

RECLAMATION

Managing Water in the West

FINDING OF NO SIGNIFICANT IMPACT

Patterson Irrigation District 10-Year Transfer and/or Warren Act Contract for up to 36,000 acre-feet of Available Surface Water Supply to Santa Clara Valley Water District

FONSI-13-072

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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 is not required for the transfer of up to 36,000 acre-feet (AF) of Patterson Irrigation District's (PID's) Replacement Water, Central Valley Project (CVP) water, and pre-1914 San Joaquin River water to Santa Clara Valley Water District (SCVWD) over a period of 10 years. This Finding of No Significant Impact (FONSI) is supported by Reclamation's Environmental Assessment (EA)-13-072, *Patterson Irrigation District 10-Year Transfer and/or Warren Act Contract for up to 36,000 acre-feet of Available Surface Water Supply to Santa Clara Valley Water District*, and is hereby incorporated by reference.

Reclamation provided the public with an opportunity to comment on the Draft FONSI and Draft EA between May 16, 2014 and May 30, 2014. No comments were received.

Background

In 2009, PID requested approval from Reclamation for the transfer of up to 13,350 AF of its Replacement Water, CVP water, and pre-1914 San Joaquin River water (henceforth known as Transfer Water) to SCVWD over a period of four years (March 1, 2010 through February 28, 2014). Reclamation analyzed the proposed transfer and/or Warren Act Contracts in EA-09-172 entitled *Four Year Transfer and Warren Act Contracts for up to 13,350 acre-feet of Patterson Irrigation District's Available Surface Water Supply to Santa Clara Valley Water District* and a FONSI was executed on March 16, 2010. As this four-year transfer has expired, PID has requested approval from Reclamation for a new 10-year transfer (March 1, 2014 through February 29, 2024), subject to available water, of up to 36,000 AF of its Transfer Water to SCVWD.

Proposed Action

Reclamation proposes to approve PID's delivery of up to 36,000 AF of PID's Transfer Water to SCVWD over a 10-year period (March 1, 2014 through February 29, 2024), with up to 6,000 AF to be transferred in any given year. If needed, Reclamation would issue Warren Act contract(s) for conveyance and storage of any non-CVP water to SCVWD within the 10-year period. Conveyance and storage of non-CVP water would be subject to available capacity. All water stored within federal facilities would be delivered prior to the end of the 10-year transfer period (by February 29, 2024).

For transfers within Contract Year 2014 (March 1, 2014 through February 28, 2015), water made available to SCVWD by PID will occur under the following conditions:

- If PID is allocated 75 percent of its Replacement Water by Reclamation, PID will make available 1,000 AF of its Transfer Water to SCVWD.
- If PID is allocated 100 percent of its Replacement Water by Reclamation, PID will make available 3,000 AF of its Transfer Water to SCVWD. If PID determines that additional

water is not needed within its service area, an additional 3,000 AF for a total of 6,000 AF of its Transfer Water will be made available to SCVWD.

For Contract Years 2015 through 2023 (March 1, 2015 through February 29, 2024), water made available to SCVWD by PID will occur under the following conditions:

- PID will make available a minimum of 4,000 AF of Transfer Water to SCVWD in each year.
- In any year that PID is allocated 100 percent of its Replacement Water by Reclamation, PID will make available an additional 2,000 AF of Transfer Water to SCVWD.

Conveyance of Replacement Water or CVP Water

PID's Replacement Water and/or CVP water will continue to be pumped from the Sacramento-San Joaquin Delta into the Delta-Mendota Canal (DMC); however, rather than being delivered to PID's turnouts, the water will be delivered to O'Neill Forebay and pumped into San Luis Reservoir. From San Luis Reservoir, the water will be diverted to Reach 1 of the Pacheco Tunnel and then to the Pacheco Pumping Plant where it will be lifted into the Pacheco Conduit and delivered to SCVWD via the Santa Clara Conduit and Tunnel. SCVWD will then convey the water through its internal distribution system to its water users for agricultural and municipal and industrial (M&I) purposes. As required by Reclamation's water rights permits, CVP water may only be used in portions of SCVWD that are within the CVP Consolidated Place of Use (CPOU) as shown in Figure 1-1 in EA-13-072.

Storage and Conveyance of pre-1914 San Joaquin River Water

PID's pre-1914 San Joaquin River water would be pumped from PID's existing pumping facility at river mile 98.5, subject to any regulatory requirements and/or conditions governing such diversions. The pumped water would be conveyed through PID's main canal distribution system and introduced into the DMC at milepost 42.53L. PID's non-CVP water would then be conveyed down the DMC to O'Neill Forebay and pumped into San Luis Reservoir. PID's non-CVP water would either be stored in San Luis Reservoir for later use by SCVWD or PID, or conveyed directly to SCVWD via the Pacheco Tunnel and Pacheco Conduit. Water conveyed to SCVWD or PID would be delivered to its water users through its internal distribution system for agricultural and M&I purposes. PID's non-CVP water is not limited to use within the CPOU and could be delivered throughout SCVWD.

Environmental Commitments

Reclamation, PID, and SCVWD will implement the environmental protection measures included in Table 2-1 in EA-13-072 to reduce environmental consequences associated with the Proposed Action. Environmental consequences for resource areas assume the measures specified will 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

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 following resources: Land Use, Cultural Resources, Indian Sacred Sites, Indian Trust Assets, Socioeconomics, Environmental Justice, Air Quality, Global Climate and Energy Use. Brief explanations of the findings for the resources listed above are provided in Table 3-1 of EA-13-072.

Water Resources

Under the Proposed Action, the maximum amount of water to be transferred over the 10-year period would be 36,000 AF, with up to 6,000 AF to be transferred in any given year. On average, PID pumps approximately 36,000 AF per year of San Joaquin River water to meet local M&I and irrigation demands. Since the San Joaquin River water that may be used for the transfer would be within the amount historically pumped by PID annually, there would be no adverse impact to PID's pre-1914 San Joaquin River water rights as a result of the Proposed Action. It is possible that due to hydrologic conditions, PID may need to pump additional San Joaquin River water in order to meet in-district demands as it did in 2012 (as shown in Table 3-3 of EA-13-072); however, the additional water pumped would be consistent with historical fluctuations and within PID's water right. Any pumped water, either additional or for the transfer to SCVWD would have to conform to any changes or requirements made by the State Water Resources Control Board. Consequently, there would be no adverse impacts to the San Joaquin River as a result of the Proposed Action.

Each year, PID would continue to receive the remaining balance of its Replacement Water and CVP contract supply from the DMC as available. In the event that PID needs to make up for any shortfalls, individual landowners and/or PID would pump groundwater to make up the amount needed for M&I uses or irrigation. However, in past years PID has only pumped groundwater as a last resort. As shown in Table 3-3 of EA-13-072, PID's pre-1914 water has made up the majority of water needed to meet local demands. PID does not expect to pump any additional groundwater as the transfer of up to 36,000 AF over 10 years to SCVWD would still leave PID with the ability to meet the needs of its water users as a result of conservation and recycling efforts PID has implemented over the past years. Therefore, there would be no adverse impacts to groundwater resources as a result of the Proposed Action.

All waters introduced, conveyed, and stored within federal facilities must meet Reclamation water quality standards. If, through monitoring, the pre-1914 San Joaquin River water pumped by PID fails to meet the water quality criteria for discharging non-CVP water into federal facilities, the water would not be introduced into the DMC until subsequent testing has demonstrated that the water quality has been met by the criteria as outlined in Reclamation's then current water quality standards (see Appendix A of EA-13-072 for Reclamation's current water quality standards). Therefore, there would be no adverse impacts to water quality as a result of the Proposed Action.

Introduction, conveyance, and storage of PID's non-CVP water is dependent on available capacity and operational constraints; therefore, the Proposed Action would not interfere with the

normal operations of federal facilities nor would it impede any CVP obligations to deliver water to other contractors or to local fish and wildlife habitat nor would the Proposed Action interfere in the quantity or timing of diversions by the CVP from the Delta.

SCVWD would continue to receive its CVP supply via the San Felipe Division in addition to the up to 36,000 AF of Transfer Water delivered from PID via the DMC and San Felipe facilities over the 10-year period. There would be no adverse impacts to any of the federal facilities involved in the transfer of PID's Transfer Water nor would the transfer impact the normal functions and operations of any CVP or SCVWD facilities. The Transfer Water would be used as a supplemental surface water supply for SCVWD's varied water resources in order to meet existing M&I and irrigation demands. The delivery of up to 36,000 AF of Transfer Water over the 10-year period would reduce the need for SCVWD to pump groundwater in order to meet in-district demands, which would have slight beneficial impacts to groundwater levels.

Biological Resources

A majority of PID consists of agricultural lands which do not provide suitable habitat for most of the species listed in Table 3-4 of EA-13-072. A majority of the SCVWD CPOU is highly urbanized and does not contain suitable habitat for federally protected species, while the remainder of SCVWD consists largely of natural lands that could provide suitable habitat for listed species. PID's Transfer Water would not be used on native lands, or lands that have been fallowed for three or more years in SCVWD; such actions would require separate environmental review and approval. No critical habitat would be impacted or altered by the Proposed Action, so no primary constituent elements of critical habitat would be affected.

Due to water quality restrictions and capacity limitations in the DMC, there would be no effects to listed species or federally protected species, if present, that may use the DMC for aquatic habitat. The amount of water pumped from the San Joaquin River over the 10-year transfer would not differ from the amount of water historically pumped by PID, so the baseline conditions in the San Joaquin River would not be altered as a result of the Proposed Action. PID's screened intakes on the San Joaquin River were designed to limit the entrainment of fish during pumping, and their operation was covered by the National Marine Fisheries Service (NMFS) in 2007. PID would operate the intake pumps within existing environmental coverage. The Proposed Action would not alter any natural waterways, impact water quality, or significantly alter water levels in the DMC, the San Joaquin River, and other conveyance facilities, so there would be no effects on listed fish species, and other federally protected species.

The Proposed Action is a 10-year continuation of the four year transfer evaluated in EA-09-172 with the addition of storage of PID's non-CVP water within San Luis Reservoir. The San Luis Reservoir has a large storage capacity (over 2,000,000 AF), so the storage of Transfer Water in the San Luis Reservoir would not measurably alter water levels. Because the Proposed Action has been in effect for the last four years, the renewal of the Proposed Action would simply be a continuation of the status-quo and would not alter baseline habitat conditions in the action area. The Proposed Action would not involve the construction of new facilities, or the modification of existing facilities. The water associated with the Proposed Action would not be used to convert native lands, or change existing land use patterns. Based on the stringent requirements for

transfers under applicable laws, the nature of the action, and the implementation of the environmental commitments in Table 2-1 of EA-13-072, Reclamation has determined that the Proposed Action would not affect any federally listed species or critical habitat, and would not result in the take of birds protected under the Migratory Bird Treaty Act.

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 and this drives requests for water service actions. Water districts aim to provide water to their customers based on available water supplies and timing, all 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, nor interfere with CVP, PID, SCVWD, or State Water Project operations, there would be no cumulative impacts to existing facilities or other contractors.

PID would continue to receive the remaining balances of its available surface water supplies to meet demands in-district and would not need to pump additional groundwater to meet demands. As such, there would be no cumulative adverse impacts to water resources within PID.

The delivery of up to 36,000 AF of PID's Transfer Water to SCVWD would be cumulatively beneficial to SCVWD's water resources as it would supplement its existing supplies.

These findings indicate that there may be slight beneficial effects, but no adverse cumulative impacts to water resources resulting from the Proposed Action.

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

RECLAMATION

Managing Water in the West

Final Environmental Assessment

Patterson Irrigation District 10- Year Transfer and/or Warren Act Contract for up to 36,000 acre-feet of Available Surface Water Supply to Santa Clara Valley Water District

EA-13-072



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

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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.

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Section 1 Introduction

The Bureau of Reclamation (Reclamation) provided the public with an opportunity to comment on the Draft Finding of No Significant Impact (FONSI) and Draft Environmental Assessment (EA) between May 16, 2014 and May 30, 2014. No comments were received. Changes between this Final EA and the Draft EA, which are not minor editorial changes, are indicated by vertical lines in the left margin of this document.

1.1 Background

In 2009, Patterson Irrigation District (PID) requested approval from Reclamation for the transfer of up to 13,350 acre-feet (AF) of its Replacement Water, Central Valley Project (CVP) water, and pre-1914 San Joaquin River water (henceforth known as Transfer Water) to Santa Clara Valley Water District (SCVWD) over a period of four years (March 1, 2010 through February 28, 2014). Reclamation analyzed the affected environment for the following resources: Water Resources, Land Use, Biological Resources, Cultural Resources, Indian Trust Assets (ITA), Socioeconomic Resources, Environmental Justice, Air Quality, and Global Climate in EA-09-172 entitled *Four Year Transfer and Warren Act Contracts for up to 13,350 acre-feet of Patterson Irrigation District's Available Surface Water Supply to Santa Clara Valley Water District*. A FONSI was executed on March 16, 2010. FONSI/EA-09-172 is hereby incorporated by reference.

