RECLAMATION
Managing Water in the West

Draft FINDING OF NO SIGNIFICANT IMPACT

Warren Act Contract for Conveyance and Storage of Groundwater from 4-S Ranch and SHS Ranch to Del Puerto Water District

FONSI-14-020

Recommended by:

_____ Date: _____
Rain L. Emerson
Natural Resources Specialist
South-Central California Area Office

Concurred by: See Appendix C Date: Appendix C in EA-14-020
Archaeologist/Architectural Historian
Mid-Pacific Regional Office

Concurred by: See Appendix D Date: Appendix D in EA-14-020
Native American Affairs Specialist
Mid-Pacific Regional Office

Concurred by: _____ Date: _____
Lisa Carlson
Wildlife Biology Technician
South-Central California Area Office

Concurred by: _____ Date: _____

Acting Supervisory Natural Resources Specialist
South-Central California Area Office

Concurred by:

_____ Date: _____

Acting Chief, Resources Management Division
South-Central California Area Office

Approved by:

_____ Date: _____
Michael Jackson
Area Manager
South-Central California Area Office

U.S. Department of the Interior
Bureau of Reclamation
South-Central California Area Office

May 2014

Introduction

In accordance with section 102(2)(c) of the National Environmental Policy Act (NEPA) of 1969, as amended, the South-Central California Area Office of the Bureau of Reclamation (Reclamation), has determined that an environmental impact statement (EIS) is not required for the issuance of a Warren Act contract for the introduction of up to 23,000 acre-feet per year (AFY) of non-Central Valley Project (CVP) groundwater into the Delta-Mendota Canal (DMC) for storage and conveyance to Del Puerto Water District (DPWD) for a period not to exceed four years. This Finding of No Significant Impact (FONSI) is supported by Reclamation's Environmental Assessment (EA)-14-020, *Warren Act Contract for Conveyance and Storage of Groundwater from 4-S Ranch and SHS Ranch to Del Puerto Water District*, and is hereby incorporated by reference.

Background

DPWD is a CVP contractor located on the west side of the San Joaquin Valley, south of the Sacramento-San Joaquin River Delta (Delta). DPWD's water supplies have been reduced in recent years because of regulatory limitations and adverse hydrologic conditions. As a result, DPWD is pursuing additional supplies for their agricultural customers.

4-S Ranch Partners, LLC (4-S Ranch), a private party, owns land in Merced County. The SHS Family Limited Partnership, another private party, owns land immediately adjacent to the 4-S Ranch in Merced County (referred to as the SHS Ranch). These lands (collectively, the "Properties") are currently used as rangeland and irrigated pasture, and consist of approximately 7,000 acres located east of the San Joaquin River and south of Bear Creek (see Figure 1-1 in EA-14-020). The area is relatively isolated, with little immediately adjacent commercial or agricultural activity. The Properties overlie a productive aquifer that has sustained groundwater pumping for decades.

4-S Ranch and SHS Ranch have agreed to pump and transfer up to 23,000 AFY of groundwater from the Properties to DPWD over the next two years, with an option to renew for an additional two years. Since the transferred water would need to be conveyed in the DMC, which is federally owned, DPWD has requested that Reclamation issue a Warren Act Contract for the conveyance and storage of the non-CVP water. The non-CVP water would be used for irrigation on existing lands in DPWD and Patterson Irrigation District (PID) that currently receive CVP water.

Proposed Action

Reclamation proposes to issue a Warren Act contract for the introduction of up to 23,000 AFY of non-CVP water into the DMC for storage and conveyance to DPWD for a period not to exceed four years. Conveyance and storage of non-CVP water in Federal facilities is subject to available capacity, conveyance losses, and Reclamation's then-current water quality requirements (see Appendix A in EA-14-020 for Reclamation's current water quality requirements). All water introduced and stored in Federal facilities would be moved before the end of the four-year period. Source of the non-CVP water would be groundwater pumped from existing wells beneath the Properties as described in Section 2.2 of EA-14-020.

Environmental Commitments

Reclamation, 4-S Ranch, SHS Ranch, PID, and DPWD would implement the environmental protection measures included in Table 2-1 of EA-14-020 to reduce environmental consequences associated with the Proposed Action. Environmental consequences for resource areas assume the measures specified would be fully implemented.

Reclamation's finding that implementation of the Proposed Action will result in no significant impact to the quality of the human environment is supported by the following findings:

Findings

Surface Water Resources

Under the Proposed Action, up to 23,000 AFY of groundwater would be pumped from the Properties and conveyed in the Eastside Bypass and/or Bear Creek to the San Joaquin River for diversion at PID's screened intakes. A portion of this water would be delivered to water users in PID for use on existing crops; the remaining water would be introduced into the DMC for direct delivery to DPWD and/or for storage in San Luis Reservoir. Stored water would later be delivered to DPWD via an exchange with Reclamation.

Pumped water quantities will be measured at the confluence of the Eastside Bypass as it flows into Bear Creek and for any direct discharges from the SHS Ranch into Bear Creek. A 10 percent loss factor would be applied to all discharges into Bear Creek and the Eastside Bypass in determining the amount of water that would be diverted at PID's screened intakes from the San Joaquin River. The water diverted from the San Joaquin River would be over and above the flows required to maintain compliance with the water quality and quantity requirements established by D-1641 and would not interfere with scheduled fall pulse flows. As this water would be diverted shortly after introduction into the San Joaquin River, there would be no measureable change in flows in the river downstream of PID's screened intakes. As such, this action would not change water flows in the river or impair Reclamation's or DWR's ability to meet their other obligations and responsibilities, including requirements for D-1641 and the 2006 Bay-Delta Water Quality Control Plan.

Water quality monitoring would be required prior to introduction of any groundwater to Bear Creek or the Eastside Bypass in order to assure that water quality within the receiving waters would not be adversely affected. In addition, Reclamation requires water quality testing prior to any introduction of non-CVP water into its facilities. As shown in Table 3-10, all wells that are proposed to pump groundwater for transfer do not exceed the standards required for introduction of non-CVP water into the DMC. All future introductions would also be required to meet Reclamation's then-current standards prior to introduction. As shown in Table 3-8, monthly averages for electrical conductivity in the San Joaquin River have been generally slightly higher than the water in the DMC; however, the averages are well below the 2,200 milligram per liter water quality standard required by Reclamation (Appendix A). If Reclamation's standards are exceeded, introductions would cease until standards have been met. As such, diversion of pumped groundwater from the San Joaquin River into the DMC is not expected to adversely affect water quality within the DMC.

The Proposed Action would not affect CVP or State Water Project (SWP) operations and would not change existing diversion points from the Delta under Reclamation's or DWR's water rights permits. The Proposed Action would not interfere with Reclamation's obligations to deliver water to other contractors, wetland habitat areas, or for other environmental purposes. This transfer would utilize existing facilities and no new infrastructure, modifications of facilities, or ground disturbing activities would be needed for movement of this water. No native or untilled land (fallow for three years or more) would be cultivated with water involved with these actions.

Groundwater Resources

Under the Proposed Action, up to 23,000 AFY of groundwater would be pumped from the well fields for transfer to DPWD. This pumped groundwater would be in addition to whatever groundwater would be pumped for irrigation of pasture lands within the Properties. Increased groundwater pumping (up to double what has been pumped in this area previously) could reduce water levels and increase rates of subsidence. However, as described above, shallow wells, such as the ones included in the Proposed Action, that are located above the Corcoran Clay layer have been determined to not be the cause of the increased subsidence in this area (USGS 2013). As such, the Proposed Action is not expected to affect subsidence trends in the area.

Although the aquifers beneath the well field is not believed to be in overdraft as water levels in the area have remained relatively constant over many years (S. Sloan personal communication), additional pumping of the well field would decrease groundwater levels as well as increase movement of groundwater into the aquifer underlying the Properties beyond what has occurred historically; however, the nearest neighboring well is several miles away and would not be impacted. Recharge from rainfall and direct deep percolation would remain unchanged; however, recharge of the aquifer due to subsurface flows would vary depending on the volume of water pumped; the more water pumped, the greater the movement of water into the boundaries of the Properties from adjacent areas. As described in Table 2-1, groundwater monitoring is required in order to minimize potential adverse impacts to groundwater levels. Any adverse impacts to the groundwater aquifer would result in the reduction or curtailment of groundwater pumping for irrigation of the Properties pastures followed by pumping for transfer, if needed.

Land Use

Under the Proposed Action, non-CVP water would move through existing facilities for delivery to existing crop lands within PID and DPWD. The water would not be used to place untilled or new lands into production, or to convert undeveloped land to other uses. 4-S and SHS Ranch would continue to irrigate its existing pasture land as has historically occurred. Should reduced or curtailed pumping be required at the Properties, pastureland could be temporarily taken out of production. This would be a temporary impact as the pastures would be returned to production following the conclusion of the Project. There would be no adverse impacts to land use as a result of the Proposed Action.

Biological Resources

With the implementation of environmental commitments (Section 2.2.1 in EA-14-020), and based on the nature of the Proposed Action, Reclamation has determined there would be *no effect* to proposed or listed species or critical habitat under the Endangered Species Act of 1973, as

amended (16 U.S.C. §1531 et seq.) and *no take* of birds protected under the Migratory Bird Treaty Act (16 U.S.C. §703 et seq.). See Section 3.5 in EA-14-020 for Reclamation's analysis.

Cultural Resources

The Proposed Action would not involve physical changes to the environment or construction activities that could impact cultural resources. As the Proposed Action would facilitate the flow of water through existing facilities to existing users and no construction or modification of these facilities would be needed in order to complete the Proposed Action, Reclamation has determined that these activities have no potential to cause effects to historic properties pursuant to 36 Code of Federal Regulations Part 800.3(a)(1). See Appendix B of EA-14-020 for Reclamation's determination.

Indian Sacred Sites

The Proposed Action will not limit access to or ceremonial use of Indian sacred sites on Federal lands by Indian religious practitioners or significantly adversely affect the physical integrity of such sacred sites.

