Island Unit, the

Salt Slough Unit was one of the initial lands purchased in implementing the San Joaquin Basin Action Plan/Kesterson Mitigation Plan. CDFW manages the unit as part of the North Grasslands Wildlife Area, along with the China Island and Gadwall Units. This unit consists primarily of managed wetlands (approximately 1,014 acres), as well as managed and native uplands, and riparian habitat which host a variety of species.

**Mendota WA:** The Mendota WA encompasses 12,425 acres and is located in western Fresno County, approximately four miles southeast of the town of Mendota, California. The Mendota WA is a large managed wetland habitat area in the south-central San Joaquin Valley with approximately 8,040 acres of managed wetlands, and constitutes valuable wildlife habitat in the midst of extensive farmland. The area is a major component of the Pacific Flyway, fostering the survival of migratory waterfowl and associated species from Alaska to Mexico, in addition to providing critical habitat for numerous resident species.

**Volta WA:** The Volta WA is located on land owned by Reclamation and has been operated by the CDFW since 1952 under an agreement with Reclamation. The agreement allows the CDFW to manage the 2,889 acre Volta WA containing seasonal and semi-permanent wetlands as waterfowl habitat, and to provide public recreation. The Volta WA has primarily been managed as a seasonally flooded wetland to provide the habitat needs of migratory waterfowl and associated species. Approximately 1,389 acres of the area are managed as seasonal, semi-permanent, and permanent flooded wetlands.

## Listed Species

Reclamation requested a list of endangered, threatened, and sensitive species from the U.S. Fish and Wildlife Service (USFWS) on May 29, 2014 via the Sacramento Field Office's website: [http://www.fws.gov/sacramento/ES\\_Species/Lists/es\\_species\\_lists-form.cfm](http://www.fws.gov/sacramento/ES_Species/Lists/es_species_lists-form.cfm) (Document No. 140529054709). The list is for the following U.S. Geological Survey 7½-minute topographic quadrangles which are overlapped by the WAs and water conveyance facilities associated with the Proposed Action: San Luis Ranch, Ingomar, Volta, Los Banos, Howard Ranch, and Tranquillity. Reclamation further queried the CDFW's California Natural Diversity Database (CNDDB) for records of special-status species near the action area associated with the Proposed Action (CNDDB 2014). This information, in addition to other information within Reclamation's files, was reviewed to determine the potential for a species to occur within the Proposed Action area (Table 3).

**Table 3: Potentially Occurring Special-status Species in the Propose Action Area**

Scientific Name	Common Name	Federal Status*
<b>INVERTEBRATES</b>		
<i>Branchinecta longiantenna</i>	Longhorn fairy shrimp	E
<i>Branchinecta lynchi</i>	Vernal pool fairy shrimp	T



<i>Desmocerus californicus dimorphus</i>	Valley elderberry longhorn beetle	T
<i>Lepidurus packardii</i>	Vernal pool tadpole shrimp	E
<b>FISH</b>		
<i>Hypomesus transpacificus</i>	Delta smelt	T
<i>Oncorhynchus mykiss</i>	Central Valley steelhead	T
<b>AMPHIBIANS</b>		
<i>Ambystoma californiense</i>	California tiger salamander, central population	T
<i>Rana draytonii</i>	California red-legged frog	T
<b>REPTILES</b>		
<i>Gambella sila</i>	Blunt-nosed leopard lizard	E
<i>Thamnophis gigas</i>	Giant garter snake	T
<b>MAMMALS</b>		
<i>Dipodomys nitratooides exilis</i>	Fresno kangaroo rat	E
<i>Vulpes macrotis mutica</i>	San Joaquin kit fox	E
* Endangered (E) Threatened (T)		

### 3.3.2 No Action

Under the No Action Alternative, the WAs could not receive full L2 supplies as a result of constrained budgets limiting the volume of surface water lift pumped due to operational costs, reducing impoundment irrigations. Reduced irrigations may reasonably include a portion of the limited IL4 water supplies allocated from the SOD IL4 Pool. No IL4 water supplies would be developed at the WAs to augment the SOD IL4 Pool, resulting in reduced quantities of IL4 water supplies available to SOD Refuges to provide for optimal habitat management. With the reduction in overall water supply, there would be a change in the amount of wetlands available to local and migratory wildlife species that depend on this habitat for nesting, foraging and refuge. In addition, a decrease in the amount of irrigations on these wetlands would result in a reduction in the quality of wetlands that are available. Irrigations are an important management tool to optimize the growth of moist soil plants that provides forage for the hundreds of thousands of waterfowl that utilize and depend upon these wetlands primarily during the winter months.

