RECLAMATION
Managing Water in the West

Environmental Assessment

2013 Water Transfers

13-05-MP

U.S. Department of the Interior
Bureau of Reclamation
Mid-Pacific Region

June 2013

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 commitment 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

This Environmental Assessment (EA) for water transfers in 2013 was prepared by the U.S. Department of the Interior, Bureau of Reclamation (Reclamation) pursuant to the National Environmental Policy Act (NEPA) (42 USC §4231 et seq.), the Council of Environmental Quality implementing regulations f (40 CFR §1500-1508) and the Department of the Interior's NEPA regulations (43 CFR Part 46).

The document describes the affected environment and the potential direct, indirect, and cumulative effects of approving the transfer of Central Valley Project (CVP or Project) Water and Base Supply water, as those terms are defined in the Sacramento River Settlement Contract (SRS Contract), from CVP Sacramento River Settlement Contractors north of the Sacramento-San Joaquin River Delta (Delta) to water users south of the Delta. This document identifies measures that have been incorporated to minimize or avoid potential project-related impacts.

The transfers included in this EA are only those involving CVP Water and/or Base Supplies or CVP facilities. These transfers require approval from Reclamation, which necessitates compliance with NEPA. Other transfers not involving CVP supplies or use of CVP facilities could occur during the same time period, but would not require Reclamation approval.

1.1 Background

To facilitate the transfer of water within the State of California, Reclamation is considering whether to approve individual water transfers between willing sellers and buyers when Base Supply, Project Water or Project facilities are involved in the transfer. Reclamation will not take part in the transfer negotiation process, nor will Reclamation develop a "program" to connect buyers and sellers. Reclamation would focus on the approval of individual transfers of water involving Base Supply and/or Project Water.

Transfers would occur from sellers located upstream from the Delta to buyers that receive water exported through the Delta. The transfer water would be conveyed, using CVP and/or State Water Project (SWP) facilities, to water users experiencing water shortages in 2013, and who require supplemental water supplies to meet anticipated demands. Reclamation would review and approve, as appropriate, proposed water transfers in accordance with the Draft Technical Information for Water Transfers in 2013 (Reclamation and DWR 2013), state law and/or the Interim Guidelines for the Implementation of Water Transfers under the Central Valley Project Improvement Act (CVPIA).

Water supplies from the 2013 Water Transfers could be made available to water providers who obtain water from CVP or SWP facilities either directly, or by exchange,

with other water providers who have access to water supplies from the CVP or SWP. Reclamation will honor CVP contract provisions in determining access to Delta pumping capacity, as necessary. The California Department of Water Resources (DWR) will likewise determine the availability of its facilities, including Delta pumping capacity, when necessary for the conveyance of transfer water.

1.2 Need for the Proposal

The hydrologic condition for 2013 is dry, and because the CVP and SWP are providing 20% and 35% of contract amounts, respectively, to contractors south of the Delta, there is a need for water to supplement local and imported supplies to meet demands.

This EA will analyze the affected environment of the Action Alternatives and No Action Alternative in order to determine the potential impacts and cumulative impacts to the following environmental resources:

- Surface Water Resources;
- Groundwater Resources;
- Air Quality; and
- Biological Resources.

1.3 Resources Not Analyzed in Detail

In conformance with the National Environmental Policy Act of 1969 (NEPA), as amended, Reclamation has prepared this EA to evaluate and disclose any potential environmental impacts associated with the proposed transfer approvals. Effects on several environmental resources were examined and found to be minor and, as a result, the following resources were eliminated from further discussion from this EA: Aesthetic Resources; Geology, Soils, Seismicity, and Minerals; Hazards and Hazardous Materials; Land Use and Agriculture; Noise; Population and Housing; Recreation; Transportation and Circulation; Utilities, Public Services, and Service Systems. Additionally for the reasons noted below, the following resources were eliminated from further review in this EA:

1.3.1 Climate Change

The Proposed Action would have no construction element and would use existing facilities within the range of normal operations; however, emissions of greenhouse gases could increase through the use of diesel-fueled engines for groundwater pumping. Even with the groundwater pumping from diesel motors, the greenhouse gases (GHG) generated by the Proposed Action are expected to be small when compared to the variety of sources that contribute to climate change. While any increase in GHG emissions would add to the global inventory of gases that would contribute to global climate change, the Proposed Action would result in potentially minimal to no increases in GHG emissions when compared to the No Action Alternative. Accordingly, trends in climate change would not be affected.