Indian Trust Assets

The Proposed Action would not impact Indian Trust Assets as there are none in the Proposed Action area. See Appendix C of EA-14-020 for Reclamation's determination.

Socioeconomic Resources

The Proposed Action would have beneficial impacts on socioeconomic resources within PID and DPWD as non-CVP water would be used to help sustain existing crops and maintain farming within the districts.

Environmental Justice

The Proposed Action would not cause dislocation, changes in employment, or increase flood, drought, or disease nor would it disproportionately impact economically disadvantaged or minority populations.

Air Quality

No construction or modification of facilities would be done in order to move non-CVP water to PID or DPWD. The non-CVP water would be moved either via gravity or electric pumps which would not produce emissions that impact air quality. The generating power plant that produces the electricity to operate the electric pumps does produce emissions that impact air quality; however, the generating power plant is required to operate under permits issued by the air quality control district. As the Proposed Action would not change the emissions generated at the generating power plant, no additional impacts to air quality would occur and a conformity analysis is not required pursuant to the Clean Air Act.

Global Climate and Energy Use

The Proposed Action would not require additional electrical production beyond baseline conditions and would therefore not contribute to additional greenhouse gas emissions. As such, there would be no additional impacts to global climate change. Global climate change is expected to have some effect on the snow pack of the Sierra Nevada and the runoff regime.

Current data are not yet clear on the hydrologic changes and how they will affect the San Joaquin Valley. CVP water allocations are made dependent on hydrologic conditions and environmental requirements. Since Reclamation operations and allocations are flexible, any changes in hydrologic conditions due to global climate change would be addressed within Reclamation's operation flexibility under either alternative.

Cumulative Impacts

Cumulative impacts result from incremental impacts of the Proposed Action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Reclamation has reviewed existing or foreseeable projects 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 which drive requests for water service actions. Water districts provide water to their customers based on available water supplies and timing, while attempting to minimize costs. Farmers irrigate and grow crops based on these conditions and factors, and a myriad of water service actions are approved and executed each year to facilitate water needs. It is likely that in 2014, more districts will request transfers and Warren Act contracts due to hydrologic conditions. Each water service transaction involving Reclamation undergoes environmental review prior to approval.

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 of facilities, nor interfere with CVP, PID, DPWD, or SWP operations, there would be no cumulative impacts to existing facilities or other contractors.

Capacity in the DMC and San Luis Reservoir is limited, and if many water actions were scheduled to take place concurrently they could cumulatively compete for space. However, non-CVP water would only be allowed to enter the DMC if excess capacity is available. In addition, any water stored within San Luis Reservoir would be limited to available capacity and would be subject to spill should capacity change over the course of the Warren Act contract. As such, the Proposed Action would not limit the ability of other users to make use of the facilities.
As pumped groundwater is required to not change receiving water quality and meet Reclamation's water quality standards prior to introduction into the DMC, no cumulative adverse water quality impacts are expected.

With incorporation of the environmental protection measures listed in Table 2-1 of EA-14-020, the Proposed Action would not contribute cumulative adverse effects to groundwater resource, subsidence trends, land uses.

As the Proposed Action is not expected to result in any direct or indirect adverse impacts to biological resources, cultural resources, Indian Sacred Sites, Indian Trust Assets, socioeconomics, minority or disadvantaged populations, air quality or global climate and energy use, there would be no cumulative adverse impacts to these resources.

RECLAMATION

Managing Water in the West

Draft Environmental Assessment

Warren Act Contract for Conveyance and Storage of Groundwater from 4-S Ranch and SHS Ranch to Del Puerto Water District

EA-14-020

U.S. Department of the Interior
Bureau of Reclamation
Mid Pacific Region
South-Central California Area Office
Fresno, California

May 2014

Mission Statements

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

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

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Section 1 Introduction

1.1 Background

Del Puerto Water District (DPWD) is a Central Valley Project (CVP) contractor located on the west side of the San Joaquin Valley, south of the Sacramento-San Joaquin River Delta (Delta). DPWD's water supplies have been reduced in recent years because of regulatory limitations and adverse hydrologic conditions. As a result, DPWD is pursuing additional supplies for their agricultural customers.

4-S Ranch Partners, LLC (4-S Ranch), a private party, owns land in Merced County. The SHS Family Limited Partnership, another private party, owns land immediately adjacent to the 4-S Ranch in Merced County (referred to as the SHS Ranch). These lands (collectively, the "Properties") are currently used as rangeland and irrigated pasture, and consist of approximately 7,000 acres located east of the San Joaquin River and south of Bear Creek (see Figure 1-1). The area is relatively isolated, with little immediately adjacent commercial or agricultural activity. The Properties overlie a productive aquifer that has sustained groundwater pumping for decades.

4-S Ranch and SHS Ranch have agreed to pump and transfer up to 23,000 acre-feet (AF) per year (AFY) of groundwater from the Properties to DPWD over the next two years, with an option to renew for an additional two years. Since the transferred water would need to be conveyed in the Delta-Mendota Canal (DMC), which is federally owned, DPWD has requested that the Bureau of Reclamation (Reclamation) issue a Warren Act Contract for the conveyance and storage of the non-CVP water. The non-CVP water would be used for irrigation on existing lands in DPWD and Patterson Irrigation District (PID) that currently receive CVP water.

1.2 Need for the Proposed Action

The State of California is currently experiencing unprecedented water management challenges due to severe drought in recent years. Both the State and Federal water projects are forecasting very low storage conditions in all major reservoirs. In addition, south of Delta (SOD) CVP contractors experienced reduced water supply allocations from 2007 to 2013 due to hydrologic conditions and regulatory requirements. Based on hydrologic conditions, Reclamation declared an initial 0 percent allocation for SOD agricultural contractors for the 2014 Contract Year[1]. As such, SOD CVP contractors, such as DPWD and PID, must find alternative sources of water to fulfill existing demands.

[1] A Contract Year is from March 1 through February 28/29 of the following year.

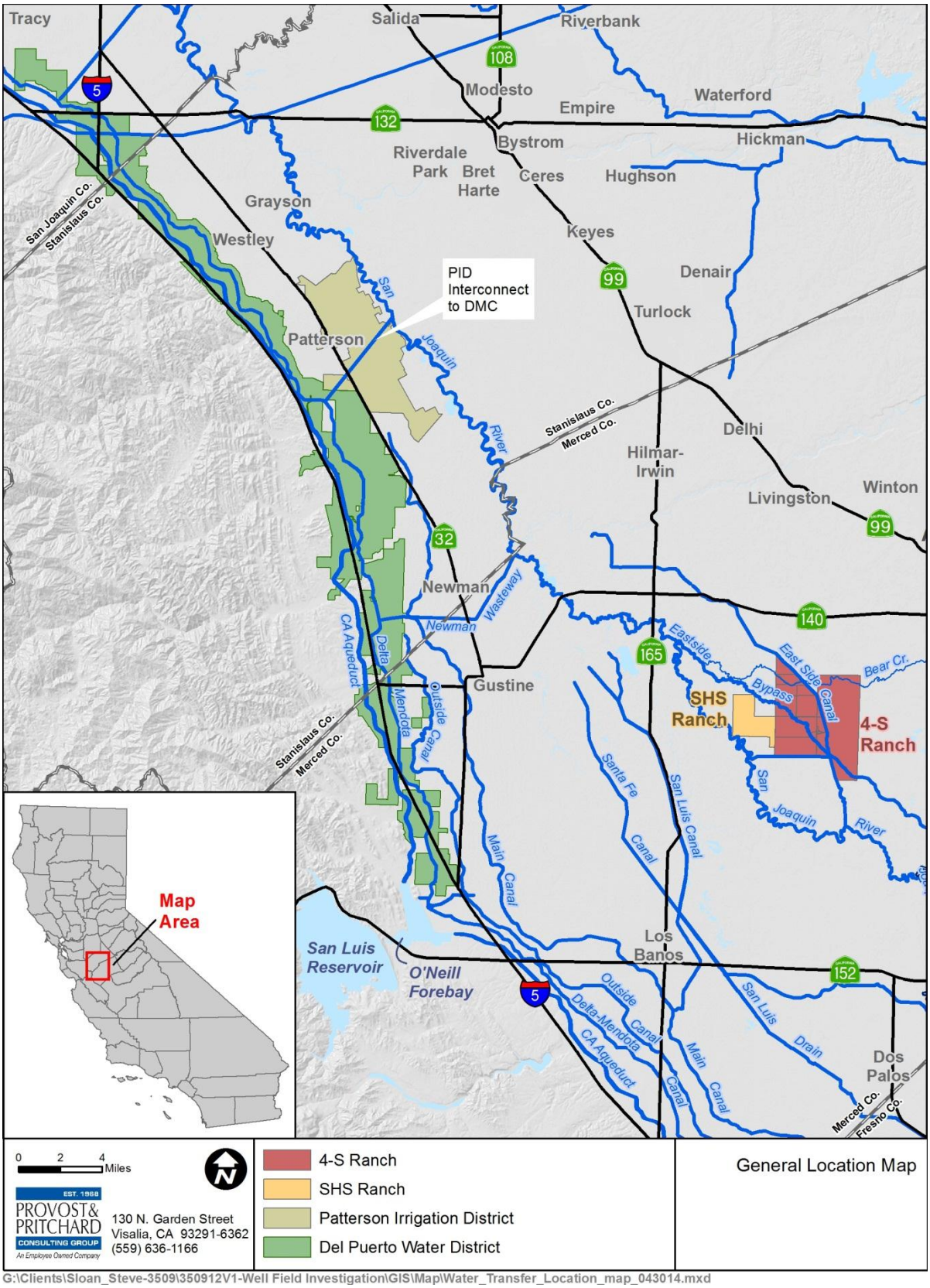

Figure 1-1 Proposed Action Area

Section 2 Alternatives Including the Proposed Action

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

2.1 No Action Alternative

Under the No Action alternative, Reclamation would not issue a Warren Act contract to DPWD for conveyance and storage of non-CVP water in Federal facilities. DPWD would need to find other sources of water to meet the needs of its customers. 4-S Ranch and SHS Ranch would continue to pump groundwater for use on their lands. It is possible that this water could be used for transfer to other parties that do not require Reclamation involvement; however, any such agreement is speculative at this time and outside the scope of this EA.