### 3.3.3 Proposed Action

Under the Proposed Action, the WAs would receive reliable conveyance of full L2 supplies to support their annual management objectives, and species and their habitats would benefit by the Proposed Action through maintaining a constant habitat baseline, avoiding habitat fluctuations resulting from the need to forego some irrigations due to lack of sufficient budgets. Reclamation would meet its obligation under Section 3406(d)(1) of the CVPIA. These WAs would also receive a portion of the developed IL4 supplies, augmenting these WAs' allocation of other IL4 supplies Reclamation would acquire in a given year. The IL4 supplies allow the WAs to progress into optimal habitat management identified in Section 3406(d)(2). And Reclamation

would advance its goals in meeting Section 3406(d)(2) IL4 obligations. No infrastructure would be built to achieve the Proposed Action and therefore there would be no construction-related impacts.

### **3.4 Cumulative Impacts**

Reclamation has reviewed existing and foreseeable projects (e.g., Volta Wasteway Wells L2 Diversification /IL4 Development Pilot Groundwater Project, and the Grassland IL 4 Groundwater Acquisition Pilot Project) in the same geographic area that could affect or could be affected by the Proposed Action. As in the past, hydrological conditions and other factors are likely to result in fluctuating water supplies for refuges and WAs.

The Proposed Action has the potential to impact surface water availability and groundwater use. The Proposed Action and other similar projects would not hinder the normal operations of the CVP and Reclamation's obligation to deliver water to its contractors or to local fish and wildlife habitat. Since the Proposed Action would not involve construction or modification, nor interfere with CVP, CDFW, or State Water Project operations, there would be no cumulative impacts to existing facilities or other contractors.

The WAs receiving the water would continue to receive the remaining balances of their available surface water supplies to help meet demands of the WAs. As such, there would be no cumulative adverse impacts to water resources within the WAs.

The development and delivery of up to 247,800 AF of developed water to the WAs and other CVPIA Refuges over the 15-year agreement would be cumulatively beneficial to WAs' and CVPIA Refuges' water resources as it would supplement and continue to supplement existing supplies. These findings indicate that there would be beneficial effects, but no adverse cumulative impacts to water resources resulting from the Proposed Action.

## **4.0 Consultation and Coordination**

Reclamation coordinated closely with managers within the CDFW to develop this Proposed Action and this NEPA document. This Environmental Assessment was made available for a 14-day public review period July 18 through August 1, 2014. No comments were received during this comment period. U.S. Fish and Wildlife Service (FWS) provided comments via email on April 22, 2015. FWS requested clarification on the Proposed Action, requested a map for inclusion in the EA and clarification on the water quality monitoring thresholds and sampling methods. Reclamation met with FWS on April 28, 2015 and provided information on the Proposed Action to respond to FWS's comments. Additional information has been added to the EA and to the WQMP to clarify the action and clarify the monitoring methods. Additionally, Reclamation added a general vicinity map and added the Hydrogeologic Monitoring Plan to the EA.

## 5.0 References

California Department of Wildlife, 2012, Los Banos Wildlife Area Water Management Plan

Bureau of Reclamation. 1989. *Report on Refuge Water Supply Investigations*.

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<http://dx.doi.org/10.3133/sir20135142>

USFWS. 2014. U.S. Fish and Wildlife Service, Sacramento Fish & Wildlife Office. Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Los Banos (403D) USGS 7.5-minute quadrangle.  
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**APPENDIX 1**  
**WATER QUALITY MONITORING PLAN**

**APPENDIX 2**  
**HYDROGEOLOGIC MONITORING PLAN**