As this four-year transfer has expired, PID has requested approval from Reclamation for a new 10-year transfer (March 1, 2014 through February 29, 2024), subject to available water, of up to 36,000 AF of its Transfer Water to SCVWD.

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 all these factors, Reclamation declared an initial CVP agricultural allocation of 0 percent for SOD contractors for the 2014 Contract Year¹. As a result, SOD water contractors, such as SCVWD, have a need to find alternative sources of water to fulfill demands.

1.3 Scope

This EA is being prepared to examine the impacts of approving a transfer and/or Warren Act contract(s) over a 10-year period for the conveyance and delivery of up to 36,000 AF of PID's Transfer Water to SCVWD, with up to 6,000 AF to be transferred in any given year. The areas

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

in which impacts may occur and methods of conveyance are the same as those analyzed in EA-09-172 (Figure 1-1).



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 approve the delivery of up to 36,000 AF of PID's Transfer Water to SCVWD over a 10-year period. Reclamation would continue to deliver CVP and Replacement water to PID and SCVWD pursuant to their CVP water service contracts. PID could sell their non-CVP water to willing buyers and SCVWD could purchase additional non-CVP water supplies.

2.2 Proposed Action

Reclamation proposes to approve PID's delivery of up to 36,000 AF of PID's Transfer Water to SCVWD over a 10-year period (March 1, 2014 through February 29, 2024), with up to 6,000 AF to be transferred in any given year. If needed, Reclamation would issue Warren Act contract(s) for conveyance and storage of any non-CVP water to SCVWD within the 10-year period. Conveyance and storage of non-CVP water would be subject to available capacity. All water stored within federal facilities would be delivered prior to the end of the 10-year transfer period (by February 29, 2024).

For transfers within Contract Year 2014 (March 1, 2014 through February 28, 2015), water made available to SCVWD by PID would occur under the following conditions:

- If PID is allocated 75 percent of its Replacement Water by Reclamation, PID would make available 1,000 AF of its Transfer Water to SCVWD.
- If PID is allocated 100 percent of its Replacement Water by Reclamation, PID would make available 3,000 AF of its Transfer Water to SCVWD. If PID determines that additional water is not needed within its service area, an additional 3,000 AF for a total of 6,000 AF of its Transfer Water would be made available to SCVWD.

For Contract Years 2015 through 2023 (March 1, 2015 through February 29, 2024), water made available to SCVWD by PID would occur under the following conditions:

- PID would make available a minimum of 4,000 AF of Transfer Water to SCVWD in each year.
- In any year that PID is allocated 100 percent of its Replacement Water by Reclamation, PID would make available an additional 2,000 AF of Transfer Water to SCVWD.

2.2.1 Conveyance of Replacement Water or CVP Water

PID's Replacement Water and/or CVP water would continue to be pumped from the Sacramento-San Joaquin Delta into the Delta-Mendota Canal (DMC); however, rather than being delivered to PID's turnouts, the water would be delivered to O'Neill Forebay and pumped into San Luis Reservoir. From San Luis Reservoir, the water would be diverted to Reach 1 of the Pacheco Tunnel and then to the Pacheco Pumping Plant where it would be lifted into the Pacheco Conduit and delivered to SCVWD via the Santa Clara Conduit and Tunnel. SCVWD would then convey the water through its internal distribution system to its water users for agricultural and municipal and industrial (M&I) purposes. As required by Reclamation's water rights permits, CVP water may only be used in portions of SCVWD that are within the CVP Consolidated Place of Use (CPOU) as shown in Figure 1-1.

2.2.2 Storage and Conveyance of pre-1914 San Joaquin River Water

PID's pre-1914 San Joaquin River water would be pumped from PID's existing pumping facility at river mile 98.5, subject to any regulatory requirements and/or conditions governing such diversions. The pumped water would be conveyed through PID's main canal distribution system and introduced into the DMC at milepost 42.53L. PID's non-CVP water would then be conveyed down the DMC to O'Neill Forebay and pumped into San Luis Reservoir. PID's non-CVP water would either be stored in San Luis Reservoir for later use by SCVWD or PID, or conveyed directly to SCVWD via the Pacheco Tunnel and Pacheco Conduit. Water conveyed to SCVWD or PID would be delivered to its water users through its internal distribution system for agricultural and M&I purposes. PID's non-CVP water is not limited to use within the CPOU and could be delivered throughout SCVWD.

2.2.3 Environmental Commitments

Reclamation, PID, and SCVWD 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	Transfer Water would only be used for beneficial purposes.
Water Resources	Replacement Water and CVP water may only be served within areas that are within the CPOU as shown in Figure 1-1.
Water Resources	The transfer would not adversely affect CVP, SCVWD, and PID normal water system delivery operations.
Water Resources	Reclamation requires that the operation and maintenance of CVP facilities shall be performed in such a manner as is practical to maintain the quality of raw water at the highest level that is reasonably attainable. Water quality and monitoring requirements are established annually by Reclamation and are instituted to protect water quality in federal facilities by ensuring that imported non-CVP water does not impair existing uses or negatively impact existing water quality conditions. These standards are updated periodically. The water quality standards are the maximum concentration of certain contaminants that may occur in each source of non-CVP water. Monitoring standards also include measuring depth to groundwater to avoid localized impacts due to well drawdown. PID's non-CVP water is required to meet Reclamation's then current water quality standards prior to introduction into the DMC. Reclamation's current water quality standards are included in Appendix A.
Biological Resources	Transfer Water would not be used to place untilled or new lands into production, nor to convert undeveloped land to other uses.
Various	No new construction or modification of existing facilities may occur in order to complete the Proposed Action.

Section 3 Affected Environment and Environmental Consequences

The environmental impacts analyzed within Section 3 of EA-09-172 are still valid and adequately assesses the environmental effects from this Proposed Action, which is hereby incorporated by reference. Potential impacts to the following resources were re-considered as a result of this proposal and were still found to be minor. Brief explanations for the impacts are provided in Table 3-1.

Table 3-1 Resources Eliminated from Further Analysis

Resource	Reason Eliminated
Land Use	PID and SCVWD would not change historic land and water management practices under the Proposed Action. Due to conservation and recycling implemented within the PID, its overall water supply would still be able to meet demands within PID over the 10-year transfer period and would not require changes to land use beyond historical fluctuations. PID's CVP water would move through existing facilities for delivery to lands within SCVWD's CVP Place of Use for ongoing agricultural and M&I purposes. The water would not be used to place untilled or new lands into production, or to convert undeveloped land to other uses.
Cultural Resources	The Proposed Action would facilitate the flow of water through existing facilities to existing users. As no construction or modification of facilities would be needed in order to complete the Proposed Action, Reclamation has determined that these activities have no potential to cause effects to historic properties pursuant to 36 CFR Part 800.3(a)(1). See Appendix B for Reclamation's determination.
Indian Sacred Sites	The Proposed Action would 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 for Reclamation's determination.
Socioeconomics	The Proposed Action would have beneficial impacts on socioeconomic resources with SCVWD as the transferred water would be used for ongoing M&I purposes and to help sustain existing crops and maintain farming within the districts. There would be no adverse socioeconomic impacts within PID as water needs would still be met for M&I and agricultural purposes.
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	Delivery of PID's Transfer Water would require no modification of existing facilities or construction of new facilities. In addition, Transfer Water would move to SCVWD via gravity and electrical 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, water under the Proposed Action is water that would be delivered from existing facilities under either alternative and is therefore part of the existing conditions. In addition, 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 involve physical changes to the environment or construction activities that could impact global climate change. Although the generating power plants that produce electricity to operate the electric pumps produce carbon dioxide that could potentially contribute to greenhouse gas emissions, they are regulated by the Environmental Protection Agency in order to minimize greenhouse gas impacts. As the Proposed Action would not change the emissions generated at the generating power plant, no additional greenhouse gas emissions would occur.

3.1 Water Resources

3.1.1 Affected Environment

The affected environment for PID, SCVWD, and CVP conveyance facilities is the same as described in Section 3.1 of EA-09-172 (Reclamation 2010). Rather than repeating the same information that has been incorporated by reference into this document, the affected environment and environmental consequences section in this EA will focus on updates or changes.

Central Valley Project

As shown in Table 3-2, SOD CVP agricultural allocations averaged 47 percent from 2005 to 2014. A 100 percent allocation was only received once in the last 10 years. Over the last five years the average agricultural allocation was 37 percent with a range of 0 to 80 percent. M&I allocations averaged 78 percent between 2005 and 2014. Over the last five years, the average M&I allocation was reduced slightly to 74 percent with a range of 50 to 100 percent.

Table 3-2 Ten-Year Average South-of-Delta Allocations

Contract Year ¹	Agricultural Allocations (%) ²	M&I Allocations ²
2014	0	50
2013	20	70
2012	40	75
2011	80	100
2010	45	75
2009	10	60
2008	40	75
2007	50	75
2006	100	100
2005	85	100
Average	47	78

¹A Contract Year is from March 1 of a given year through February 28/29 of the following year.
²As percentage of Water Service Contract total
Source: http://www.usbr.gov/mp/cvo/vungvari/water_allocations_historical.pdf

Patterson Irrigation District

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 and Replacement water from the DMC. In 2012, the local irrigation demand after conservation was approximately 43,305 AF (see Table 3-3).

As a pre-1914 water rights holder, PID has the authority and right under California law to divert the amount of water that is needed as long as it is put to beneficial use and within its original water right. San Joaquin River water is pumped by PID uphill into its Main Canal through a series of pump stations and reservoir pools. On average, PID pumps approximately 36,000 AF per year from the San Joaquin River to meet local agriculture demand after conservation and recycling. In 2012, the gross amount pumped by the district for such purposes was 60,891 AF (see Table 3-3). In general, PID is approximately 88 percent efficient at delivering San Joaquin River water to its landowners.

Table 3-3 PID's 2012 Water Balance

Source	Gross Quantity Pumped/ Available (AF)*	Net Quantity Delivered (AF)**	Local Demand (AF)	Out of District Transfers (AF)
San Joaquin River	60,891	53,323	43,305	10,018
CVP Water	6,600	6,600	0	6,600
Replacement Water	6,000	5,831	1,239	4,592
Groundwater	5,132	4,516	4,516	0
Total	78,623	70,270	49,060	21,210
Notes: *Pursuant to wheeling agreements the actual amount pumped by PID from the San Joaquin River is greater than listed here. This listing shows the amounts pumped from the San Joaquin River under PID's water rights. **At 88 percent efficiency				

PID also has a water service contract with Reclamation for 16,500 AF per year 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.

3.1.2 Environmental Consequences

No Action

Under the No Action Alternative, Reclamation would not approve the transfer between PID and SCVWD. Reclamation would continue to convey and deliver water via the DMC and San Felipe facilities to both SCVWD and PID pursuant to their respective CVP contracts as water is available. Transfer Water would remain with PID and continue to be used to meet in-district irrigation demands or other water transfers as has been done in the past. There would be no impacts to federal facilities as conditions would remain the same as existing conditions.

SCVWD would have to rely on its CVP and SWP allocations and/or purchase water from willing sellers to meet its service area water demands; however, no sellers have been identified and the action is outside the scope of this EA. If other sources of supplemental water cannot be provided by SCVWD to meet demands, additional groundwater pumping may become necessary. Through its proactive groundwater management programs and activities, SCVWD, as the groundwater management agency for the Santa Clara and Llagas Subbasins in Santa Clara County, has helped to maintain groundwater levels, minimized land subsidence, and improved groundwater protection to ensure sufficient water is available for present and future beneficial uses (SCVWD 2012). With the need for additional pumping, there may be slight impacts to groundwater resources as a result of the No Action Alternative, but these impacts would likely be stabilized by the on-going efforts described in SCVWD's groundwater management plan.

Proposed Action

Under the Proposed Action, the maximum amount of water to be transferred over the 10-year period would be 36,000 AF, with up to 6,000 AF to be transferred in any given year. On average, PID pumps approximately 36,000 AF per year of San Joaquin River water to meet local M&I and irrigation demands. Since the San Joaquin River water that may be used for the

transfer would be within the amount historically pumped by PID annually, there would be no adverse impact to PID's pre-1914 San Joaquin River water rights as a result of the Proposed Action. It is possible that due to hydrologic conditions, PID may need to pump additional San Joaquin River water in order to meet in-district demands as it did in 2012 (as shown in Table 3-3); however, the additional water pumped would be consistent with historical fluctuations and within PID's water right. Any pumped water, either additional or for the transfer to SCVWD would have to conform to any changes or requirements made by the State Water Resources Control Board. Consequently, there would be no adverse impacts to the San Joaquin River as a result of the Proposed Action.