2.2 Proposed Action

Reclamation proposes to issue a Warren Act contract for the introduction of up to 23,000 AFY of non-CVP water into the DMC for storage and conveyance to DPWD for a period not to exceed four years. Conveyance and storage of non-CVP water in Federal facilities is subject to available capacity, conveyance losses, and Reclamation's then-current water quality requirements (see Appendix A for Reclamation's current water quality requirements). All water introduced and stored in Federal facilities would be moved before the end of the four-year period. Source of the non-CVP water would be groundwater pumped from existing wells beneath the Properties as described below.

Landowners of the Properties would pump groundwater from 13 existing wells (see Figure 2-1) for discharge into the Eastside Bypass and/or Bear Creek. The wells would pump 24 hours a day for approximately 8 months in order to provide up to 23,000 AF. Water would then flow downstream to the San Joaquin River where it would be pumped from the Patterson Irrigation District (PID) intakes located at river mile 98.5 on the San Joaquin River, subject to any regulatory requirements and/or conditions governing such diversions. The pumped water would then be conveyed through PID's main canal distribution system and introduced into the DMC at milepost (MP) 42.53L. A portion of the conveyed water would be delivered to water users within PID pursuant to an agreement between DPWD and PID. The remaining non-CVP water would be discharged into the DMC for conveyance to DPWD. Any water not delivered to DPWD would be stored in San Luis Reservoir for later delivery to DPWD via exchange with Reclamation.

Conveyance losses of 10 percent would be assessed from the points of discharge to PID's intake pumps (i.e., in the Eastside Bypass, Bear Creek, and San Joaquin River), and a 5 percent conveyance loss would be assessed in the DMC.

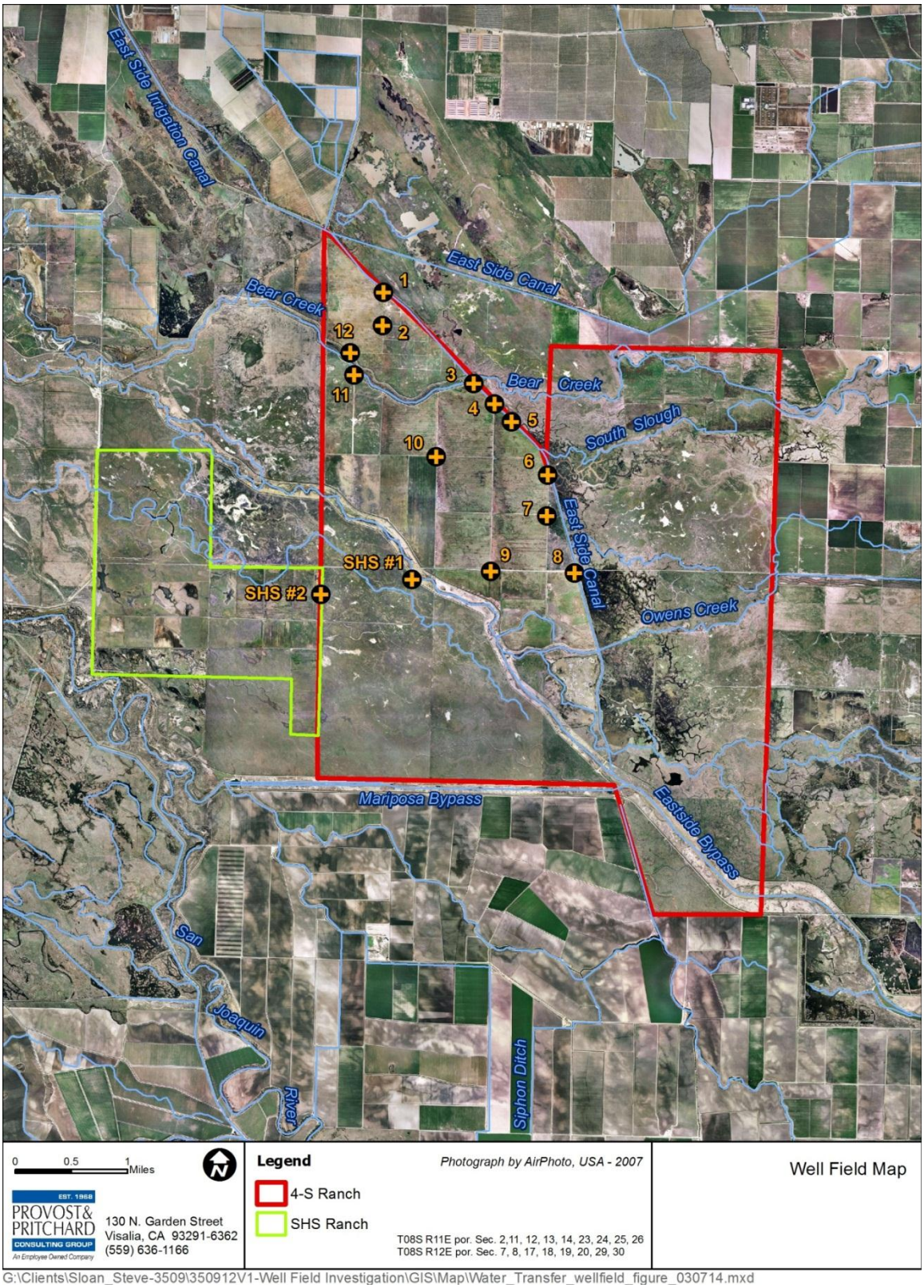

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Figure 2-1 Well Locations

2.2.1 Environmental Commitments

Reclamation, 4-S Ranch, SHS Ranch, PID, and DPWD would implement the following environmental protection measures to reduce environmental consequences associated with the Proposed Action (Table 2-1). Environmental consequences for resource areas assume the measures specified would be fully implemented.

Table 2-1 Environmental Protection Measures and Commitments

Resource	Protection Measure
Water Resources	• 4-S Ranch and SHS Ranch will provide annually the depth to groundwater in every well before pumping into the DMC commences and once every three months until pumping ceases. • 4-S Ranch and SHS Ranch will test the water quality at all operating discharge points into the Eastside Bypass and Bear Creek to ensure that all discharges meet or exceed receiving water quality at the time of initial introduction and once every three months until pumping ceases. • 4-S Ranch and SHS Ranch will provide access to each well for Reclamation and/or San Luis Delta Mendota Water Authority (SLDMWA) staff for depth measurement and water quality testing. • 4-S Ranch and SHS Ranch will allow their lands to be accessed by Reclamation for inclusion in the subsidence monitoring network already established by Reclamation for the San Joaquin River. Subsidence monitoring will be done annually for the term of the Proposed Action. • 4-S Ranch and SHS Ranch will reduce or curtail pumping (for their own pasture uses or for the Proposed Action) should adverse impacts to the groundwater, the groundwater aquifer or to receiving water quality become apparent. • DPWD, 4-S Ranch, SHS Ranch and PID will monitor river flows upstream of PID's pumping plant and downstream of the point of introduction at existing monitoring stations to determine that the non-Project water is available in the San Joaquin River at PID to pump. This monitoring and the assumed loss of 10 percent will insure that PID is pumping only introduced non-Project water for DPWD.
Biological Resources	• No native or untilled land (fallow for three consecutive years or more) may be cultivated with this water without additional environmental analysis and approval; • Water would not be used to place untilled or new lands into production, nor to convert undeveloped land to other uses; • The Proposed Action cannot alter the flow regime of natural waterways or natural watercourses such as rivers, streams, creeks, ponds, pools, wetlands, etc., so as to have a detrimental effect on fish or wildlife or their habitats. • The Proposed Action shall not change the land use patterns of the cultivated or fallowed fields that do have some value to listed species or birds protected by the Migratory Bird Treaty Act
General	• The water shall be used for beneficial purposes and in accordance with Federal Reclamation law and guidelines, as applicable; • Use of the water shall comply with all federal, state, local, and tribal law, and requirements imposed for protection of the environment and Indian Trust Assets; • The water introduced into the DMC shall be used within the permitted place of use for CVP water; • No land conversions may occur as a result of the Proposed Action; • No new construction or modification of existing facilities may occur in order to complete the Proposed Action.

Section 3 Affected Environment and Environmental Consequences

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

3.1 Resources Eliminated from Further Analysis

Reclamation analyzed the affected environment and determined that the Proposed Action did not have the potential to cause direct, indirect, or cumulative adverse effects to the resources listed in Table 3-1.

Table 3-1 Resources Eliminated from Further Analysis

Resource	Reason Eliminated
Cultural Resources	The Proposed Action would not involve physical changes to the environment or construction activities that could impact cultural resources. As the Proposed Action would facilitate the flow of water through existing facilities to existing users and no construction or modification of these facilities would be needed in order to complete the Proposed Action, Reclamation has determined that these activities have no potential to cause effects to historic properties pursuant to 36 Code of Federal Regulations Part 800.3(a)(1). See Appendix B for Reclamation's determination.
Indian Sacred Sites	The Proposed Action would not limit access to and ceremonial use of Indian sacred sites on Federal lands by Indian religious practitioners or affect the physical integrity of such sacred sites. There would be no impacts to Indian sacred sites as a result of the Proposed Action.
Indian Trust Assets	The Proposed Action would not impact Indian Trust Assets as there are none in the Proposed Action area. See Appendix C for Reclamation's determination.
Socioeconomics	The Proposed Action would have beneficial impacts on socioeconomic resources within PID and DPWD as non-CVP water would be used to help sustain existing crops and maintain farming within the districts.
Environmental Justice	The Proposed Action would not cause dislocation, changes in employment, or increase flood, drought, or disease nor would it disproportionately impact economically disadvantaged or minority populations.
Air Quality	No construction or modification of facilities would be done in order to move non-CVP water to PID or DPWD. The non-CVP water would be moved either via gravity or electric pumps which would not produce emissions that impact air quality. The generating power plant that produces the electricity to operate the electric pumps does produce emissions that impact air quality; however, the generating power plant is required to operate under permits issued by the air quality control district. As the Proposed Action would not change the emissions generated at the generating power plant, no additional impacts to air quality would occur and a conformity analysis is not required pursuant to the Clean Air Act.
Global Climate and Energy Use	The Proposed Action would not require additional electrical production beyond baseline conditions and would therefore not contribute to additional greenhouse gas emissions. As such, there would be no additional impacts to global climate change. Global climate change is expected to have some effect on the snow pack of the Sierra Nevada and the runoff regime. Current data are not yet clear on the hydrologic changes and how they will affect the San Joaquin Valley. CVP water allocations are made dependent on hydrologic conditions and environmental requirements. Since Reclamation operations and allocations are flexible, any changes in hydrologic conditions due to global climate change would be addressed within Reclamation's operation flexibility under either alternative.