Each year, PID would continue to receive the remaining balance of its Replacement Water and CVP contract supply from the DMC as available. In the event that PID needs to make up for any shortfalls, individual landowners and/or PID would pump groundwater to make up the amount needed for M&I uses or irrigation. However, in past years PID has only pumped groundwater as a last resort. As shown in Table 3-3, PID's pre-1914 water has made up the majority of water needed to meet local demands. PID does not expect to pump any additional groundwater as the transfer of up to 36,000 AF over 10 years to SCVWD would still leave PID with the ability to meet the needs of its water users as a result of conservation and recycling efforts PID has implemented over the past years. Therefore, there would be no adverse impacts to groundwater resources as a result of the Proposed Action.

All waters introduced, conveyed, and stored within federal facilities must meet Reclamation water quality standards. If, through monitoring, the pre-1914 San Joaquin River water pumped by PID fails to meet the water quality criteria for discharging non-CVP water into federal facilities, the water would not be introduced into the DMC until subsequent testing has demonstrated that the water quality has been met by the criteria as outlined in Reclamation's then current water quality standards (see Appendix A for Reclamation's current water quality standards). Therefore, there would be no adverse impacts to water quality as a result of the Proposed Action.

Introduction, conveyance, and storage of PID's non-CVP water is dependent on available capacity and operational constraints; therefore, the Proposed Action would not interfere with the normal operations of federal facilities nor would it impede any CVP obligations to deliver water to other contractors or to local fish and wildlife habitat nor would the Proposed Action interfere in the quantity or timing of diversions by the CVP from the Delta.

SCVWD would continue to receive its CVP supply via the San Felipe Division in addition to the up to 36,000 AF of Transfer Water delivered from PID via the DMC and San Felipe facilities over the 10-year period. There would be no adverse impacts to any of the federal facilities involved in the transfer of PID's Transfer Water nor would the transfer impact the normal functions and operations of any CVP or SCVWD facilities. The Transfer Water would be used as a supplemental surface water supply for SCVWD's varied water resources in order to meet existing M&I and irrigation demands. The delivery of up to 36,000 AF of Transfer Water over the 10-year period would reduce the need for SCVWD to pump groundwater in order to meet in-district demands, which would have slight beneficial impacts to groundwater levels.

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 and this drives requests for water service actions. Water districts aim to provide water to their customers based on available water supplies and timing, all 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, nor interfere with CVP, PID, SCVWD, or State Water Project operations, there would be no cumulative impacts to existing facilities or other contractors.

PID would continue to receive the remaining balances of its available surface water supplies to meet demands in-district and would not need to pump additional groundwater to meet demands. As such, there would be no cumulative adverse impacts to water resources within PID.

The delivery of up to 36,000 AF of PID's Transfer Water to SCVWD would be cumulatively beneficial to SCVWD's water resources as it would supplement its existing supplies.

These findings indicate that there may be slight beneficial effects, but no adverse cumulative impacts to water resources resulting from the Proposed Action.

3.2 Biological Resources

3.2.1 Affected Environment

Reclamation requested a list of endangered, threatened, and sensitive species from the U.S. Fish and Wildlife Service (USFWS) on February 21, 2014 via the Sacramento Field Office's website: http://www.fws.gov/sacramento/ES_Species/Lists/es_species_lists-form.cfm (Document No. 140221121203). The list is for the following U.S. Geological Survey 7½-minute topographic quadrangles which are overlapped by SCVWD, PID, and water conveyance facilities associated with the Proposed Action: Mariposa Peak, Three Sisters, San Felipe, Chittenden, Watsonville East, Howard Ranch, Crevison Peak, Pacheco Pass, San Luis Dam, Mustang Peak, Mississippi Creek, Gilroy Hot Springs, Pacheco Peak, Mt. Sizer, Morgan Hill, Mt. Madonna, Gilroy, Santa Teresa Hills, Los Gatos, Laurel, Loma Prieta, Castle Rock Ridge, Crows Landing, Patterson, Newman, Mt. Boardman, Mt. Stakes, Eylar Mtn, Mt. Day, Lick Observatory, Isabel Valley, Calaveras Reservoir, Milpitas, San Jose West, San Jose East, Mountain View, Palo Alto, Mindego Hill, Cupertino, Westley, and Brush Lake. Reclamation further queried the California

Department of Fish and Wildlife's California Natural Diversity Database (CNDDDB) for records of special-status species near the action area associated with the Proposed Action (CNDDDB 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 action area (Table 3-4).

Table 3-4 Threatened and Endangered Species and Critical Habitat that may occur within the Vicinity of the Action Area

Species	Status ¹	Effects ²	Occurrence in the Study Area ³
INVERTEBRATES			
bay checkerspot butterfly <i>Euphydryas editha bayensis</i>	T, X	NE	Present. There are CNDDDB records and Critical Habitat for this species within the action area. There would be no conversion of land from existing uses.
Conservancy fairy shrimp <i>Branchinecta conservatio</i>	E	NE	Possible. There are no CNDDDB records of this species in the action area, but they could be present if suitable vernal pool habitat is available. Vernal pool habitat if present would not be impacted because there would be no conversion of land from existing uses.
Valley elderberry longhorn beetle <i>Desmocerus californicus dimorphus</i>	T	NE	Possible. There are no CNDDDB records of this species in the action area, but they have the potential to be present if suitable habitat is available in the action area. Vernal pool habitat if present would not be impacted because there would be no conversion of land from existing uses.
Vernal pool fairy shrimp <i>Branchinecta lynchi</i>	T	NE	Possible. There are no CNDDDB records of this species in the action area, but they have the potential to be present if suitable vernal pool habitat is available. Vernal pool habitat if present would not be impacted because there would be no conversion of land from existing uses.
Vernal pool tadpole shrimp <i>Lepidurus packardii</i>	E,X	NE	Possible. There are no CNDDDB records of this species in the action area, but they have the potential to be present if suitable vernal pool habitat is available. Vernal pool habitat if present would not be impacted because there would be no conversion of land from existing uses.
FISH			
Central CA coastal steelhead <i>Oncorhynchus mykiss</i>	T, X, NMFS	NE	Possible. There is suitable habitat for this species within the action area; however the Proposed Action would not alter any natural waterways.
Central Valley spring-run chinook salmon <i>Oncorhynchus tshawytscha</i>	T, NMFS	NE	Possible. This species may be present in some of the tributaries to the San Francisco Bay; however the Proposed Action would not alter any natural waterways.
Central Valley steelhead <i>Oncorhynchus mykiss</i>	T, X, NMFS	NE	Possible. There is suitable habitat for this species within the action area; however the Proposed Action would not alter any natural waterways.
Coho salmon-central CA coast <i>Oncorhynchus kisutch</i>	E, X, NMFS	NE	Possible. This species may be present in some of the tributaries to the San Francisco Bay; however the Proposed Action would not alter any natural waterways.
Delta smelt <i>Hypomesus transpacificus</i>	T	NE	Possible. There is suitable habitat for this species within the action area; however the Proposed Action would not alter any natural waterways.

Species	Status ¹	Effects ²	Occurrence in the Study Area ³
Green sturgeon <i>Acipenser medirostris</i>	T, NMFS	NE	Possible. There is suitable freshwater habitat for this species within the northern portion of SCVWD, to the south of the San Francisco Bay. The Proposed Action would not alter any natural waterways.
South Central CA steelhead <i>Oncorhynchus mykiss</i>	T, NMFS	NE	Possible. There is suitable habitat for this species within the action area; however the Proposed Action would not alter any natural waterways.
Tidewater goby <i>Eucyclogobius newberryi</i>	E	NE	Possible. Although there are no recorded occurrences of this species in the action area, there is some suitable habitat in the northern portion of SCVWD where several rivers and sloughs drain into the San Francisco Bay. The Proposed Action would not alter any natural waterways.
Winter-run chinook salmon, Sacramento River <i>Oncorhynchus tshawytscha</i>	E, NMFS	NE	Possible. This species may be present in some of the tributaries to the San Francisco Bay; however the Proposed Action would not alter any natural waterways.
AMPHIBIANS			
California red-legged frog <i>Rana aurora draytonii</i>	T, X, PX	NE	Present. There are several CNDDDB-recorded occurrences of this species in the action area and Critical Habitat is present. There would be no construction of new facilities, and no conversion of land from existing uses.
California tiger salamander <i>Ambystoma californiense</i>	T, X	NE	Present. There are several CNDDDB records of this species in the action area and Critical Habitat is present. There would be no construction of new facilities and no conversion of land from existing uses.
REPTILES			
Alameda whipsnake <i>Masticophis lateralis euryxanthus</i>	T, X	NE	Possible. There are CNDDDB records of this species in the northern-most portion of SCVWD. The main range of this species is located in Alameda and Contra Costa Counties, but they may be present in small patches of natural habitat in northern Santa Clara County. There would be no construction of new facilities and no conversion of land from current uses.
Blunt-nosed leopard lizard <i>Gambelia sila</i>	E	NE	Possible. There is a CNDDDB-record from 1931 near O'Neill Forebay, and the records near the action area are still considered extant. There would be no construction of new facilities and no conversion of land from current uses.
Giant garter snake <i>Thamnophis gigas</i>	T	NE	Possible. Although it is highly unlikely, there is a potential for this species to occur in the DMC, or within riparian habitats near PID. There would be no conversion of land and no construction associated with the Proposed Action.
San Francisco garter snake <i>Thamnophis sirtalis tetrataenia</i>	E	NE	Possible. There are no CNDDDB records of this species within the action area. The eastern edge of the action area overlaps the western-most portion of the species' range, and suitable habitat may be present in natural lands within SCVWD. No natural lands would be converted for the Proposed Action.
BIRDS			

Species	Status ¹	Effects ²	Occurrence in the Study Area ³
burrowing owl <i>Athene cunicularia</i>	MBTA	NT	Present. There are CNDDDB records of this species and suitable habitat within the action area. There would be no construction of new facilities and no conversion of land from existing uses.
California brown pelican <i>Pelecanus occidentalis californicus</i>	E MBTA	NE NT	Absent. There are no CNDDDB records of this species or suitable habitat within the action area.
California clapper rail <i>Rallus longirostris obsoletus</i>	E	NE	Present. There are CNDDDB records of this species and suitable habitat within the action area. There would be no construction of new facilities and no conversion of land from existing uses.
California least tern <i>Sternula antillarum browni</i>	E	NE	Present. There are CNDDDB records of this species and suitable habitat within the action area. There would be no construction of new facilities and no conversion of land from existing uses.
Least Bell's vireo <i>Vireo bellii pusillus</i>	E	NE	Present. There are CNDDDB records of this species and suitable riparian habitat within the action area. There would be no conversion of land from existing uses, and no impacts to riparian habitat.
Marbled murrelet <i>Brachyramphus marmoratus</i>	T, X	NE	Possible. SCVWD overlaps a very small portion of Critical Habitat for this species, just west of Los Gatos. Although there are no records of this species in the action area, there is a potential for them to occur in natural lands within SCVWD. There would be no conversion of land or construction of new facilities required for the Proposed Action.
Swainson's hawk <i>Buteo swainsoni</i>	MBTA	NT	Present. There are CNDDDB records of this species throughout the action area. There would be no construction of new facilities and no conversion of land from existing uses.
western snowy plover <i>Charadrius alexandrinus nivosus</i>	T	NE	Possible. There are CNDDDB records of this species and suitable foraging habitat within the action area. There would be no conversion of land from existing uses.
MAMMALS			
Fresno kangaroo rat <i>Dipodomys nitratoides exilis</i>	E	NE	Possible. There are no records of this species within the action area, but the action area is within the species' range, so there is some potential for them to be present near the San Luis Reservoir and O'Neill Forebay. There would be no conversion of land from existing uses.
San Joaquin kit fox <i>Vulpes macrotis mutica</i>	E	NE	Possible. There are several recorded occurrences of this species in the action area. There would be no construction of new facilities and no conversion of land.
salt marsh harvest mouse <i>Reithrodontomys raviventris</i>	E	NE	Possible. There are records of this species in SCVWD near Palo Alto. There would be no construction of new facilities and no conversion of land.
Riparian brush rabbit <i>Sylvilagus bachmani riparius</i>	E	NE	Absent. There are only two known extant populations of this species, both of which are located outside of the action area.
PLANTS			
California sea blite <i>Suaeda californica</i>	E	NE	Possible. There is one CNDDDB record from the 1970s in the northernmost portion of SCVWD. There would be no conversion of land from current uses.