3.2 Surface Water Resources

3.2.1 Affected Environment

Central Valley Project

CVP water is used for the irrigation of agricultural areas, for municipal and industrial uses, for the restoration of fisheries and aquatic habitat in the waterways that have been affected by water development, for wildlife refuges, and for other purposes. The largest use of CVP water is for agricultural irrigation. The greatest demand for irrigation water occurs in mid to late summer, as crops mature and crop water use increases. During the winter, farmers in the CVP also use water for frost control, pre-irrigation of fields to saturate the upper soil and for irrigation when precipitation is insufficient.

The amount of CVP water available each year for contractors is based, among other considerations, on the storage of winter precipitation and the control of spring runoff in the Sacramento and San Joaquin River basins. Reclamation's delivery of CVP water diverted from these rivers is determined by State water right permits, judicial decisions, and State and Federal obligations to prior rights holders, to maintain water quality, to enhance environmental conditions, and to prevent flooding.

SOD CVP agricultural allocations averaged 47 percent from 2005 to 2014 (Table 3-2). Over the last five years the average allocation was 37 percent with a range of 0 to 80 percent. A 100 percent allocation was only received once in the last 10 years (2006). Due to operational constraints and fluctuating hydrologic conditions, water allocations in the future are likely to be similar to those shown in Table 3-2.

Table 3-2 Ten Year Average SOD Agricultural Allocation

Contract Year	Agricultural Allocations (%)[1]
2014[2]	0
2013	20
2012	40
2011	80
2010	45
2009	10
2008	40
2007	50
2006	100
2005	85
Average	47

[1]As percentage of Water Service Contract total
[2]Initial 2014 allocation.
Source: http://www.usbr.gov/mp/cvo/vungvari/water_allocations_historical.pdf

Delta-Mendota Canal The DMC, the second largest of the CVP waterways, was completed in 1951. It includes a combination of both concrete-lined and earth-lined sections and is about 117 miles in length. The canal transports water from the Jones Pumping Plant to the Mendota Pool, which is controlled by a concrete storage dam that was constructed in 1917. The Mendota Pool is the terminus for the DMC and is located at the confluence of the San Joaquin River and the North Fork of the Kings River, approximately 30 miles west of the city of Fresno. The DMC is divided into the upper and lower portions. The dividing point is Check 13 near Santa Nella,

California. Check 13 is the intake to the O'Neill Forebay and San Luis Reservoir. Capacity in the DMC is restricted by the physical limitations of the canal and the pumping limits of the Jones Pumping Plant.

Del Puerto Water District

DPWD is a CVP contractor with a CVP water service contract that provides up to 140,210 AFY (Contract No. 14-06-200-922). This contract water supply, which is delivered directly from the DMC, is the District's only source of water supply. Privately developed groundwater is available on a limited basis throughout the District, some of which is stored and/or conveyed under the terms of temporary Warren Act Contracts between the DPWD and Reclamation. Currently, the only CVP supply used for municipal and industrial purposes is one or two AF per month of landscape water supplied to a small piece of land recently converted to commercial use. All remaining CVP supplies are delivered for agriculture purposes.

DPWD receives its CVP supply directly through turnouts on the DMC. The district does not have any distribution facilities and does not own any pumps, pipelines, or canals to transport the CVP water. Instead, all turnouts, pumps, pipelines, and canals in the district are maintained and operated by private owners while DPWD owns and operates the water meters. The district does not own or operate any groundwater wells. Individual landowners pump groundwater from their wells when DPWD cannot provide sufficient surface water supplies.

Patterson Irrigation District

PID is a CVP contractor with a water service contract that provides up to 16,500 AFY (Contract No. 14-06-200-3598A) of CVP water delivered from the DMC. As a result of a settlement reached between PID and Reclamation for the construction of Friant Dam and partial obstruction of natural flow from the San Joaquin River, PID receives an additional 6,000 AF per year of Replacement Water from Reclamation via the DMC. PID currently gets between 80 to 90 percent of its water supply from the San Joaquin River, with its remaining supply coming from groundwater, recirculation projects and CVP water from the DMC as described above.

PID's point of diversion is located at river mile 98.5 on the San Joaquin River (between the confluences of the Merced and Tuolumne Rivers with the San Joaquin River), about 3.5 miles east of the City of Patterson. In 2011, PID completed construction of a new 195 cubic-feet per second (cfs) National Marine Fisheries Service (NMFS)-approved fish screen and diversion pump station at this location in order to limit entrainment and impingement of fish during pumping.

PID's main canal has five lift stations and a peak capacity of 200 cfs. It begins at the San Joaquin River, just north of the Las Palmas Bridge, and heads southwest towards the City of Patterson for approximately 3.3 miles before heading south along State Route 33. The main canal supplies 13 lateral canals which distribute water north and south from the main canal. At the end of the Main Canal, PID maintains intertie facilities capable of conveying approximately 40 cfs to the DMC at MP 42.53L.

Eastside Bypass

The Eastside Bypass is a man-made earthen channel that extends from the confluence of the Fresno River and the Chowchilla Bypass to its confluence with the San Joaquin River. The

bypass carries flood flows from the San Joaquin River (at the Chowchilla Bifurcation Structure) and the eastside tributaries to the main stem San Joaquin River upstream of the Merced River confluence. The bypass is a component of the Lower San Joaquin River Flood Control Project which was authorized by Congress and the California legislature in 1946 and constructed from 1959 to 1966.

Bear Creek

Bear Creek is an ephemeral stream with some minimal flood control features to limit potential for damages as it makes its way through the City of Merced, but is otherwise largely uncontrolled. At times the reach within the Proposed Action area has flows during the summer due to spill from Merced Irrigation District's delivery system. Flood flows that are not diverted make their way to the San Joaquin River at a point just north of the Properties. There are water rights associated with Bear Creek with diversions at various points including the Eastside Canal, but much of the flow in the lower reaches of Bear Creek are as a result of releases of Merced River water into Bear Creek as operational spills or for subsequent diversion by downstream water users.

Water quality in Bear Creek is generally good; however, the State Water Resources Control Board (SWRCB) has identified water quality impairments in 84 miles of Bear Creek (from Bear Valley to the San Joaquin River) located within Mariposa and Merced counties which includes the Proposed Action area (SWRCB 2014). Impairments are due to *Escherichia coli* and unknown toxicity although sources of the contaminants are unknown. The SWRCB has listed this section of Bear Creek as a Category 5 (a water segment where standards are not met and a Total Maximum Daily Load [TMDL] is required, but not yet completed, for at least one of the pollutants being listed for the segment). TMDLs are scheduled to be completed by 2021 (SWRCB 2014).

San Joaquin River

The San Joaquin River at the confluence of the Eastside Bypass has a number of different potential tributaries including the upper main-stem of the San Joaquin River, the Fresno and Chowchilla rivers, water imported via the DMC, runoff from local streams and local drainage waters. Water quality in the San Joaquin River is variable, depending on the location, time of year, and the contributing sources of inflows. The SWRCB has identified water quality impairments in the San Joaquin River from Mendota Pool to the confluence of the Stanislaus River (downstream of Vernalis) for several different contaminants as shown in Tables 3-3 to 3-7.

Table 3-3 San Joaquin River (Mendota Pool to Bear Creek)

Pollutant	First Year Listed	TMDL Requirement Status*	TMDL Date**
Boron	2002	5A	2019
Chlorpyrifos	2002	5B	2007
Dichlorodiphenyltrichlorethane (DDT)	2002	5A	2011
Diazinon	2002	5B	2007
Group A pesticides	2002	5A	2011
Unknown toxicity	1994	5A	2019

* TMDL requirement status definitions for listed pollutants are: A= TMDL still required and B= being addressed by an U.S. Environmental Protection Agency (EPA)-approved TMDL
** Dates relate to the TMDL requirement status, so a date for A= TMDL scheduled completion date and B= Date EPA approved the TMDL
Source: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml

Table 3-4 San Joaquin River (Bear Creek to Mud Slough)

Pollutant	First Year Listed	TMDL Requirement Status*	TMDL Date**
Arsenic	2010	5A	2021
Boron	2006	5A	2019
Chlorpyrifos	2006	5B	2007
DDT	2006	5A	2011
Electrical conductivity (EC)	2006	5A	2019
Escherichia coli	2010	5A	2021
Group A pesticides	2006	5A	2011
Mercury	2006	5A	2012
Unknown toxicity	2006	5A	2019

* TMDL requirement status definitions for listed pollutants are: A= TMDL still required and B= being addressed by an U.S. Environmental Protection Agency (EPA)-approved TMDL
** Dates relate to the TMDL requirement status, so a date for A= TMDL scheduled completion date and B= Date EPA approved the TMDL
Source: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml

Table 3-5 San Joaquin River (Mud Slough to Merced River)

Pollutant	First Year Listed	TMDL Requirement Status	TMDL Date
Boron	1996	5A	2019
Chlorpyrifos	2006	5B	2007
DDT	2006	5A	2011
Diazinon	2006	5B	2007
EC	2006	5A	2019
Escherichia coli	2010	5A	2022
Group A pesticides	2006	5A	2011
Mercury	2006	5A	2012
Selenium	2006	5B	2002
Unknown toxicity	2006	5A	2019

* TMDL requirement status definitions for listed pollutants are: A= TMDL still required and B= being addressed by an EPA-approved TMDL
** Dates relate to the TMDL requirement status, so a date for A= TMDL scheduled completion date and B= Date EPA approved the TMDL
Source: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml

Table 3-6 San Joaquin River (Merced River to Tuolumne River)

Pollutant	First Year Listed	TMDL Requirement Status	TMDL Date
Boron	2002	5B	2007
Chlorpyrifos	2006	5B	2007
Dichlorodiphenyltrichlorethylene (DDE)	2010	5A	2011
Dichlorodiphenyltrichlorethane (DDT)	2002	5A	2011
Electrical conductivity (EC)	1998	5A	2021
Group A pesticides	2002	5A	2011
Mercury	2006	5A	2012
Temperature, water	2010	5A	2021
Unknown toxicity	2002	5A	2019
benzenehexachloride (alpha-BHC or alpha-HCH)	2010	5A	2022

* TMDL requirement status definitions for listed pollutants are: A= TMDL still required and B= being addressed by an EPA-approved TMDL
** Dates relate to the TMDL requirement status, so a date for A= TMDL scheduled completion date and B= Date EPA approved the TMDL
Source: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml

Table 3-7 San Joaquin River (Tuolumne River to Stanislaus River)

Pollutant	First Year Listed	TMDL Requirement Status	TMDL Date
Chlorpyrifos	2006	5B	2007
Dichlorodiphenyltrichlorethane (DDT)	2006	5A	2011
Diazinon	2006	5B	2007
Electrical conductivity (EC)	1998	5A	2021
Group A pesticides	1994	5A	2011
Mercury	2006	5A	2012
Temperature, water	2010	5A	2021
Unknown toxicity	1994	5A	2019

* TMDL requirement status definitions for listed pollutants are: A= TMDL still required and B= being addressed by an EPA-approved TMDL
** Dates relate to the TMDL requirement status, so a date for A= TMDL scheduled completion date and B= Date EPA approved the TMDL
Source: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml

As shown in Tables 3-3 to 3-7, TDMLs have not yet been reached for the majority of these contaminants, although several are being addressed by EPA-approved TMDLs. PID's screened intakes are located between the confluences of the Merced and Tuolumne Rivers.

Water quality is monitored at various sites within the watershed. At Vernalis the quality and volume of flow depends on several factors, including the contribution of flows from the Stanislaus, Tuolumne, and Merced Rivers, and the contribution of agricultural return flows. Typically, the higher the San Joaquin River flow at Vernalis, the better the water quality entering the Delta. At times, New Melones Reservoir is operated to maintain compliance with Vernalis water quality objectives. Water quality is assessed by measuring the average monthly EC, which generally indicates presence of salts. Readings are taken at Patterson, Vernalis and in the DMC is shown in Table 3-8.

Table 3-8 2004-2013 Average Monthly EC (mhos/cm) for the, San Joaquin River and DMC

Month	San Joaquin River at Patterson	San Joaquin River at Vernalis	DMC Headworks	DMC Check 20
January	1,601	632	553	639
February	1,010	661	546	619
March	998	652	512	629
April	903	399	413	622
May	554	276	331	544
June	638	384	338	489
July	755	481	292	354
August	714	506	360	415
September	768	520	437	498
October	634	457	415	495
November	693	667	456	537
December	1,071	706	570	607
Average	862	528	435	537

Source: DWR 2014

Currently SWRCB's Decision 1641 requires the implementation of the 2006 Bay-Delta Water Quality Control Plan, under which the California Department of Water Resources (DWR) and Reclamation are responsible for mitigating water quality effects of their operations in the Delta. The water quality constituents of concern in the Delta can be categorized broadly as metals, pesticides, nutrient enrichment and associated eutrophication, constituents associated with

suspended sediments and turbidity, salinity, bromide, and organic carbon. Drinking water quality constituents that are of specific concern include salinity, bromide, and organic carbon.

4-S Ranch and SHS Ranch

The 4-S Ranch (5,401 acres) and SHS Ranch (1,700 acres) are located within western Merced County approximately six miles due east of the intersection of Highway 165 and Highway 140 (Figure 1-1). The 4-S Ranch is bounded by the Eastside Canal on its northern and eastern boundaries and the Mariposa Bypass forms much of the southern boundary. Bear Creek and the Eastside Bypass run through the property (Figure 2-1). The SHS Ranch has the San Joaquin River as part of its southern and western boundary and the Eastside Bypass run along the eastern and northern edges of the property (Moss 2012). Groundwater is the only source of water for the ranches (see Section 3.3 for a discussion of groundwater resources).

3.2.2 Environmental Consequences

No Action

Under the No Action alternative, Reclamation would not approve the introduction of non-CVP water into the DMC. 4-S Ranch and SHS Ranch would continue to pump groundwater for their local needs. It is possible that some of this water could be used for transfers with other parties not requiring Reclamation involvement. As potential transfers under this alternative are speculative, no environmental analysis can be made. DPWD would need to find alternate sources of supplemental water.

Proposed Action

Under the Proposed Action, up to 23,000 AFY of groundwater would be pumped from the Properties and conveyed in the Eastside Bypass and/or Bear Creek to the San Joaquin River for diversion at PID's screened intakes. A portion of this water would be delivered to water users in PID for use on existing crops; the remaining water would be introduced into the DMC for direct delivery to DPWD and/or for storage in San Luis Reservoir. Stored water would later be delivered to DPWD via an exchange with Reclamation.

Pumped water quantities would be measured at the confluence of the Eastside Bypass as it flows into Bear Creek and for any direct discharges from the 4S Ranch into Bear Creek. A 10 percent loss factor would be applied to all discharges into Bear Creek and the Eastside Bypass in determining the amount of water that would be diverted at PID's screened intakes from the San Joaquin River. The water diverted from the San Joaquin River would be over and above the flows required to maintain compliance with the water quality and quantity requirements established by D-1641 and would not interfere with scheduled fall pulse flows. As this water would be diverted shortly after introduction into the San Joaquin River, there would be no measureable change in flows in the river downstream of PID's screened intakes. As such, this action would not change water flows in the river or impair Reclamation's or DWR's ability to meet their other obligations and responsibilities, including requirements for D-1641 and the 2006 Bay-Delta Water Quality Control Plan.

Water quality monitoring would be required prior to introduction of any groundwater to Bear Creek or the Eastside Bypass in order to assure that water quality within the receiving waters would not be adversely affected. In addition, Reclamation requires water quality testing prior to

any introduction of non-CVP water into its facilities. As shown in Table 3-10, all wells that are proposed to pump groundwater for transfer do not exceed the standards required for introduction of non-CVP water into the DMC. All future introductions would also be required to meet Reclamation's then-current standards prior to introduction. As shown in Table 3-8, monthly averages for electrical conductivity in the San Joaquin River have been generally slightly higher than the water in the DMC; however, the averages are well below the 2,200 milligram per liter water quality standard required by Reclamation (Appendix A). If Reclamation's standards are exceeded, introductions would cease until standards have been met. As such, diversion of pumped groundwater from the San Joaquin River into the DMC is not expected to adversely affect water quality within the DMC.

The Proposed Action would not affect CVP or State Water Project (SWP) operations and would not change existing diversion points from the Delta under Reclamation's or DWR's water rights permits. The Proposed Action would not interfere with Reclamation's obligations to deliver water to other contractors, wetland habitat areas, or for other environmental purposes. This transfer would utilize existing facilities and no new infrastructure, modifications of facilities, or ground disturbing activities would be needed for movement of this water. No native or untilled land (fallow for three years or more) would be cultivated with water involved with these actions.

Cumulative Impacts

Cumulative impacts result from incremental impacts of the Proposed Action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Reclamation has reviewed existing or foreseeable projects 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 which drive requests for water service actions. Water districts provide water to their customers based on available water supplies and timing, while attempting to minimize costs. Farmers irrigate and grow crops based on these conditions and factors, and a myriad of water service actions are approved and executed each year to facilitate water needs. It is likely that in 2014, more districts will request transfers and Warren Act contracts due to hydrologic conditions. Each water service transaction involving Reclamation undergoes environmental review prior to approval.

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 of facilities, nor interfere with CVP, PID, DPWD, or SWP operations, there would be no cumulative impacts to existing facilities or other contractors.

Capacity in the DMC and San Luis Reservoir is limited, and if many water actions were scheduled to take place concurrently they could cumulatively compete for space. However, non-CVP water would only be allowed to enter the DMC if excess capacity is available. In addition, any water stored within San Luis Reservoir would be limited to available capacity and would be subject to spill should capacity change over the course of the Warren Act contract. As such, the Proposed Action would not limit the ability of other users to make use of the facilities.

As pumped groundwater is required to not change receiving water quality and meet Reclamation's water quality standards prior to introduction into the DMC, no cumulative adverse water quality impacts are expected.

3.3 Groundwater Resources

3.3.1 Affected Environment

The Properties are located within the Merced Subbasin of the San Joaquin Valley Groundwater Basin. In 1995, DWR estimated the total storage capacity of the subbasin to be 21,100,000 AF to a depth of 300 feet and 47,600,000 AF to the base of fresh groundwater (DWR 2003). Although records aren't available, the existing well field within the Properties was most likely developed in the 1960s or early 1970s. Approximately 20,000 AFY of water is pumped from the well field (Figure 2-1) for irrigating the pastures in both Properties. The wells have capacities ranging from 866 to 2,071 gallons per minute (gpm) as shown in Table 3-9. There are 12 wells on the 4-S Ranch, most of which are located along either the Eastside Canal or Bear Creek and 2 wells on the SHS Ranch (Figure 2-1). These wells have total combined capacity of 21,732 gpm, or 48.4 cfs (Table 3-9).