Species	Status ¹	Effects ²	Occurrence in the Study Area ³
Contra Costa goldfields <i>Lasthenia conjugens</i>	E, X	NE	Absent. This species has been extirpated from the action area.
Coyote ceanothus <i>Ceanothus ferrisae</i>	E	NE	Present. There are two CNDDDB records of this species in the action area from 2011. There would be no conversion of natural lands or other potentially suitable habitat.
Fountain thistle <i>Cirsiumfontinale</i> var. <i>fontinale</i>	E	NE	Absent. There are no known populations of this species within the action area.
Marin dwarf-flax <i>Hesperolinon congestum</i>	T	NE	Absent. There are no known occurrences of this species within the action area.
Metcalf Canyon jewelflower <i>Streptanthus albidus</i> ssp. <i>albidus</i>	E	NE	Present. There are extant populations of this species in the action area between San Jose and Gilroy. There would be no conversion of natural lands or other potentially suitable habitat.
Robust spineflower <i>Chorizanthe robusta</i> var. <i>robusta</i>	E	NE	Absent. There are no known extant populations of this species within the action area.
San Mateo thornmint <i>Acanthomintha duttonii</i>	E	NE	Absent. The only known extant population of this species is located outside of the action area in San Mateo County.
San Mateo woolly sunflower <i>Eriophyllum latilobum</i>	E	NE	Absent. There are no known occurrences of this species within the action area.
Santa Clara Valley dudleya <i>Dudleya setchellii</i>	E	NE	Present. There are several CNDDDB-recorded occurrences of this species within the action area. There would be no conversion of natural lands or other potentially suitable habitat.
Santa Cruz Tarplant <i>Holocarpha macradenia</i>	T,X	NE	Absent. There are no known occurrences of this species within the action area.
Showy Indian clover <i>Trifolium amoenum</i>	E	NE	Absent. The only extant occurrences of this species are located in Marin County, outside of the action
Tiburon paintbrush <i>Castilleja affinis</i> ssp. <i>neglecta</i>	E	NE	Present. There is a small population of this species in the action area near Morgan Hill.
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 PX: Proposed Critical Habitat. 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 area and habitat present			

3.2.2 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

A majority of PID consists of agricultural lands which do not provide suitable habitat for most of the species listed in Table 3-4. A majority of the SCVWD CPOU is highly urbanized and does not contain suitable habitat for federally protected species, while the remainder of SCVWD consists largely of natural lands that could provide suitable habitat for listed species. PID's Transfer Water would not be used on native lands, or lands that have been fallowed for three or more years in SCVWD; such actions would require separate environmental review and approval. No critical habitat would be impacted or altered by the Proposed Action, so no primary constituent elements of critical habitat would be affected.

Due to water quality restrictions and capacity limitations in the DMC, there would be no effects to listed species or federally protected species, if present, that may use the DMC for aquatic habitat. The amount of water pumped from the San Joaquin River over the 10-year transfer would not differ from the amount of water historically pumped by PID, so the baseline conditions in the San Joaquin River would not be altered as a result of the Proposed Action. PID's screened intakes on the San Joaquin River were designed to limit the entrainment of fish during pumping, and their operation was covered by the National Marine Fisheries Service (NMFS) in 2007 (NMFS 2007). PID would operate the intake pumps within existing environmental coverage. The Proposed Action would not alter any natural waterways, impact water quality, or significantly alter water levels in the DMC, the San Joaquin River, and other conveyance facilities, so there would be no effects on listed fish species, and other federally protected species.

The Proposed Action is a 10-year continuation of the four year transfer evaluated in EA-09-172 with the addition of storage of PID's non-CVP water within San Luis Reservoir. The San Luis Reservoir has a large storage capacity (over 2,000,000 AF), so the storage of Transfer Water in the San Luis Reservoir would not measurably alter water levels. Because the Proposed Action has been in effect for the last four years, the renewal of the Proposed Action would simply be a continuation of the status-quo and would not alter baseline habitat conditions in the action area. The Proposed Action would not involve the construction of new facilities, or the modification of existing facilities. The water associated with the Proposed Action would not be used to convert native lands, or change existing land use patterns. Based on the stringent requirements for transfers under applicable laws, the nature of the action, and the implementation of the environmental commitments in Table 2-1, Reclamation has determined that the Proposed Action would not affect any federally listed species or critical habitat, and would not result in the take of birds protected under the Migratory Bird Treaty Act.

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 provided 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. No comments were received.

4.2 Endangered Species Act (16 U.S.C. § 1531 et seq.)

Section 7 of the Endangered Species Act requires Federal agencies, in consultation with the Secretary of the Interior and/or Commerce, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of these species.

As described in Section 3.2.2, Reclamation has determined that the Proposed Action would have no effect to any federally listed species or critical habitat. Therefore, no consultation with the USFWS or with the NMFS is necessary.

4.3 Migratory Bird Treaty Act (16 U.S.C. § 703 et seq.)

The Migratory Bird Treaty Act implements various treaties and conventions between the United States and Canada, Japan, Mexico and the former Soviet Union for the protection of migratory birds. Unless permitted by regulations, the Act provides that it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not. Subject to limitations in the Act, the Secretary of the Interior may adopt regulations determining the extent to which, if at all, hunting, taking, capturing, killing, possessing, selling, purchasing, shipping, transporting or exporting of any migratory bird, part, nest or egg will be allowed, having regard for temperature zones, distribution, abundance, economic value, breeding habits and migratory flight patterns.

As described in Section 3.2.2, Reclamation has determined that the Proposed Action would not result in the take of any birds protected under the Migratory Bird Treaty Act.

Section 5 Preparers and Reviewers

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Section 6 References

Bureau of Reclamation (Reclamation). 2010. Four Year Transfer and Warren Act Contracts for up to 13,350 acre-feet of Patterson Irrigation District's Available Surface Water Supply to Santa Clara Valley Water District (FONSI/EA-09-172). South-Central California Area Office. Fresno, CA. Website: http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=5165.

California Natural Diversity Database (CNDDB). 2014. California Department of Fish and Wildlife's Natural Diversity Database, Version 3.1.1. RareFind 3. Last Updated February 2014.

National Marine Fisheries Service (NMFS). 2007. Letter from Rodney R. McInnis, NMFS, to Richard J. Woodley, Bureau of Reclamation, transmitting a concurrence letter on the Patterson Irrigation District Fish Screen Project. June 8, 2007.

Santa Clara Valley Water District (SCVWD). 2012. 2012 Groundwater Management Plan. Retrieved 03/12/2014, from: <http://www.valleywater.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=8467>.

Appendix A

Reclamation's Water Quality Standards for the Delta-Mendota Canal

RECLAMATION

Managing Water in the West

2014 Delta-Mendota Canal Groundwater Pump-in Program Water Quality Monitoring Plan



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

Revised: 06 Jan 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.

List of Abbreviations and Acronyms

Authority	San Luis and Delta-Mendota Water Authority
°C	degrees Celsius
DMC	Delta-Mendota Canal
DMC Headworks	DMC Milepost 2.5, Jones Pumping Plant
DMC Check 13	DMC Milepost 70, O'Neill Forebay
DMC Check 20	DMC Milepost 111, near Firebaugh
DMC Check 21	DMC Milepost 116, terminus at Mendota Pool
COC	chain of custody
CVP	Central Valley Project
DFG	California Department of Fish and Game
EC	electrical conductivity, $\mu\text{S}/\text{cm}$
Exchange Contractors	San Joaquin River Exchange Contractors Water Authority
°F	degrees Fahrenheit
mg/L	milligrams per liter, equivalent to parts per million
QA	Quality Assurance
QC	Quality Control
QCO	Quality Control Officer
Reclamation	U.S. Department of the Interior, Bureau of Reclamation
Regional Board	California EPA, Central Valley Regional Water Quality Board
TDS	Total dissolved solids, mg/L
USGS	U.S. Geological Survey
$\mu\text{g}/\text{L}$	micrograms per liter, equivalent to parts per billion
$\mu\text{S}/\text{cm}$	microSiemens per cm, salinity in water

2014 Delta-Mendota Canal Groundwater Pump-in Program Water Quality Monitoring Plan

Introduction

The overall supply of Central Valley Project (CVP) water has been reduced by drought and restrictions on pumping from the Sacramento-San Joaquin Delta. Under the Warren Act of 1911, Reclamation may execute temporary contracts to convey non-project water in excess capacity in federal irrigation canals. In 2014, Reclamation proposes to execute temporary contracts with water districts to convey up to 50,000 acre-feet of groundwater in the Delta-Mendota Canal (DMC) subject to the monitoring and reporting requirements outlined in this document. The following districts could potentially participate in this program:

- Banta-Carbona Irrigation District
- Byron Bethany Irrigation District
- Del Puerto Water District
- Mercy Springs Water District
- Pacheco Water District
- Panoche Water District
- San Luis Water District
- West Stanislaus Irrigation District

This document describes the plan for measuring the changes in the quality of water in the DMC caused by the conveyance of groundwater during 2014, plus changes in groundwater elevation to estimate subsidence. Various agencies will use these data to assess water quality in the DMC, Mendota Pool, and wetlands water supply channels, and physical condition of local groundwater resources.

This document has been prepared by the U.S. Department of the Interior, Bureau of Reclamation (Reclamation), in cooperation with the San Luis & Delta-Mendota Water Authority (Authority), and the San Joaquin River Exchange Contractors Water Authority (Exchange Contractors), with assistance from staff of Banta Carbona Irrigation District, Del Puerto Water District, San Luis Water District, and Panoche Water District. This monitoring plan will be conducted by staff of Reclamation, the Authority, and Water Districts and will complement independent monitoring by other Federal, State, and private agencies.

Several sampling techniques will be used to collect samples of water, including real-time, grab, and composite. The techniques used at each location are summarized in Section 3.

Continuous measurement of specific conductance (salinity) will be recorded at four stations in the canal using sondes connected to digital data loggers. The data will be averaged every 15 minutes, sent via satellite to the California Data Exchange Center where it will be posted in the Internet as preliminary data:

<http://cdec.water.ca.gov/queryDaily.html>

Central Valley Operations Office will post the daily average salinity measurements on its website:

<http://www.usbr.gov/mp/cvo/wqrpt.html>

The real-time data will be collected by Reclamation and used in a mass balance to calculate and predict water quality conditions along the DMC. The calculated results will be reported to various agencies, and compared with independent field measurements collected by the Reclamation, the Exchange Contractors, US Geological Survey, and California EPA Central Valley Regional Water Quality Control Board (Regional Board).

Based on available funding, Reclamation will operate autosamplers at four locations along the DMC and Mendota Pool that will collect daily composite samples for measurement of selenium and salinity.

Reclamation and the Regional Board will collect grab samples from various locations in the watershed to measure selenium and many other parameters.

Reclamation will use these data to assess changes in water quality and groundwater conditions caused by the 2014 Groundwater Pump-in Program, and will implement the terms and conditions of the 2014 Warren Act Contracts, exchange agreements, and the current Letter from the Exchange Contractors to Reclamation (Appendix 1).

Background

The Delta Division of the federal Central Valley Project (CVP) delivers water to almost a million acres of farmland in the San Joaquin Valley of California. The CVP is also the sole source of clean water for state and federal wildlife refuges and many private wetlands in Fresno, Merced, San Joaquin, and Stanislaus Counties.

The source of water for the Division is the northern Sierra mountains, passing through the delta of the Sacramento and San Joaquin Rivers. This water is suitable in quality for irrigation and wetlands. The Central Valley is regularly affected by droughts that reduce the supply of water. Environmental regulations also restrict the operation of the Jones Pumping Plant to divert water from the Delta. The salinity of water in the Delta is highly variable due to the influence of tides and outflow of river water.

The Delta-Mendota Canal carries CVP water to farms, communities, and wetlands between Tracy and Mendota. The 116 mile canal is operated and maintained by the San Luis and Delta-Mendota Water Authority (Authority) under contract with Reclamation.

Inflows of tailwater and subsurface water add contaminants to the canal. The conveyance of groundwater may further degrade the quality of water in the canal.

The districts and refuges in the Delta Division use groundwater to supplement their contractual supply from the CVP. These supplies of groundwater are called “Non-Project Water” because they have not been appropriated by the United States for the purposes of the CVP.

The Warren Act of 1911⁽¹⁾ authorizes Reclamation to execute temporary contracts to impound, store, and carry non-project water in federal irrigation canals when excess capacity is available. Such contracts will be negotiated by Reclamation with Delta Division water districts to allow the introduction of non-project water into the Delta-Mendota Canal to supplement the supply of CVP water to help farmers deliver enough water to irrigate and sustain valuable permanent crops like grapes, citrus, and deciduous fruit, and to sustain the local multi-billion dollar farming economy.