Table 3-9 Well Information

Pump Number	Horsepower	Total Pump Lift (feet)	Measured Flow Rate (gpm)	Measured Flow Rate (cfs)	Standing Water Level (feet)	Water Table Drawdown (feet)	Specific Capacity (gpm/feet drawdown)
4-S 1*	50	69	1,560	3.5	43.5	18	86.7
4-S 2*	50	90	1,403	3.1	66.0	16	87.7
4-S 3*	50	62	1,436	3.2	35.0	24	59.8
4-S 4+	50	68	1,840	4.1	14.0	49	37.6
4-S 5+	50	66	2,071	4.6	13.0	43	48.2
4-S 6+	50	106	1,584	3.5	12.0	85	18.6
4-S 7*	40	87	1,180	2.6	43.0	41	28.8
4-S 8*	50	69	1,667	3.7	48.5	17	98.1
4-S 9*	50	147	866	1.9	84.0	60	14.4
4-S 10*	50	67	1,386	3.1	35.5	27	51.3
4-S 11*	50	98	1,055	2.4	66.0	28	37.7
4-S 12*	40	65	1,605	3.6	39.0	23	69.8
SHS-1^	75	84	1,997	4.5	39.0	40	49.9
SHS-2^	60	80	2,082	4.6	21.0	52	40.0
Average	51	83	1,552	3.5	40.0	37	52.0
Total	-	-	21,732	48.4	-	-	-

Notes:
* Test dates June, July and September 2010
+ March and August 2009
^ May 2009

All of the wells are finished in the upper portion of the unconfined and semiconfined aquifer above the Corcoran Clay layer which is estimated to be approximately 60 feet thick in the areas surrounding the Properties (Quinn 2006). Recharge to this portion of this aquifer comes from rainfall on overlying lands, local water courses, seepage from neighboring water courses, application of water to nearby wetland areas and irrigated lands including subsurface inflow due to resulting seepage losses from these lands, as well as subsurface inflow from upgradient areas towards the trough of the Valley. Well recovery has been shown to be quite rapid for several of

the wells tested (Moss 2012, Quinn 2006). Water quality testing conducted in 2012 for each of the wells is summarized in Table 3-10.

Table 3-10 Water Quality Data

Pump Number	B (µg/L)	Cr (µg/L)	Mo (µg/L)	Ni (µg/L)	Se (µg/L)	Hg (µg/L)	TDS (mg/L)	Specific Conductance (µmhos/cm)	As (µg/L)	Pb (µg/L)
4-S 1#	104	ND	6.0	ND	ND	ND	625	949	1.7	ND
4-S 2^	99.2	ND	6.0	ND	ND	ND	671	1,010	1.6	ND
4-S 3#	99.3	ND	5.6	ND	ND	ND	616	893	1.7	ND
4-S 4#	98.7	ND	5.7	ND	ND	ND	615	933	1.7	ND
4-S 5#	101	ND	5.6	ND	ND	ND	618	955	1.7	ND
4-S 6^	ND	ND	ND	47.1	0.5	ND	329	455	6.3	ND
4-S 7^	96.0	ND	5.9	ND	0.5	ND	671	1,010	6.0	ND
4-S 8^	ND	ND	ND	ND	ND	ND	325	459	1.7	ND
4-S 9^	ND	ND	ND	ND	ND	ND	327	461	1.7	ND
4-S 10^	ND	ND	ND	ND	ND	ND	325	462	1.7	ND
4-S 11+	ND	ND	ND	ND	ND	ND	620	990	-	-
4-S 12+	100.0	ND	ND	ND	ND	ND	280	430	-	-
SHS-1*	45.8	ND	4.8	ND	ND	ND	678	1,130	-	-
SHS-2*	79.7	ND	13.7	ND	ND	ND	1,170	1,940	-	-
MCLs	700	50	10	100	2	15	1,500	2,200	10	15
Dates Sampled	* 3/8/2012 + 4/3/2012 ^ 5/16/2012 # 5/31/2012								8/2/2012	
Note: Maximum contaminate level (MCL) from Table 5 in Appendix A. ND = non detect										

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 (Poland and Lofgren 1984). Large withdrawal 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 (Poland and Lofgren 1984). 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 (Poland and Lofgren 1984, USGS 2013). 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 (USGS 2013).

In 2013, the U.S. Geological Survey (USGS), in cooperation with Reclamation and the San Luis Delta Mendota Water Authority, published a Scientific Investigations Report (2013-5142) which assessed land subsidence and water levels in the vicinity of the DMC from 2003-2010 (USGS 2013). 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 (USGS 2013). 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 system but was likely originated below the Corcoran Clay (USGS 2013).

The noted subsidence is several miles away from the Properties. No known subsidence has occurred on or under the Properties (S. Sloan personal communication); however, the 4-S Ranch and SHS Ranch owners have agreed to allow subsidence monitoring on their lands as part of Reclamation's subsidence monitoring program associated with the San Joaquin River Restoration Program (SJRRP).

3.3.2 Environmental Consequences

No Action

Under the No Action alternative, Reclamation would not approve the introduction of non-CVP water into the DMC. The Properties would continue to pump up to 20,000 AFY of groundwater for their local needs as they have in the past. They may also pump additional groundwater for transfers with other parties not requiring Reclamation involvement. Current subsidence trends would be unchanged.

Proposed Action

Under the Proposed Action, up to 23,000 AFY of groundwater would be pumped from the well fields for transfer to DPWD. This pumped groundwater would be in addition to whatever groundwater would be pumped for irrigation of pasture lands within the Properties. Increased groundwater pumping (up to double what has been pumped in this area previously) could reduce water levels and increase rates of subsidence. However, as described above, shallow wells, such as the ones included in the Proposed Action, that are located above the Corcoran Clay layer have been determined to not be the cause of the increased subsidence in this area (USGS 2013). As such, the Proposed Action is not expected to affect subsidence trends in the area.

Although the aquifers beneath the well field is not believed to be in overdraft as water levels in the area have remained relatively constant over many years (S. Sloan personal communication), additional pumping of the well field would decrease groundwater levels as well as increase movement of groundwater into the aquifer underlying the Properties beyond what has occurred historically. As the nearest neighboring well is several miles away, neighboring wells would not be impacted. Recharge from rainfall and direct deep percolation would remain unchanged; however, recharge of the aquifer due to subsurface flows would vary depending on the volume of water pumped; the more water pumped, the greater the movement of water into the boundaries of the Properties from adjacent areas. As described in Table 2-1, groundwater monitoring is required in order to minimize potential adverse impacts to groundwater levels. Any adverse impacts to the groundwater aquifer would result in the reduction or curtailment of groundwater pumping for irrigation of the Properties pastures followed by pumping for transfer, if needed.

Cumulative Impacts

With incorporation of the environmental protection measures listed in Table 2-1, the Proposed Action would not contribute cumulatively to groundwater resources or subsidence trends.

3.4 Land Use

3.4.1 Affected Environment

4-S Ranch and SHS Ranch

The Properties are currently in pasture land, most of which is irrigated pasture used for cattle ranching. Surrounding land uses include native uplands and wetlands and irrigated row crop, grain and hay fields.

Del Puerto Water District

DPWD is located along the west side of the San Joaquin Valley and extends from Vernalis to Santa Nella. The District includes approximately 45,000 acres of productive farmland with an estimated production value of over $139 million gross farm dollars annually in Stanislaus, San Joaquin and Merced Counties.

3.4.2 Environmental Consequences

No Action

Under the No Action alternative, Reclamation would not approve the introduction of 4-S and SHS Ranch's groundwater into the DMC. 4-S and SHS Ranch would continue to pump groundwater for its local needs and for transfers with other parties not requiring federal involvement. DPWD would need to find an alternate source of supplemental water. It is possible that without additional sources of water, DPWD may need to increase fallowing or take permanent crops out of production, adversely affecting land use within the District.

Proposed Action

Under the Proposed Action, non-CVP water would move through existing facilities for delivery to existing crop lands within PID and DPWD. The water would not be used to place untilled or new lands into production, or to convert undeveloped land to other uses. 4-S and SHS Ranch would continue to irrigate their existing pasture land as has historically occurred. Should reduced or curtailed pumping be required at the Properties, pastureland could be temporarily taken out of production. This would be a temporary impact as the pastures would be returned to production following the conclusion of the Project. There would be no adverse impacts to land use as a result of the Proposed Action.

Cumulative Impacts

With incorporation of the environmental protection measures listed in Table 2-1, the Proposed Action would not contribute cumulatively to any impacts to land uses because no permanent land use changes would result from the action.

3.5 Biological Resources

3.5.1 Affected Environment

The Action area includes the Properties, Reach 3 of the Eastside Bypass to its confluence with Bear Creek and the San Joaquin River, the San Joaquin River downstream to PID's screened intake (about 50 river miles), PID's main canal distribution system and CVP service area, the

DMC from PID's discharge to the San Luis Reservoir, the DPWD's existing DMC turnouts and CVP service area, and the San Luis Reservoir.

Special-Status Species

Reclamation requested an official species list from the U.S. Fish and Wildlife Service (Service) on April 21, 2014 via the Sacramento field office's website, http://www.fws.gov/sacramento/es/spp_list.htm (Document number: 140421030232). The list is for the following 7 ½ minute USGS quadrangles which are overlapped by the Action area: Los Banos Valley, Mariposa Peak, Turner Ranch, San Luis Ranch, Howard Ranch, Pacheco Pass, San Luis Dam, Arena, Hatch, Gustine, Stevinson, Crows Landing, Patterson, Orestimba Peak, Newman, Westley, Brush Lake, Vernalis, Tracy, and Solyo. The California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB) was also queried for records of protected species near the action area (CNDDB 2014). The information collected above, in addition to information within Reclamation's files, was combined to determine the likelihood of protected species occurrence within the Action area.