The quality of local groundwater is variable and must be measured to confirm that there will be no harm to downstream water users when the non-project water is pumped into the canal. Reclamation has developed a set of standards for the acceptance of non-project water in the canal based on the requirements of downstream water users.

In 2014, environmental regulations and climate change continue to reduce the supply of surface water for the Central Valley Project. Water managers now must depend on groundwater to supplement a diminished supply of surface water for irrigation. However, continuous pumping of groundwater can quickly reduce local aquifers and can cause irreversible damage to facilities through subsidence.

Reclamation will require information about each source of groundwater and more monitoring of the aquifer to measure overdraft, prevent subsidence, and determine the feasibility of continuing this program in the future. Staff from the Authority and water districts will be required to take regular measurements of depth to groundwater, pump rates, and in-stream salinity measurements.

This monitoring plan will ensure that monitoring data will measure any changes in the quality of CVP water in the Delta-Mendota Canal and Mendota Pool, and assess impacts on local aquifers.

Monitoring Mission and Goals

The mission of this monitoring plan is to produce physical measurements that will determine the changes in the quality of the water in canal caused by the conveyance of groundwater during 2014. The data will be used to implement the terms of the 2013 Warren Act Contracts and exchange agreements, and to ensure that the quality of CVP water is commensurate with the needs and expectations of water users.

¹ Act of February 21, 1911, ch. 141, 36 Stat. 925

The monitoring program will also deal with changes to groundwater resources to identify and prevent long-term problems to local aquifers and facilities.

Program Goals

The general goals of monitoring are:

- Evaluate the quality of water in each well, and
- Confirm that the blend of CVP water and groundwater is suitable for domestic, agricultural, and wetlands uses.
- Provide reliable data for regulation of the 2014 DMC Groundwater Pump-in Program to prevent contamination problems
- Provide measurements of groundwater dynamics (depth, recharge) to identify overdraft and subsidence

Study Area

The Study Area for this program encompasses the Delta-Mendota Canal from Tracy to Mendota, and the Mendota Pool. The canal is divided into two reaches in relation to the O'Neill Forebay and the connection to the State Water Project.

Water Quality Standards

The quality of water in each source of groundwater must meet the standards listed in Tables 6 and 7. The lists have been developed by Reclamation to measure constituents of concern that would affect downstream water users. In particular, the concentration of selenium in any pump-in water shall not exceed 2 µg/L, the limit for the Grasslands wetlands water supply channels specified in the 1998 Basin Plan.² The salinity of each source of pump-in water shall not exceed 1500 mg/L TDS. The other constituents are mainly agricultural chemicals listed in the California Drinking Water Standards (Title 22)³.

² California Regional Water Quality Control Board, Central Valley Region, Fourth Edition of the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins.
http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr.pdf

³ California Code of regulations, Title 22. The Domestic Water Quality and Monitoring Regulations specified by the State of California Health and Safety Code (Sections 4010 4037), and Administrative Code (Sections 64401 et seq.), as amended.
<http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Lawbook/dwregulations-06-24-2010.pdf>

Water Quality Monitoring Plan

In-stream Monitoring

The quality of water in the DMC will be measured at the locations listed in Tables 1, 2, and 3.

Reclamation will operate and maintain the real-time stations listed in Table 1. Based on available funding, Reclamation will continue to collect water samples at the sites listed in Table 2 under the DMC Water Quality Monitoring Program. Reclamation will be responsible for the costs of sampling and analysis of water sampled from the DMC under this monitoring program.

Table 3 is a list of places along the canal near groups of wells that could pump into the canal under this program. If the real-time monitoring is not sufficient to identify in-stream changes in quality caused by the addition of groundwater, Reclamation may require weekly measurements at the checks listed in Table 3 to determine local effects from each group of wells. Furthermore, if flow of CVP water in the canal is limited, Reclamation will require detailed monitoring to identify the individual and cumulative changes in water quality caused by the addition of groundwater.

Table 1. Real-Time Monitoring Stations

Location	Operating Agency	Parameters	Frequency	Remarks
DMC Headworks Milepost 3.5	CVO	EC	Real-time	CDEC Site: DMC
DMC Check 13 Milepost 70	CVO	EC	Real-time	CDEC site : ONI
DMC Check 20 Milepost 111	CVO	EC	Real-time	CDEC site : DM2
DMC Check 21 Milepost 116.5	CVO	EC	Real-time	CDEC site : DM3

Key: CDEC: California Data Exchange Center CVO: Central Valley Operations Office EC: Electrical conductivity

Table 2. Water Quality Monitoring Stations

Location	Operating Agency	Parameters	Frequency	Remarks
DMC Headworks Milepost 3.5	Reclamation	EC, selenium	Daily composite	Autosampler
DMC at McCabe Rd Milepost 68	Reclamation	Various	Monthly	Grab sample
DMC Check 13 Milepost 70	Reclamation	EC, selenium	Daily composite	Autosampler
DMC at Russell Ave Milepost 97.7	Reclamation	EC, selenium, boron, mercury	Monthly	Grab sample
DMC at Telles Farm Bridge Milepost 100	Reclamation	EC, selenium	Monthly	Grabs sampler
DMC at Washoe Ave Milepost 110.1	Reclamation	EC, selenium, boron, mercury	Monthly	Grab sample
DMC Check 21 Milepost 116.5	Reclamation	EC, selenium	Daily composite	Autosampler
CCID Main Canal at Bass Ave	Reclamation	EC, selenium	Daily composite	Autosampler

Key: Reclamation: MP-157 Environmental Monitoring Branch

Table 3. In-Stream Monitoring Stations (Optional)

Location	Responsible Agency	Parameters	Frequency	Remarks
DMC Check 2 Milepost 16.2	SLDMWA	EC	Weekly	Field measurement
DMC Check 3 Milepost 20.6	SLDMWA	EC	Weekly	Field measurement
DMC Check 6 Milepost 34.4	SLDMWA	EC	Weekly	Field measurement
DMC Check 7 Milepost 38.7	SLDMWA	EC	Weekly	Field measurement
DMC Check 9 Milepost 48.6	SLDMWA	EC	Weekly	Field measurement
DMC Check 12 Milepost 64.0	SLDMWA	EC	Weekly	Field measurement
DMC Check 16 Milepost 85.1	SLDMWA	EC	Weekly	Field measurement
DMC at Telles Bridge Milepost 100.9	SLDMWA	EC	Weekly	Field measurement

Key: SLDMWA: San Luis and Delta-Mendota Water Authority

Wellhead Monitoring

Initial Analysis

All districts participating in the 2014 DMC Groundwater Pump-in Program must provide the following information about each well to Reclamation prior to pumping groundwater into the DMC:

- the location of each well, pumping rate, and point of discharge into the DMC;
- complete water quality analyses (Table 5 or 6)⁴
- the depth to groundwater in every well before pumping into the DMC commences.

Though most of the wells are privately owned, the Districts must provide access to each well for Reclamation and Authority staff.

All water samples must be sampled and preserved according to established protocols in correct containers. Analyses should be conducted by laboratories that have been approved by Reclamation, listed in Table 7. Each sample of well water must be sampled and analyzed at the expense of the well owner. Reclamation staff will review the analytical results and notify the District which wells may pump into the DMC in 2014.

⁴ Note: Laboratory analyses of water in each well may be measured within three years

Compliance Monitoring

Daily Salinity

Mean daily salinity of water in the DMC will be assessed with the sensors along the canal that report real-time data to CDEC, listed in Table 1. Reclamation and the Authority will monitor daily changes in salinity along the canal.

Weekly Monitoring

Reclamation may require weekly measurements of salinity along the DMC if the real-time sensors are not sufficient to identify changes. If necessary, Reclamation will direct the Authority to measure the EC of water in the canal at the places listed in Table 3. These sites are located downstream from clusters of wells that could pump into the DMC. In addition, Reclamation may also direct Authority staff to measure the EC of the water in each active well

The weekly volume of groundwater pumped into the DMC from each well will be measured by the Authority and sent to Reclamation at the end of each week.

Selenium Monitoring

Based on available funds, Reclamation will continue to measure selenium in the canal and Mendota Pool with autosamplers listed in Table 2. Reclamation may collect random samples of water from various active wells; the cost of these selenium tests will be borne by Reclamation. Based on available funds, Reclamation may also measure boron in the canal and wells.

Depth to Groundwater

The Authority will measure the depth to groundwater in each active well quarterly. Table 8 is a summary of measurements collected by the Authority since May 1995. The current depth to groundwater in each well will be compared to the depths listed in Table 8. If the current depth exceeds the maximum depth observed in Table 8, then Reclamation will advise the District to stop pumping from that well until the depth of water in the well recovers to an agreed depth, such as the median observed depth.

Data Compilation and Review

All compliance monitoring data collected by the Authority (i.e., flow/ EC/depth of groundwater in each active well, flow/EC in the DMC) will be entered into worksheets and presented each week to Reclamation via e-mail. Reclamation will review the data to identify changes in the quality of water in the canal and in individual wells, and potential changes in the local aquifer that could lead to overdraft or subsidence.

Water Quality Monitoring Parameters and Data Management

The following sections describe the parameters for real-time and laboratory measurement of water quality, as well as methods for quality control, data management, and data reporting.

Real-Time Water Quality Monitoring Parameters

The Central Valley Operations Office (CVO) operates four sensors along the DMC that measure salinity and temperature of water. These continuous measurements are posted on the Internet in real-time.

Salinity

Salinity is a measure of dissolved solids in water. It is the sum weight of many different elements within a given volume of water, reported in milligrams per liter (mg/L) or parts per million (ppm). Salinity is an ecological factor of considerable importance, influencing the types of organisms that live in a body of water. Also, salinity influences the kinds of plants and fish that will grow in a water body. Salinity can be estimated by measuring the electrical conductivity (EC) of the water.

CVO uses this conversion factor for estimating Total Dissolved Solids (TDS) from

$$\text{TDS (mg/L)} = \text{EC (}\mu\text{S/cm)} * 0.618 + 16$$

Sampling For Laboratory Analyses of Water Quality

The following sections describe constituents for laboratory analyses of water quality, as well as methods for water quality sampling and chain of custody documentation.

Constituents

Table 5 and 6 are lists of constituents to be measured at in each well that will pump into the DMC during 2014. Parameters include selenium, mercury, boron, nutrients, and other compounds that cannot be measured with field sensors. Table 7 is a list of laboratories whose sampling and analytical practices have been approved by Reclamation.

Sampling methods

Grab samples will be collected in a bucket or bottle from the point of discharge into the canal. Samples of canal water should be collected mid-stream from a bridge or check structure. Grab samples should be poured directly into sample bottles appropriate to the analyses. This technique is for samples collected weekly or less frequently. The analytical laboratory will specify the sample volume, type of bottle, need for preservative, and special handling requirements. Reclamation may train field staff on proper sample collection and handling.

Time composite samples will be collected from the DMC by Reclamation using an autosampler. Daily composite samples will consist of up to eight subsamples taken per day and mixed into one sample. Weekly composite samples will consist of seven daily subsamples mixed into one sample.

Chain of Custody documentation

Chain of custody (COC) forms will be used to document sample collection, shipping, storage, preservation, and analysis. All individuals transferring and receiving samples will sign, date, and record the time on the COC that the samples are transferred.

Laboratory COC procedures are described in each laboratory's Quality Assurance Program Manual. Laboratories must receive the COC documentation submitted with each batch of samples and sign, date, and record the time the samples are transferred. Laboratories will also note any sample discrepancies (e.g., labeling, breakage). After generating the laboratory data report for the client, samples will be stored for a minimum of 30 days in a secured area prior to disposal.

Quality Control/ Quality Assurance

Quality control (QC) is the overall system of technical activities that measure the attributes and performance of a process, item, or service against defined standards to verify that stated requirements are met.

Quality assurance (QA) is an integrated system of management activities involving, planning, implementation, documentation, assessment, reporting, and quality improvement to ensure that a process, item, or service is of the type and quality needed and expected by the customer.

QA objectives will be used to validate the data for this project. The data will be accepted, rejected, or qualified based on how sample results compare to established acceptance criteria.

The precision, accuracy, and contamination criteria will be used by the QCO to validate the data for this project. The criteria will be applied to the blind external duplicate/split, blank, reference, or spiked samples submitted with the production samples to the analytical laboratories by the participating agencies to provide an independent assessment of precision, accuracy, and contamination.

Laboratories analyze their own QC samples with the client's samples. Laboratory QC samples, including laboratory fortified blanks, matrix spikes, duplicates, and method blanks, assess precision, accuracy, and contamination. Laboratory QC criteria are stated in the analytical methods or determined by each laboratory. Since internal control ranges are often updated in laboratories based on instrumentation, personnel, or other influences, it is the responsibility of the QCO to verify that these limits are well documented and appropriately updated during system audits. The preferred method of reporting the QC results is for the laboratory to provide a QC summary report with acceptance criteria for each QC parameter of interest.

For water samples, the QCO will use a statistical program to determine if current concentrations for parameters at given sites are consistent with the historical data at these sites. A result is determined to be a historical outlier if it is greater than 3 standard deviations from the average value for the site. The presence of an outlier could indicate an error in the analytical process or a significant change in the environment.

Samples must be prepared, extracted, and analyzed within the recommended holding time for the parameter. Data may be qualified if the sample was analyzed after the holding time expires.

Completeness refers to the percentage of project data that must be successfully collected, validated, and reported to proceed with its intended use in making decisions.

Constraints with regard to time, money, safety, and personnel were some of the factors in choosing the most representative sites for this project. Monitoring sites have been selected by considering the physical, chemical, and biological boundaries that define the system under study.

Sites also were selected to be as representative of the system as possible. However, Reclamation will continue to evaluate the choice of the sites with respect to their representativeness and will make appropriate recommendations to the Contracting Officer given a belief or finding of inadequacy.

Comparability between each agency's data is enhanced through the use of Standard Operating Procedures that detail methods of collection and analysis. Each agency has chosen the best available protocol for the sampling and analyses for which it is responsible based on the agency's own expertise. Audits performed by the QCO will reinforce the methods and practices currently in place and serve to standardize techniques used by the agencies.

Data Management

Real-Time Data – Raw data from field sensors, must be identified as preliminary, subject to change

Provisional Data - Data that have been reviewed by the collecting agency but may be changed pending re-analyses or statistical review

Laboratory Data – Data produced by the laboratory following laboratory QA/QC protocols

In-stream data will be collected by Reclamation. Routine measurements of flow, EC, and depth of groundwater in each well will be collected by the Authority and sent to Reclamation each week.

Reclamation will compile these data in a water balance model developed by Reclamation, the Authority, and Exchange Contractors to predict the change in salinity in the canal with the addition of groundwater.

Real-time data will be used to monitor day-to-day patterns and assess actual conditions. The real-time data will be posted in regular e-mail messages to the districts and Authority. Reclamation will compile all flow, water quality, and groundwater data into a final report for future reference.

Water Quality Requirements

Each week, Reclamation staff will use the real-time salinity measurements (Table 1) and optional weekly in-stream measurements (Table 3) to monitor changes in salinity in the DMC, and determine if the groundwater pump-ins have caused these changes. Reclamation staff will compile other water quality data collected for this program and by others do evaluate changes in the canal.

Reclamation and the Authority will allow groundwater to be pumped into the DMC if such water does not cause the concentration of selenium or salinity in the canal to exceed certain thresholds listed in Tables 4a and 4b.

Table 4a. Maximum Allowable Concentration of Seven Constituents in the Upper DMC (between Jones Pumping Plant and Check 13)

Constituent	Monitoring Location	Maximum concentration in the DMC
Selenium	Check 13	1 µg/L
Specific conductance	Check 13	800 µS/cm
Increase in Conductance	Between Jones PP and Check 13	Less than 50 µS/cm

Reclamation will direct the Authority contact the Districts to stop pumping groundwater into the upper DMC if the concentration of any of these constituents in the canal exceed the maximum allowable concentrations listed in Table 4a.

Table 4b. Maximum Allowable Concentration of Three Constituents in the Lower DMC⁵

Constituent	Monitoring Location	Maximum concentration in the DMC
Selenium	Check 21	2 µg/L
Specific Conductance	Check 21	800 µS/cm
Increase in Conductance	Checks 13 – 20	Not to exceed 50 µS/cm per day for seven consecutive days ⁶
Minimum flow	Check 21	300 cfs

Reclamation will direct the Authority to contact the Districts to stop pumping groundwater into the lower DMC if any of the parameters listed in Table 4b are exceeded, or if flow is insufficient for dilution.

Reclamation will continue to monitor the effects of the six sumps near Firebaugh that pump subsurface groundwater into the canal. Note: the sumps are located downstream of the proposed wells listed in Table 8.

Reclamation reserves the right to modify this monitoring program at any time to change.

Revised: 06 Jan 2014 SCC-107

⁵ The 2014 Exchange Contractors letter will have further conditions for the lower portion of the canal.

⁶ Equivalent to 30 mg/L Total Dissolved Solids

**Table 5. Water Quality Standards for Acceptance of Ground Water in the Upper Delta-Mendota Canal
Jones Pumping Plant to Check 13 (O'Neill Forebay)**

Constituent	Units	Maximum Contaminant Level		Detection Limit for Reporting		CAS Registry Number	Recommended Analytical Method
Primary							
Aluminum	mg/L	1	(1)	0.05	(2)	7429-90-5	EPA 200.7
Antimony	mg/L	0.006	(1)	0.006	(2)	7440-36-0	EPA 200.8
Arsenic	mg/L	0.01	(1)	0.002	(2)	7440-38-2	EPA 200.8
Barium	mg/L	1	(1)	0.1	(2)	7440-39-3	EPA 200.7
Beryllium	mg/L	0.004	(1)	0.001	(2)	7440-41-7	EPA 200.7
Boron	mg/L	0.7	(13)			7440-42-8	EPA 200.7
Cadmium	mg/L	0.005	(1)	0.001	(2)	7440-43-9	EPA 200.7
Chromium, total	mg/L	0.05	(1)	0.01	(2)	7440-47-3	EPA 200.7
Lead	mg/L	0.015	(9)	0.005	(8)	7439-92-1	EPA 200.8
Mercury	mg/L	0.002	(1)	0.001	(2)	7439-97-6	EPA 245.1
Nickel	mg/L	0.1	(1)	0.01	(2)	7440-02-0	EPA 200.7
Nitrate (as NO ₃)	mg/L	45	(1)	2	(2)	7727-37-9	EPA 300.1
Nitrate + Nitrite (sum as nitrogen)	mg/L	10	(1)				EPA 353.2
Nitrite (as nitrogen)	mg/L	1	(1)	0.4	(2)	14797-65-0	EPA 300.1
Selenium	mg/L	0.002	(10)	0.0004		7782-49-2	EPA 200.8
Thallium	mg/L	0.002	(1)	0.001	(2)	7440-28-0	EPA 200.8
Secondary							
Chloride	mg/L	250	(7)			16887-00-6	EPA 300.1
Copper	mg/L	1	(10)	0.05	(8)	7440-50-8	EPA 200.7
Iron	mg/L	0.3	(6)			7439-89-6	EPA 200.7
Manganese	mg/L	0.05	(6)			7439-96-5	EPA 200.7
Molybdenum	mg/L	0.01	(11)			7439-98-7	EPA 200.7
Silver	mg/L	0.1	(6)			7440-22-4	EPA 200.7
Sodium	mg/L	69	(12)			7440-23-5	EPA 200.7
Specific Conductance	µS/cm	2,200	(7)				SM 2510 B
Sulfate	mg/L	250	(7)			14808-79-8	EPA 300.1
Total Dissolved Solids	mg/L	1,500	(7)				SM 2540 C
Zinc	mg/L	5	(6)			7440-66-6	EPA 200.7
Radioactivity							
Gross Alpha	pCi/L	15	(3)	3	(3)		SM 7110C
Organic Chemicals							
Dibromochloropropane (DBCP)	µg/L	1	(4)	0.5	(5)	96-12-8	EPA 504.1
Ethylene Dibromide (EDB)	µg/L	18	(4)	2	(5)	206-93-4	EPA 504.1
Chlordane	µg/L	18	(4)	5	(5)	57-74-9	EPA 505
Endrin	µg/L	0.1	(4)	0.1	(5)	72-20-8	EPA 505
Heptachlor	µg/L	25	(4)	0	(5)	76-44-8	EPA 505
Heptachlor Epoxide	µg/L	70	(4)	10	(5)	1024-57-3	EPA 505
Lindane	µg/L	160	(4)	0	(5)	58-89-9	EPA 505
Methoxychlor	µg/L	0.2	(4)	0.01	(5)	72-43-5	EPA 505
Toxaphene	µg/L	2	(4)	0.1	(5)	8001-35-2	EPA 505
Diazinon	µg/L	0.16	(11)			333-41-5	EPA 507
Atrazine	µg/L	700	(4)	25	(5)	1912-24-9	EPA 508.1
Simazine	µg/L	0.01	(4)	0.01	(5)	122-34-9	EPA 508.1
Bentazon	µg/L	0.01	(4)	0.01	(5)	25057-89-0	EPA 515.1-4
2, 4, 5-TP (Silvex)	µg/L	30	(4)	10	(5)	93-72-1	EPA 515.1-4
2,4-D	µg/L	0.2	(4)	0.2	(5)	94-75-7	EPA 515.1-4
Molinate	µg/L	20	(4)	2	(5)	2212-67-1	EPA 525.2
Thiobencarb	µg/L	50	(4)	1	(5)	28249-77-6	EPA 525.2
Carbofuran	µg/L	4	(4)	1	(5)	1563-66-2	EPA 531.1-2
Glyphosate	µg/L	70	(4)	1	(5)	1071-83-6	EPA 547
Chlorpyrifos	µg/L	0.025	(11)			2921-88-2	EPA 8141

Table 5. Water Quality Standards for Acceptance of Ground Water in the Upper Delta-Mendota Canal Jones Pumping Plant to Check 13 (O'Neill Forebay)

Sources:

Sources:

Title 22. The Domestic Water Quality and Monitoring Regulations specified by the State of California Health and Safety Code (Sections 4010-4037), and Administrative Code (Sections 64401 et seq.), as amended.

- (1) Title 22, Table 64431-A Maximum Contaminant Levels, Inorganic Chemicals
- (2) Title 22, Table 64432-A Detection Limits for Reporting (DLRs) for Regulated Inorganic Chemicals
- (3) Title 22, Table 64442 Radionuclide Maximum Contaminant Levels (MCLs) and Detection Levels for Purposes of Reporting
- (4) Title 22, Table 64444-A Maximum Contaminant Levels, Organic Chemicals
- (5) Title 22, Table 64445.1-A Detection Limits for Purposes of reporting (DLRs) for Regulated Organic Chemicals
- (6) Title 22, Table 64449-A Secondary Maximum Contaminant Levels "Consumer Acceptance Contaminant Levels"
- (7) Title 22, Table 64449-B Secondary Maximum Contaminant Levels "Consumer Acceptance Contaminant Level Ranges"
- (8) Title 22, Table 64678-A DLRs for Lead and Copper
- (9) Title 22, Section 64678 (d) Lead Action level

2013 California Drinking Water Regulations: <http://www.cdph.ca.gov/certlic/drinkingwater/Pages/Lawbook.aspx>
<http://www.cdph.ca.gov/certlic/drinkingwater/Documents/Lawbook/dwregulations-2013-07-01.pdf>

California Regional Water Quality Control Board, Central Valley Region, Fourth Edition of the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins.

- (10) Basin Plan, Table III-1 (ug/L) (selenium in Grasslands water supply channels)
- (11) Basin Plan, Table III-2A (ug/L) (chlorpyrifos & diazinon in San Joaquin River from Mendota to Vernalis)

Sacramento & San Joaquin River Basin Plan 2009

http://www.waterboards.ca.gov/centralvalley/water_issues/basin_plans/sacsjr.pdf

Ayers, R. S. and D. W. Westcot, *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations - Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1985).

- (12) Ayers, Table 1 (mg/L) (sodium)
- (13) Ayers, Table 21 (mg/L) (boron)

Water Quality Standards for Agriculture 1985

<http://www.fao.org/DOCREP/003/T0234E/T0234E00.HTM>

revised: 06 Jan 2014

**Table 6. Water Quality Standards for Acceptance of Groundwater in the lower Delta-Mendota Canal
Check 13 (O'Neill Forebay) To Check 21 (Mendota Pool)**

Constituent	Units	Maximum Contaminant Level		CAS Registry Number	Recommended Analytical Method
Bicarbonate	mg/L	61	(5)	71-52-3	SM 2320 A
Boron	mg/L	0.7	(3)	7440-42-8	EPA 200.7
Calcium	mg/L	80	(5)	7440-70-2	EPA 200.5
Chloride	mg/L	40	(5)	189689-94-9	EPA 300.1
Chlorpyrifos	µg/L	0.025	(2)	2921-88-2	EPA 8141
Chromium, total	µg/L	50	(1)	7440-47-3	EPA 200.7
Diazinon	µg/L	0.16	(2)	333-41-5	EPA 507
Hardness	mg/L				calculated
Magnesium	mg/L	16	(5)	7439-95-4	EPA 200.5
Mercury	µg/L	2	(1)	7439-97-6	EPA 245.1
Molybdenum	µg/L	10	(3)	7439-98-7	EPA 200.7
Nickel	µg/L	100	(1)	7440-02-0	EPA 200.7
Nitrate (as NO ₃)	mg/L	45	(1)	7727-37-9	EPA 300.1
Nitrite (as nitrogen)	mg/L	1	(1)	14797-65-0	EPA 300.1
pH	units	5.0 - 7.0	(5)		EPA 150.1
Potassium	mg/L	4.5	(5)	7440-09-7	EPA 200.5
SAR		<2	(5)		calculated
Selenium	µg/L	2	(2)	7782-49-2	EPA 200.8
Sodium	mg/L	69	(3)	7440-23-5	EPA 200.7
Specific Conductance	µS/cm	1,230	(4)		SM 2510 B
Sulfate	mg/L	250	(1)	14808-79-8	EPA 300.1
Total Dissolved Solids	mg/L	800	(4)		SM 2540 C

(1) Title 22. The Domestic Water Quality and Monitoring Regulations specified by the State of California Health and Safety Code (Sections 4010-4037), and Administrative Code (Sections 64401 et seq.), as amended.