Table 3-11 Special Status Species with the Potential to Occur in the Action Area

Species	Status	Effects	Occurrence in the Study Area
INVERTEBRATES			
Conservancy fairy shrimp *Branchinecta conservatio*	E, X	NE	**Present.** There are CNDDB records and designated critical habitat for this species within the Properties and along the Eastside Bypass, Bear Creek, and the San Joaquin River (CNDDB 2014). The Proposed Action would not alter the inundation time or hydrology of any vernal pools, nor flood any vernal pools located along the San Joaquin River, Eastside Bypass, or Bear Creek. There would be no effect to this species or its critical habitat.
Longhorn fairy shrimp *Branchinacta longiantenna*	E,X	NE	**Present.** There are CNDDB records of this species along the San Joaquin River and designated critical habitat for this species is present along portions of the Eastside Bypass and San Joaquin River. The Proposed Action would not alter the inundation time or hydrology of vernal pools, and would not flood vernal pools adjacent to the San Joaquin River, Eastside Bypass, or Bear Creek. There would be no effect to this species or its critical habitat.
Vernal pool fairy shrimp *Branchinecta lynchi*	T,X	NE	**Present.** There are CNDDB records and critical habitat for this species located within the Properties and along the Eastside Bypass, Bear Creek, and the San Joaquin River. The Proposed Action would not alter the inundation time or hydrology of vernal pools, and would not flood vernal pools adjacent to the San Joaquin River, Eastside Bypass, or Bear Creek. There would be no effect to this species or its critical habitat.

Species	Status	Effects	Occurrence in the Study Area
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	T	NE	**Possible.** There are CNDDB records of this species on the Merced River and the San Joaquin River over 9 miles from the action area. This species may be present in elderberry bushes growing along Bear Creek, the Eastside Bypass, or the San Joaquin River. The Proposed Action would not involve any removal/disturbance of vegetation, construction, or conversion of native or fallowed lands. There would be no effect to this species or its host plant.
Vernal pool tadpole shrimp *Lepidurus packardi*	E,X	NE	**Present.** There are CNDDB records and critical habitat for this species located within the Properties and along the Eastside Bypass, Bear Creek, and the San Joaquin River. The Proposed Action would not alter the inundation time or hydrology of vernal pools, and would not flood vernal pools adjacent to the San Joaquin River, Eastside Bypass, or Bear Creek. There would be no effect to this species or its critical habitat.
FISH			
Green sturgeon *Acipenser medirostris*	T, NMFS	NE	**Absent.** Green Sturgeon do not travel as far upstream in the San Joaquin River as PID's intake facility, and are not present within the Action area (NMFS 2005; M. Gutierrez, NMFS personal communication 2014).
Delta smelt *Hypomesus transpacificus*	T,X	NE	**Absent.** Delta smelt do not travel as far upstream in the San Joaquin river as PID's intake facility, and are not present within the action area. There is no critical habitat for this species in the Action area (SJRRP 2011b).
Central Valley steelhead *Oncorhynchus mykiss*	T,X, NMFS	NE	**Present.** This species and its critical habitat are present in the San Joaquin River downstream from the San Joaquin-Merced River confluence. This species is believed to be extirpated from the San Joaquin River upstream of the San Joaquin-Merced River confluence (Portz et al. 2013). Water levels and temperatures in the San Joaquin River would not be measurably altered by the Proposed Action and would be consistent with normal day-to-day variation. PID's NMFS-approved screened intakes on the San Joaquin River were designed to limit entrainment of fish, and their operation is covered under an existing EA and letter of concurrence from NMFS (NMFS 2007). There would be no effect to this species.
Central Valley spring-run Chinook salmon *Oncorhynchus tshawytscha*	T, NMFS	NE	**Present.** This species is present in the San Joaquin River, downstream from the San Joaquin-Merced River confluence. Water levels and temperatures in the San Joaquin River would not be measurably altered by the Proposed Action and would be consistent with normal day-to-day variation. PID's NMFS-approved screened intakes on the San Joaquin River were designed to limit entrainment of fish, and their operation is covered under an existing EA and letter of concurrence from NMFS (NMFS 2007). There would be no effect to this species or its critical habitat.

Species	Status	Effects	Occurrence in the Study Area
Winter-run Chinook salmon, Sacramento River *Oncorhynchus tshawytscha*	E, NMFS	NE	**Present.** This species is present in the San Joaquin River, downstream from the San Joaquin-Merced River confluence. Water levels and temperatures in the San Joaquin River would not be measurably altered by the Proposed Action and would be consistent with normal day-to-day variation. PID's NMFS-approved screened intakes on the San Joaquin River were designed to limit entrainment of fish, and their operation is covered under an existing EA and concurrence letter from NMFS (NMFS 2007). There would be no effect to this species or its critical habitat.
AMPHIIBIANS			
California tiger salamander, Central population *Ambystoma californiense*	T	NE	**Present.** There are several CNDDB records of this species within 3 miles of the Properties, and along the San Joaquin River. The vernal pools and grazed grasslands in the Action area provide suitable upland and breeding habitat for this species. The Proposed Action would not alter the inundation time or hydrology of vernal pools, and would not involve any ground-disturbing activities, construction, or conversion of native or fallowed lands. There would be no effect to this species.
California red-legged frog *Rana draytonii*	T,X	NE	**Present.** There is one CNDDB occurrence of this species in DPWD, and several near San Luis Reservoir. There is critical habitat for this species along the western shore of the San Luis Reservoir, outside of the action area. The Proposed Action would not involve any construction, ground-disturbing activities or conversion of native or fallowed lands. There would be no effect to this species or its critical habitat.
REPTILES			
Blunt-nosed leopard lizard *Gambelia sila*	E	NE	**Possible.** The Action area is located to the north of the current range of this species (USFWS 2010a). The Eastside Bypass may have provided marginally suitable habitat prior to the start of interim restoration flows in 2010, but now that the Bypass floods more frequently it has become unsuitable for this species (SJRRP 2009). The Proposed Action would not inundate suitable blunt-nosed leopard lizard, and would have no effect on the species.
Giant garter snake *Thamnophis gigas*	T	NE	**Present.** There are several CNDDB occurrences of this species near the Action area, and it is known to inhabit wetlands within the Grasslands Wildlife Management Area. The Proposed Action would not involve any construction, ground-disturbing activities, or conversion of cultivated or fallowed fields that may provide habitat for this species There would be no effect to this species.
BIRDS			
Tri-colored blackbird *Agelaius tricolor*	MBTA	NT	**Present.** There are several CNDDB records of this species throughout the Action area. The Proposed Action would not change the land use patterns of cultivated or fallowed fields that may provide habitat for this species. There would be no take of tri-colored blackbirds or other migratory

Species	Status	Effects	Occurrence in the Study Area
			birds in the Action area.
Swainson's hawk *Buteo swainsoni*	MBTA	NT	**Present.** There are several CNDDB records of this species along the San Joaquin River, and some records within DPWD. This species may nest in the Action area but would not be affected by the Proposed Action because there would be no construction or change in land use patterns of cultivated or fallowed fields that may provide habitat for this species. There would be no take of this species or other migratory bird species in the action area.
Burrowing owl *Athene cunicularia*	MBTA	NT	**Present.** There are CNDDB records of this species near DPWD and burrowing owls are known to occupy burrows along the DMC. The Proposed Action does not involve any construction, ground-disturbing activities, or changes in land use patterns of cultivated or fallowed fields that may provide habitat for this species. There would be no take of burrowing owls.
Least Bell's vireo *Vireo bellii pusillus*	E	NE	**Possible.** There is one CNDDB record of this species along the San Joaquin River about 9 miles north of the PID pump. The Proposed Action would not alter riparian vegetation or measurably change water levels in the San Joaquin River. There would be no effect to this species.
MAMMALS			
Giant kangaroo rat *Dipodomys ingens*	E	NE	**Absent.** The Action area is located outside of the known range of this species (USFWS 2010c).
Fresno kangaroo rat *Dipodomys nitratoides exilis*	E	NE	**Possible.** There are no CNDDB records of this species within the Action area. Previous surveys for this species in Merced County have failed to locate any individuals, but not all areas of suitable habitat have been surveyed (USFWS 2010b). The Proposed Action would not involve construction, ground-disturbing activities, or conversion of native or fallowed lands. There would be no effect to this species.
Riparian (San Joaquin Valley) woodrat *Neotoma fuscipes riparia*	E	NE	**Possible.** Currently, there are only two known populations of this species, one in Caswell Memorial State Park and one in the San Joaquin River National Wildlife Refuge about 7.5 miles north of PID's San Joaquin River pumps. There are some marginally suitable riparian woodland habitats along the San Joaquin River in the action area that could potentially support this species. The proposed action would not alter riparian habitat or measurably change water levels in the San Joaquin River, so there would be no effect to this species.
Riparian brush rabbit *Sylvilagus bachmani riparius*	E	NE	**Possible.** There are only a few extant occurrences of this species, one in Caswell Memorial State Park and one along the San Joaquin River about 21 miles north of PID's pumps. The Proposed Action would not alter riparian habitat or measurably alter water levels in the San Joaquin River, so there would be no effect to this species.

Species	Status	Effects	Occurrence in the Study Area
San Joaquin kit fox *Vulpes macrotis mutica*	E	NE	**Present.** There are several CNDDB records of this species in Del Puerto WD and within 5 miles of all portions of the action area. The Proposed Action would not involve any construction, ground-disturbing activities, or conversion of native or fallowed lands. There would be no effect to this species.
PLANTS			
Large-flowered fiddleneck *Amsinckia grandiflora*	E	NE	**Possible.** There are no known populations of this species within the action area. There is one extant occurrence about four miles east of the DPWD. The Proposed Action does not involve any ground-disturbing activities or conversion of native or fallowed lands, so there would be no effect to this species.
Hoover's spurge *Chamaesyce hooveri*	T,X	NE	**Present.** There is critical habitat and one CNDDB record of this plant species from 2011 on the Properties. This species only grows in vernal pools. The Proposed Action would not alter the inundation time or hydrology of any vernal pools, so there would be no effect to this species or its critical habitat.
Colusa grass *Neostapfia colusana*	T,X	NE	**Present.** There is critical habitat and one CNDDB record of this plant on the Properties. This species only grows in vernal pools. The Proposed Action would not alter the inundation time or hydrology of any vernal pools, so there would be No Effect to this species or its critical habitat.

1 Status= Listing of Federally special status species
E: Listed as Endangered
MBTA: Protected under the Migratory Bird Treaty Act
NMFS: Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service
T: Listed as Threatened
X: Critical Habitat designated for this species
2 Effects = Effect determination
NE: No Effect from the Proposed Action to federally listed species
NT: No Take would occur from the Proposed Action to migratory birds
3 Definition Of Occurrence Indicators
Absent: Species not recorded in study area and/or habitat requirements not met
Possible: Species not observed in the last 10 years in area
Present: Species recorded in or near action area and habitat present

3.5.2 Environmental Consequences

No Action

Under the No Action Alternative, there would be no impacts to biological resources since conditions would remain the same as existing conditions.

Proposed Action

Under the Proposed Action, an additional amount of up to 23,000 AFY of groundwater would be pumped from the Properties and conveyed to DPWD, PID, and the San Luis Reservoir for up to four years. The Properties contain CNDDB records of federally listed species and multiple vernal pools that have been designated as critical habitat. The Properties are located within the Grasslands Wildlife Management Area, which is an area of private lands with perpetual conservation easements held by the Service that support the largest remaining block of wetlands

in the Central Valley (USFWS 2013). The Properties provide suitable habitat for several listed species and migratory birds.

The vernal pools on the Properties are filled by winter and spring rains, and are underlain by impermeable clay soils which separate them from the semi-confined ground-water aquifer (Rains et al 2005; S. Lee, Reclamation, personal communication). Currently, 20,000 AFY of groundwater is pumped and used to irrigate the Properties for cattle grazing; if the Proposed Action is approved an additional 23,000 AFY would be pumped from the wells. This increase in groundwater pumping would have no effect on the inundation time or habitat suitability of these vernal pools because they are separate from the aquifer and, therefore, are unaffected by water levels within the aquifer (Rains et al 2005). The Proposed Action does not involve any ground-disturbing activities, construction, or conversion of land, so there would be no effect to vernal pool critical habitat, or federally listed species that depend on vernal pools.

The water pumped from the Properties would be conveyed into Bear Creek and Reach 3 of the Eastside Bypass. Bear Creek and Reach 3 of the Eastside Bypass pass through the East Bear Creek Unit (EBCU) of the San Luis National Wildlife Refuge, which provides wetland habitat for migratory waterfowl. Flows within Bear Creek are intermittent and variable, with times of the year when the creek is completely dry and other times when it is overrun by flood events (Reclamation 2012). A majority of the flow in Bear Creek near/in the action area comes from releases of Merced River water and water from Yosemite Lake and McClure Lake, for delivery to downstream water users, including the EBCU (Reclamation 2012). The amount of water to be conveyed into Bear Creek for the Proposed Action would be within the range of typical water level fluctuations.

Prior to the release of the first interim flows for the SJRRP, the Eastside Bypass was typically a dry channel and conveyed only flood flows, agricultural return flows and run-off (SJRRP 2009). Since the release of the first interim flows in 2010, inundation of the Eastside Bypass has occurred seasonally, and has varied greatly in magnitude between years. In Water Year (WY) 2011, a large flood release of about 7,500 cfs was released from Friant Dam and conveyed through the Bypass channel (SJRRP 2011b). Interim flows continued to be conveyed in the Eastside Bypass, until February 2014 when critically dry conditions forced an early reduction in flows (SJRRP 2014).

Prior to the first release of interim flows, the Eastside Bypass previously provided moderately suitable upland habitat for federally listed species like the blunt-nosed leopard lizard. Protocol surveys in 2009 and 2010 by the California State University's Endangered Species Recovery Program and DWR failed to locate any blunt-nosed leopard lizards in the Eastside Bypass (SJRRP 2009). The Service determined that the interim flows were not likely to adversely affect the blunt-nosed leopard lizard due to seasonal flooding and the poor quality of habitat in the Eastside Bypass (USFWS 2009).

If any federally listed upland species were present in the Eastside Bypass channel, their burrows would have flooded during the WY 2011 releases and they would have been forced to migrate out of the channel. Due to the ongoing periodic inundation of the Eastside Bypass from flood flows, interim flows, agricultural return flows, agricultural run-off, and tributary inflows from

the San Joaquin River, it is unlikely that any federally listed upland species would have moved into the Eastside Bypass since the last interim flows were conveyed in mid-February 2014. The amount of water to be conveyed in Bear Creek and the Eastside Bypass would be within the range of typical water level fluctuations.

There are vernal pools along the Eastside Bypass and Bear Creek that have been designated as critical habitat. The water associated with the Proposed Action would remain in the levees of the Eastside Bypass and Bear Creek, and would not flood adjacent vernal pools or upland habitats. After passing through the Eastside Bypass and Bear Creek, the water would enter Reach 5 of the San Joaquin River and be conveyed about 50 river miles downstream to PID's screened intakes. Critical habitat for Central Valley steelhead and Central Valley Chinook salmon is located in the San Joaquin River downstream from the San Joaquin-Merced River confluence at the bottom of Reach 5. Central Valley steelhead are believed to be extirpated from all waters upstream of the San Joaquin-Merced River confluence, and have not been observed in this area of the river during ongoing monitoring efforts associated with the SJRRP (Portz et al. 2013). Central Valley steelhead continue to persist in small numbers within the Merced River, and are assumed to be present in the action area downstream from the San Joaquin-Merced River confluence. About 54,000 hatchery-bred spring-run Chinook salmon were released into the San Joaquin River, near the San Joaquin-Merced River confluence in April 2014 (Grossi 2014). Fall-run Chinook salmon captured in Reach 1 of the San Joaquin River are also scheduled to be released near the San Joaquin-Merced River confluence sometime in spring of 2014 (Reclamation 2014).

The water would be pumped out of the San Joaquin River via PID's NMFS-approved screened intake. The screened intake was constructed in 2011 and designed to limit the entrainment of fish during pumping. The operation of PID's screened intake was addressed and covered by NMFS in 2007 (NMFS 2007). During the Proposed Action, PID's intake would operate within the limits of existing environmental coverage.

A maximum of 20,700 AF of water per year could be conveyed in the San Joaquin River as a result of the Proposed Action (factoring in a 10 percent conveyance loss). This minor increase in flow would not alter water levels or temperatures to values outside of the range of typical day-to-day fluctuation. The Proposed Action would have no effect on Essential Fish Habitat, critical habitat, federally listed fish species, or other native fish in the action area.

Water delivered to PID and DPWD for the Proposed Action would be conveyed through PID's Main Canal, the DMC, and the Districts' existing distribution systems. The Proposed Action does not involve any construction, modification of facilities, or other ground-disturbing activities. The water associated with the Proposed Action would only be used on established agricultural lands within PID and DPWD and would not be used to irrigate native lands, or lands that have been fallowed for three years or more. The Proposed Action also would not change the land use patterns of cultivated or fallowed fields that are of value to listed species or birds protected under the Migratory Bird Treaty Act (MBTA). There is no designated critical habitat within DPWD or PID, so there would be no effect to critical habitat.

The Proposed Action may include storage of water in San Luis Reservoir. Theoretically, up to 78,660 AF of water in total could be stored in the San Luis Reservoir, assuming a total

conveyance loss of 15 percent, and assuming PID and DPWD do not use any of the water for the 4-year duration of the Proposed Action. This maximum amount of water could only be stored in San Luis Reservoir for a short period of time (less than one year), because only a maximum of 19,665 AF of water associated with the Proposed Action could be delivered into San Luis Reservoir each year. The maximum amount of 78,660 AF of water constitutes less than 4 percent of the capacity of San Luis Reservoir (capacity of 2,041,000 AF) and would not have a measurable effect on water levels in the reservoir. The actual amount of water stored in the San Luis Reservoir would likely be much less than the theoretical maximum because of the ongoing drought and PID and DPWD's need for water. Storage of water within San Luis Reservoir, even at the maximum amount of 78,660 AF, would have no effect to federally listed species, critical habitat, or birds protected under the MBTA.

With the implementation of environmental commitments (Section 2.2.1), and based on the nature of the Proposed Action, Reclamation has determined there would be *no effect* to proposed or listed species or critical habitat under the Endangered Species Act of 1973, as amended (16 U.S.C. §1531 et seq.) and *no take* of birds protected under the Migratory Bird Treaty Act (16 U.S.C. §703 et seq.).

Cumulative Impacts

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

Section 4 Consultation and Coordination

4.1 Public Review Period

Reclamation intends to provide the public with an opportunity to comment on the Draft Finding of No Significant Impact and Draft EA during a 15 day public review period.

Section 5 Preparers and Reviewers

5.1 Bureau of Reclamation

Rain L. Emerson, M.S., Natural Resources Specialist, SCCAO
Lisa Carlson, Wildlife Biology Technician, SCCAO
William Soule, Archaeologist, MP-153
Patricia Rivera, Native American Affairs Specialist, MP-400
David E. Hyatt, Supervisory Wildlife Biologist, SCCAO – reviewer
Cathy James, Repayment Specialist, SCCAO – reviewer
Ben Lawrence, Acting Supervisory Natural Resources Supervisor – reviewer
David E. Hyatt, Supervisory Wildlife Biologist – reviewer

5.2 Proponents

Rick Besecker, Provost & Pritchard Consulting Group
Anthea Hansen, DPWD – reviewer
Steve Sloan, 4-S Ranch – reviewer
Richard Moss, P.E., Provost & Pritchard Consulting Group – reviewer

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