(2) California Regional Water Quality Control Board, Central Valley Region, Fourth Edition of the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins. Table III-2A

(3) Ayers, R. S. and D. W. Westcot, *Water Quality for Agriculture*, Food and Agriculture Organization of the United Nations - Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1985).

(4) Second Amended Contract for Exchange of Waters, No 11r-1144, Article 9. Quality of Substitute Water.

(5) Spectrum Analytic, Inc. Guide to Interpreting Irrigation Water Analysis. Washington C.H., Ohio
http://www.spectrumanalytic.com/support/library/rf/A_Guide_to_Interpreting_Irrigation_Water_Analysis.htm

revised 06 Jan 2014

RECLAMATION

Managing Water in the West

Table 7a. Approved Laboratory List for the Mid-Pacific Region Environmental Monitoring Branch

APPL Laboratory	<u>Address</u>	908 North Temperance Avenue, Clovis, CA 93611
	<u>Contact</u>	Renee' Patterson, Project Manager
	<u>P/F</u>	(559) 275-2175 / (559) 275-4422
	<u>Email</u>	rpatterson@applinc.com; danderson@applinc.com;
	<u>Methods</u>	Approved for inorganic and organic parameters in water and soil
Basic Laboratory	<u>Address</u>	2218 Railroad Avenue Redding, CA 96001 USA
	<u>Contact</u>	Josh Kirkpatrick, Nathan Hawley, Melissa Hawley
	<u>P/F</u>	(530) 243-7234 / (530) 243-7494
	<u>Email</u>	jkirkpatrick@basiclab.com (QAO and PM); nhawley@basiclab.com, mhawley@basiclab.com (invoices); poilar@basiclab.com (sample custody), khawley@basiclab.com (sample custody)
	<u>Methods</u>	Approved for inorganic/organic parameters
California Laboratory Services	<u>Address</u>	3249 Fitzgerald Road Rancho Cordova, CA 95742
	<u>Contact</u>	Scott Furnas
	<u>P/F</u>	(916) 638-7301 / (916) 638-4510
	<u>Email</u>	janetm@californialab.com (QA); scottf@californialab.com (PM)
	<u>Methods</u>	Approved for inorganic, organic, and microbiological parameters
Calscience Environmental Laboratories	<u>Address</u>	7440 Lincoln Way; Garden Grove, CA 92841
	<u>Contact</u>	Don Burley
	<u>P/F</u>	714-895-5494 (ext. 203)/714-894-7501
	<u>Email</u>	DBurley@calscience.com
	<u>Methods</u>	Approved for inorganic and organic parameters in water, sediment, and soil.
Caltest Analytical Laboratory	<u>Address</u>	1885 N. Kelly Rd. Napa, CA 94558
	<u>Contact</u>	Mike Hamilton, Patrick Ingram (Lab Director)
	<u>P/F</u>	(707) 258-4000/(707) 226-1001
	<u>Email</u>	Mike_Hamilton@caltestlabs.com; Patrick_Ingram@caltestlabs.com info@caltestlabs.com
	<u>Methods</u>	Approved for inorganic and microbiological parameters
Dept. of Fish & Game - WPCL	<u>Address</u>	2005 Nimbus Road Rancho Cordova, CA 95670 USA
	<u>Contact</u>	David B. Crane - Laboratory Director, Patty Bucknell - Inorganic Chemist (916) 358-4398 Gail Chow - QA Manager + re-analysis requests (916) 358-2840
	<u>P/F</u>	(916) 358-2858 / (916) 985-4301, Sample Receiving: (916) 358-0319 Scott or Mary
	<u>Email</u>	dcrane@ospr.dfg.ca.gov; pbucknell@ospr.dfg.ca.gov; gcho@ospr.dfg.ca.gov
	<u>Methods</u>	Approved only for metals analysis in tissue, organics pending

Table 7a. Approved Laboratory List for the Mid-Pacific Region Environmental Monitoring Branch

Eurofins Eaton Analytical, Inc. (formerly MWH Laboratories)	<u>Address</u>	750 Royal Oaks Drive Ste. 100 Monrovia, CA 91016 USA
	<u>Contact</u>	Linda Geddes (Project Manager), Rick Zimmer (quotes)
	<u>P/F</u>	(626) 386-1100, Linda - (626) 386-1163, Rick - (626) 386-1157
	<u>Email</u>	lindageddes@eurofinsus.com
	<u>Methods</u>	Approved for all inorganic, organic, and radiochemistry parameters in water
Fruit Growers Laboratory	<u>Address</u>	853 Corporation Street Santa Paula, CA 93060 USA
	<u>Contact</u>	David Terz, QA Director
	<u>P/F</u>	(805) 392-2024 / (805) 525-4172
	<u>Email</u>	davidt@fglinc.com
	<u>Methods</u>	Approved for general physical analysis in soils and most inorganic and organic parameters in water and soil; not approved for mercury in water or silver in soil.
Sierra Foothill Laboratory, Inc.	<u>Address</u>	255 Scottsville Blvd, Jackson, CA 95642
	<u>Contact</u>	Sandy Nurse (Owner) or Karen Lantz (Program Manager)
	<u>P/F</u>	(209) 223-2800 / (209) 223-2747
	<u>Email</u>	sandy@sierrafoothilllab.com, CC: dale@sierrafoothilllab.com
	<u>Methods</u>	Approved for all inorganic parameters (except low level TKN), microbiological parameters, acute and chronic toxicity.
South Dakota Agricultural Laboratories	<u>Address</u>	Brookings Biospace, 1006 32nd Avenue, Suites 103,105, Brookings, SD 57006-4728
	<u>Contact</u>	Regina Wixon, Jessie Davis, Steven Hauger (sample custodian)
	<u>P/F</u>	(605) 692-7325/(605) 692-7326
	<u>Email</u>	regina.wixon@sdaglabs.com, annie.mouw@sdaglabs.com, emily.weissenfluh@sdaglabs.com, darin.wixon@sdaglabs.com
	<u>Methods</u>	Approved for selenium analysis
TestAmerica	<u>Address</u>	880 Riverside Parkway West Sacramento, CA 95605 USA
	<u>Contact</u>	Linda Laver
	<u>P/F</u>	(916) 374-4362 / (916) 372-1059 fax
	<u>Email</u>	Linda.Laver@TestAmericaInc.com
	<u>Methods</u>	Approved for all inorganic parameters and hazardous waste organics . Ag analysis in sediment, when known quantity is present, request 6010B
Western Environmental Testing Laboratories	<u>Address</u>	475 East Greg Street # 119 Sparks, NV 89431 USA
	<u>Contact</u>	Kurt Clarkson/Logan Greenwood (Client Services), Andy Smith (Lab Drctr)
	<u>P/F</u>	(775) 355-0202 / (775) 355-0817
	<u>Email</u>	kurtc@wetlaboratory.com, logang@wetlaboratory.com, andy@wetlaboratory.com
	<u>Methods</u>	Approved for inorganic parameters (metals, general chemistry) and coliforms.

Revised: 09 Dec 2013

Table 7b. Approved Laboratory Matrix for the Mid-Pacific Region Environmental Monitoring Branch (MP-157)

Laboratory	Water					Sediment/Soil				Tissue/Vegetation	
	Inorganic	Organic	Micro-biological	Radio-chemistry	Toxicity	Inorganic	Organic	General physical	Toxicity	Inorganics	Organics
APPL Laboratory	X	X				X	X				
Basic Laboratory	X	X				X	X				
California Laboratory Services	X	X	X			X	X				
Calscience Environmental Laboratories	X	X				X	X				
Caltest Analytical Laboratory	X		X								
Dept. of Fish & Game - WPCL		pending				X	pending			X	pending
Eurofins Eaton Analytical, Inc. (formerly MWH Laboratories)	X	X		X							
Fruit Growers Laboratory	X (not for mercury)	X				X (not for silver)	X	X			
Sierra Foothill Laboratory, Inc.	X (not for TKN)		X		X				X		
South Dakota Agricultural Laboratories	selenium					selenium				selenium	
TestAmerica	X	X				X	X				
Western Environmental Testing Laboratories	X		X								

revised: 11 Dec 2013

Table 8. Summary of Depth to Groundwater in Wells Beside the Delta-Mendota Canal (feet)
May 1995 - Dec 2012

DMC Milepost	Max	Min	Average	Median	Recent	Last measure	Count
12.37L	327.8	164.2	228.7	223.0	210.7	Dec-12	59
12.69L	244.8	201.4	221.9	219.7	209.0	Dec-12	59
12.75R	295.0	212.0	248.7	252.0	239.7	Dec-12	58
13.31L	275.8	201.4	226.1	222.0	209.9	Dec-12	58
14.26R	268.5	218.4	237.9	237.0	227.2	Dec-12	58
15.11R	264.0	200.0	240.7	241.5	233.5	Dec-12	59
21.25L	169.5	106.0	125.4	117.5	142.3	Dec-12	57
21.86L	130.0	89.6	108.9	109.0	114.0	Dec-12	59
22.77R	170.0	39.2	135.0	135.1	137.6	Dec-12	59
23.41L	254.0	141.0	189.7	185.0	168.1	Dec-12	59
30.43R	169.8	121.8	145.7	147.2	149.8	Dec-12	59
30.43L	191.0	102.0	127.7	124.7	191.0	Jun-12	59
31.60L	277.0	110.1	203.9	231.0	135.6	Dec-12	59
33.71L	198.6	130.9	162.3	165.2	139.2	Dec-12	59
35.73R	287.0	146.8	165.8	164.0	174.5	Dec-12	59
36.01L	290.0	137.2	201.3	181.2	181.2	Dec-12	57
36.80L	204.0	111.0	154.8	154.3	154.3	Dec-12	58
37.10L	277.0	158.0	191.3	189.5	173.7	Dec-12	58
37.32L	200.0	150.8	165.3	162.0	164.0	Mar-10	58
37.58L	170.0	127.8	145.9	142.7	146.0	Sep-11	58
45.78R	127.2	83.0	101.1	97.5	107.8	Dec-12	58
48.97L	130.0	71.0	96.1	94.0	71.0	Mar-10	49
48.96LNEW	96.0	88.0	93.3	96.0	96.0	Jun-10	6
48.97L	101.0	101.0	101.0	101.0	101.0	Mar-11	10
51.66L	150.4	86.4	109.8	108.5	110.8	Dec-12	58
58.28L	69.0	27.0	45.3	43.3	59.9	Mar-12	57
60.06R	95.0	37.6	68.3	69.0	78.2	Dec-12	57
66.71L	54.0	19.8	37.1	38.0	43.5	Dec-12	57
78.31L	49.3	21.9	29.7	28.0	38.8	Dec-12	66
79.13R	111.8	57.8	82.4	86.2	81.7	Dec-12	66
79.13L	132.1	63.3	92.6	90.7	132.1	Dec-12	14
79.60L	83.2	52.9	65.2	62.3	59.6	Mar-11	66
80.03L	80.0	16.0	36.2	35.8	44.5	Dec-12	66
80.03R	143.5	73.0	105.7	107.0	94.9	Dec-12	15
80.62R	100.2	47.8	62.7	61.0	80.0	Dec-12	66
80.62L	69.0	19.4	44.0	43.6	51.1	Dec-12	66
81.08-R	72.5	55.1	60.8	58.7	58.7	Dec-12	14
83.08-R	64.9	37.6	46.8	44.1	46.5	Dec-12	41
83.67-L	71.6	12.0	25.3	24.1	25.6	Dec-12	41
90.18R	201.3	103.9	140.9	134.6	178.4	Dec-12	66
90.19L1	218.5	98.9	145.6	138.0	138.3	Dec-12	66
90.19L2	190.0	72.0	132.5	126.3	144.3	Dec-12	66
90.39R	212.0	105.0	139.7	134.1	145.0	Dec-12	66
90.60L	192.0	28.7	139.2	134.2	167.8	Dec-12	66
90.61R	198.0	104.0	138.2	135.0	142.4	Dec-12	66
90.91L	285.9	93.2	143.9	136.5	137.8	Dec-12	66
91.15L	287.7	97.4	139.2	134.0	140.6	Dec-12	66

Table 8. Summary of Depth to Groundwater in Wells Beside the Delta-Mendota Canal (feet)
May 1995 - Dec 2012

DMC Milepost	Max	Min	Average	Median	Recent	Last measure	Count
91.36L	217.0	10.3	96.1	116.9	13.3	Dec-12	66
91.57R	222.2	91.8	135.5	128.5	143.0	Dec-12	66
91.68R	219.6	99.2	145.5	140.0	168.9	Dec-12	66
91.77R	172.2	96.0	127.1	124.2	out	Sep-03	66
91.80L	195.2	93.1	135.7	132.6	141.7	Dec-12	66
92.00R	172.6	109.0	137.7	131.2	out	Sep-03	66
92.14L	215.1	98.8	144.0	139.8	145.0	Dec-12	66
92.20R	220.0	95.8	141.6	142.0	142.0	Dec-12	66
92.72L	218.3	100.2	147.0	135.8	146.6	Dec-12	66
93.20L	296.1	102.2	140.9	131.8	173.2	Dec-12	66
93.27R	228.4	115.0	159.4	154.0	179.6	Dec-12	65
93.27L	218.9	100.8	146.1	141.9	165.6	Dec-12	66
94.26L	228.1	99.7	144.8	135.2	177.2	Dec-12	66
95.62L	213.4	99.6	145.2	132.0	172.1	Dec-12	66
97.28L	159.9	34.0	71.8	58.6	91.1	Dec-12	66
98.74L	114.2	39.2	53.9	46.0	56.9	Mar-11	66
99.24L	158.3	31.5	63.7	53.1	136.7	Dec-12	66
99.82L	190.3	19.5	69.8	56.0	88.1	Dec-12	66
100.24L	144.1	28.1	61.8	52.0	71.1	Dec-12	66
100.65L	137.6	36.5	67.0	64.5	94.4	Dec-12	66
100.85L	133.6	39.0	60.6	58.3	73.7	Dec-12	65
101.27L	131.4	37.4	66.3	57.0	72.1	Dec-12	65
102.04R	130.0	38.0	63.8	54.0	62.8	Dec-12	65
106.20R	138.3	60.7	91.6	85.0	97.1	Dec-12	65
113.72L	29.2	13.2	21.6	21.6	n/a	Mar-05	65
115.32R	82.9	18.5	30.0	31.0	24.6	Dec-12	65
115.62L	42.0	12.2	25.6	24.3	18.2	Dec-12	64
115.84R	39.2	14.9	24.7	23.0	22.6	Dec-12	65
116.40L1	77.0	14.2	29.5	27.7	20.6	Dec-12	65
116.40L2	74.0	11.3	30.6	24.1	31.2	Dec-12	65

Subsidence Wells near Russell Ave

97.69LH-2	23.1	23.0	23.0	23.0		11
97.69LH-3	17.3	17.3	17.3	17.3		16
97.69LH-4	no data					
97.69LH-5	139.5	131.5	137.1	137.7		16
97.69LH-6	209.9	64.3	134.4	134.3		16

Source: San Luis & Delta-Mendota Water Authority

Appendix 1. 2014 Letter from Exchange Contractors



Consisting of 240,000 acres on the Westside of the San Joaquin Valley

January 4, 2013

JAMES E. O'BANION
Chairman

ROY CATANIA
Vice Chairman

STEVE CHEDESTER
Executive Director

LARRY FREEMAN
Water Resources Specialist

JOANN WHITE
Administrative Assistant

**MINASIAN, MEITH,
SOARES, SEXTON
& COOPER LLP**
Legal Counsel

VIA E-MAIL & U.S. MAIL

Mr. Michael Jackson
U.S. Bureau of Reclamation
1243 N Street
Fresno, CA 93721-1813

Ms. Frances Mizuno
San Luis & Delta-Mendota Water Authority
Post Office Box 2157
Los Banos, CA 93635

**CENTRAL CALIFORNIA
IRRIGATION DISTRICT**

James E. O'Banion
President

Christopher White
General Manager

**SAN LUIS CANAL
COMPANY**

James L. Nickel
President

Chase Hurley
General Manager

**FIREBAUGH CANAL
WATER DISTRICT**

Mike Stearns
President

Jeff Bryant
General Manager

**COLUMBIA CANAL
COMPANY**

Roy Catania
President

Randy Houk
General Manager

RE: ***Long-Term DMC Pumping***

Dear Michael and Frances:

This letter is to confirm that the San Joaquin River Exchange Contractors Water Authority (Exchange Contractors) is in receipt of the San Luis & Delta-Mendota Water Authority's (Authority) request to conduct a comprehensive long-term environmental review for a DMC pumping program. We also understand the large commitments of time and resource requirements to annually conduct the necessary environmental review and Warren Act contracts. Therefore, we believe that the EA- FONSI entitled, "Ten-Year Exchange Agreements and/or Warren Act Contracts for Conveyance of Groundwater in the Delta-Mendota Canal – Contract Years 2013 through 2023 (March 1, 2013 – February 29, 2024)" has established a ten year authorization subject to certain terms and conditions for groundwater pumping.

During the past several years, the Exchange Contractors have agreed to the annual program subject to certain terms and conditions as specified below. We anticipate we will annually approve the program so long as there are no unmitigated impacts to our water supply or operations. Exchange Contractors agree that a comprehensive long-term environmental review for a DMC pumping program is warranted. If there are unanticipated conditions, we understand the U.S. Bureau of Reclamation (Reclamation) and Authority would not proceed in later years with the program until the conditions are studied and mitigated. We have included condition 8 for that purpose.

P.O. Box 2115
541 H Street
Los Banos, CA 93635
(209) 827-8616
Fax (209) 827-9703
e-mail: jwhite@sjrecwa.net
Website: www.sjrecwa.net

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Ms. Frances Mizuno
RE: ***DMC Pumping Program***
January 4, 2013
Page 2

Our understanding is that the Authority's request is to continue the annual DMC pumping program from Water Year 2013-2023, but each year determine if there are new or different conditions which require reconsideration.

As a result of subsidence effects determined in 2008, wells in Management Areas 2 and 3 must continue to be excluded from pumping in this program. If subsidence is detected in other areas along the DMC, one of the mitigation conditions of the program should be reduction of pumping in those areas; and, in following years, no pumping in those areas would occur until a mitigation plan is developed and implemented.

The Exchange Contractors' Board approval for this pumping program is based upon the conditions set forth below:

1. Annually, any well that is proposed to pump into the lower DMC must obtain a current water quality analysis. The analysis shall consist of Ag Suitability and selenium, plus any other constituents the Reclamation may require (wells may be pumped for 24 hours in order to get the initial sample for water quality testing). These tests will be conducted on a monthly basis for the duration of the pumping period. From our perspective, pumping may begin once we have received copies of current lab test results for salinity and selenium, recognizing the other constituents may take longer to obtain the lab results.
2. Only wells that test at 1,500 ppm TDS or less at the well head will be allowed.
3. Only wells that test at 2 ppb selenium or less at the well head will be allowed.
4. The calculated degradation caused by the lower DMC wells shall not exceed 30 ppm (the model developed by Reclamation during the 2008 and 2009 pumping program shall be used to determine this calculation and Reclamation shall provide at least weekly updates of the reports to the Exchange Contractors).
5. At any time, the wells in the lower DMC will be shut off if the measured water quality at Check 20 on the DMC exceeds 450 ppm TDS in a single day. The wells may resume pumping after the average water exceedence no longer exists for three (3) days. Wells with water quality at the well head of 450 TDS or less would be allowed to continue to pump and would not be subject to this restriction.
6. A joint groundwater study between the Central California Irrigation District (CCID), the City of Los Banos and Reclamation was completed in the Los Banos aquifer subarea due to significant groundwater concerns in April 2010. This study is updated

Mr. Michael Jackson
Ms. Frances Mizuno
RE: **DMC Pumping Program**
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Page 3

each year. The annual study and its recommendations for triggers for any pumping adjustments must be incorporated into the annual DMC pumping program.

- a. Pumping in the Los Banos aquifer subarea shall be in accordance with the recommendation contained within the annual updates.
7. The water would be credited to the receiving district as a whole, not for specific growers.
8. It is our understanding that the above described mitigation conditions would be utilized on an ongoing basis to avoid significant impacts upon the environment. If there were detected significant impacts from the program after commencement of pumping in the spring of the year or summer periods which are in addition to or different than the above-described conditions and mitigation measures designed to reduce those impacts below significance, we would understand that efforts would be made to reduce pumping that may be causing or contributing to those unexpected new conditions, but because of irrigation commitments, it may not be possible for Reclamation and the Authority to completely terminate in that water year the pumping that may be causing the impacts that were not anticipated. A review of those conditions would occur following the irrigation season. No pumping would be permitted in those areas suspected to be subject to these new and unexpected environmental conditions not addressed by the above described mitigation conditions in the following years until supplemental examination of the environmental conditions and effects had occurred. In this way, the costs of repeatedly processing environmental documents on an annual basis by the Authority and Reclamation can be avoided unless there are new and unexpected conditions which have not been contemplated and addressed.

If you agree with the program as outlined, and before any additional lower DMC pumping commences, we request that each of your agencies confirm in writing to the program described above. Please contact us if you have any questions regarding this matter.

Sincerely,



Steve Chedester

cc: San Joaquin River Exchange Contractors Board Members
Paul Minasian, Esq.

Appendix B

Reclamation's Cultural Resources Determination

CULTURAL RESOURCE COMPLIANCE

Reclamation Division of Environmental Affairs

MP-153

MP-153 Tracking Number: 14-SCAO-099

Project Name: Patterson Irrigation District (PID) 10-Year Transfer and/or Warren Act Contract for up to 36,000- Acre-Feet (AF) of Available Surface Water Supply to Santa Clara Valley Water District (SCVWD)

NEPA Document: EA-13-072

NEPA Contact: Rain Emerson, Natural Resources Specialist

MP 153 Cultural Resources Reviewer: William Soule, Archaeologist

Date: 02/13/2014

The undertaking by Reclamation is to approve a new 10-transfer and/or Warren Act Contract for PID to transfer of up to 36,000 AF of its Transfer Water to SCVWD. This is the type of undertaking that does not have the potential to cause effects to historic properties, should such historic properties be present, pursuant to the National Historic Preservation Act (NHPA) Section 106 regulations codified at 36 CFR Part 800.3(a)(1).

Under the proposed action Reclamation approve PID's delivery of up to 36,000 AF of PID's Transfer Water to SCVWD over a 10-year period (March 1, 2014 through February 29, 2024). If needed, Reclamation would issue Warren Act contract(s) for conveyance of any non-CVP water to SCVWD within the 10-year period.

After reviewing the materials submitted by SCAO, I concur with a statement in EA-13-072 that neither this proposed action, nor the no action alternative, have the potential to cause effects to historic properties pursuant to 36 CFR § 800.3(a)(1). With this determination, Reclamation has no further NHPA Section 106 obligations. This memorandum is intended to convey the completion of the NHPA Section 106 process for this undertaking. Please retain a copy in the administrative record for this action. Should changes be made to this project, additional NHPA Section 106 review, possibly including consultation with the State Historic Preservation Officer, may be necessary. Thank you for providing the opportunity to comment.

CC: Cultural Resources Branch (MP-153), Anastasia Leigh – Regional Environmental Officer (MP-150)

Appendix C

Reclamation's Indian Trust Assets Determination



Emerson, Rain <remerson@usbr.gov>

EA-13-072 Project Description for Review

RIVERA, PATRICIA <privera@usbr.gov>

Fri, Feb 14, 2014 at 10:13 AM

To: "Emerson, Rain" <remerson@usbr.gov>

Cc: Kristi Seabrook <kseabrook@usbr.gov>, "Williams, Mary D (Diane)" <marywilliams@usbr.gov>

Rain,

I reviewed the proposed action to approve the transfer of up to 36,000 acre-feet (AF) of Patterson Irrigation District's Replacement Water, CVP Water, and pre-1914 San Joaquin River water to Santa Clara Valley Water District (SCVWD) over a period of 10 years (March 1, 2014 through February 29, 2024).

The proposed action does not have a potential to impact Indian Trust Assets.

Patricia Rivera
Native American Affairs Program Manager
US Bureau of Reclamation
Mid-Pacific Region
2800 Sacramento, California 95825
(916) 978-5194

Kristi this is admin-please log in. Thanks