1.3.2 Cultural Resources

The Proposed Action does not involve the types of activities that have the potential to affect historic properties pursuant to the regulations at 36 CFR Part 800.3(a)(1). Land use would remain unchanged and no new construction or new ground disturbing activities will take place.

1.3.3 Environmental Justice

Executive Order 12898 (February 11, 1994) mandates Federal agencies to identify and address disproportionately high and adverse human health or environment effects of its programs, policies and activities on minority and low income populations.

No significant changes in agricultural communities or practices would result from the Proposed Action. The groundwater substitution transfers in the Proposed Action would not cause any farm labor changes in the Sacramento Valley since no agricultural land would be taken out of production. Water transfers under the Proposed Action would provide water to agricultural users in the San Joaquin Valley. Increased water supply in agricultural areas would allow farmers to increase irrigation. Increased irrigation could increase farm employment as farmers produce more crops. This would be a beneficial effect to environmental justice populations. Accordingly, the Proposed Action would not have any significant or disproportionately negative impacts on low-income or minority individuals within the project area.

1.3.4 Indian Trust Assets

Indian trust assets (ITA) are legal interests in assets that are held in trust by the United States Government for Federally recognized Indian tribes or individuals. The Proposed Action does not have a potential to affect ITA.

1.3.5 Indian Sacred Sites

Reclamation is required by Executive Order 13007, to the extent practicable permitted by law, and not clearly inconsistent with essential agency functions, to: (1) accommodate access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners; and (2) avoid adversely affecting the physical integrity of such sacred sites. When appropriate, Reclamation shall, to the greatest extent possible, maintain the confidentiality of sacred sites.

The Proposed Action would not inhibit access to or ceremonial use of an Indian Sacred Site, nor would the Proposed Action adversely affect the physical integrity of such sacred sites.

1.3.6 Land Use

No impacts to land use are anticipated as a result of the Proposed Action because land use would remain unchanged within the boundaries of all of the participating buyer and seller agencies, and no crop idling, crop shifting, construction or other land use changes would occur with implementation of the Proposed Action. The only type of transfers proposed for the 2013 transfer season, are groundwater substitution transfers. Therefore, the Proposed Action would have no affect to land use.

Section 2 Alternatives Including the Proposed Action

2.1 No Action

Under the No Action Alternative, Reclamation would not approve the proposed transfer of Base Supply and/or Project Water from willing Sacramento River Settlement Contract sellers north of the Delta to users south of the Delta in 2013. However, other transfers that do not involve the CVP or CVP contractors may occur under the No Action Alternative. Additionally, Base Supply and/or Project Water transfers within basins would continue to occur and would still require Reclamation's approval. Some CVP contractors that are not included in this EA may decide they are interested in selling water to buyers south of the Delta at a later time, however additional NEPA analysis would be required before those transfers could proceed.

Under the No Action Alternative, some agricultural and urban water users would face shortages in the absence of water transfers. These users may take alternative water supply actions in response to shortages, including increased groundwater pumping, cropland idling, reduction of landscape irrigation, or water rationing. These subsequent actions do not require Reclamation approval and are outside the scope of this EA.

2.2 Proposed Action

The Proposed Action includes groundwater substitution transfers in 2013 that require Reclamation approval. The Proposed Action includes potential transfers of Base Supply and/or Project Water from eight entities with Sacramento River Settlement Contracts located north of the Delta, displayed in Figure 2-1 and listed in Table 2-1. Reclamation would evaluate each proposal individually, as it is received, to determine if it meets state law and/or CVPIA requirements. Reclamation has followed this process in past years when approving transfers (such as in 2009 for the Drought Water Bank).

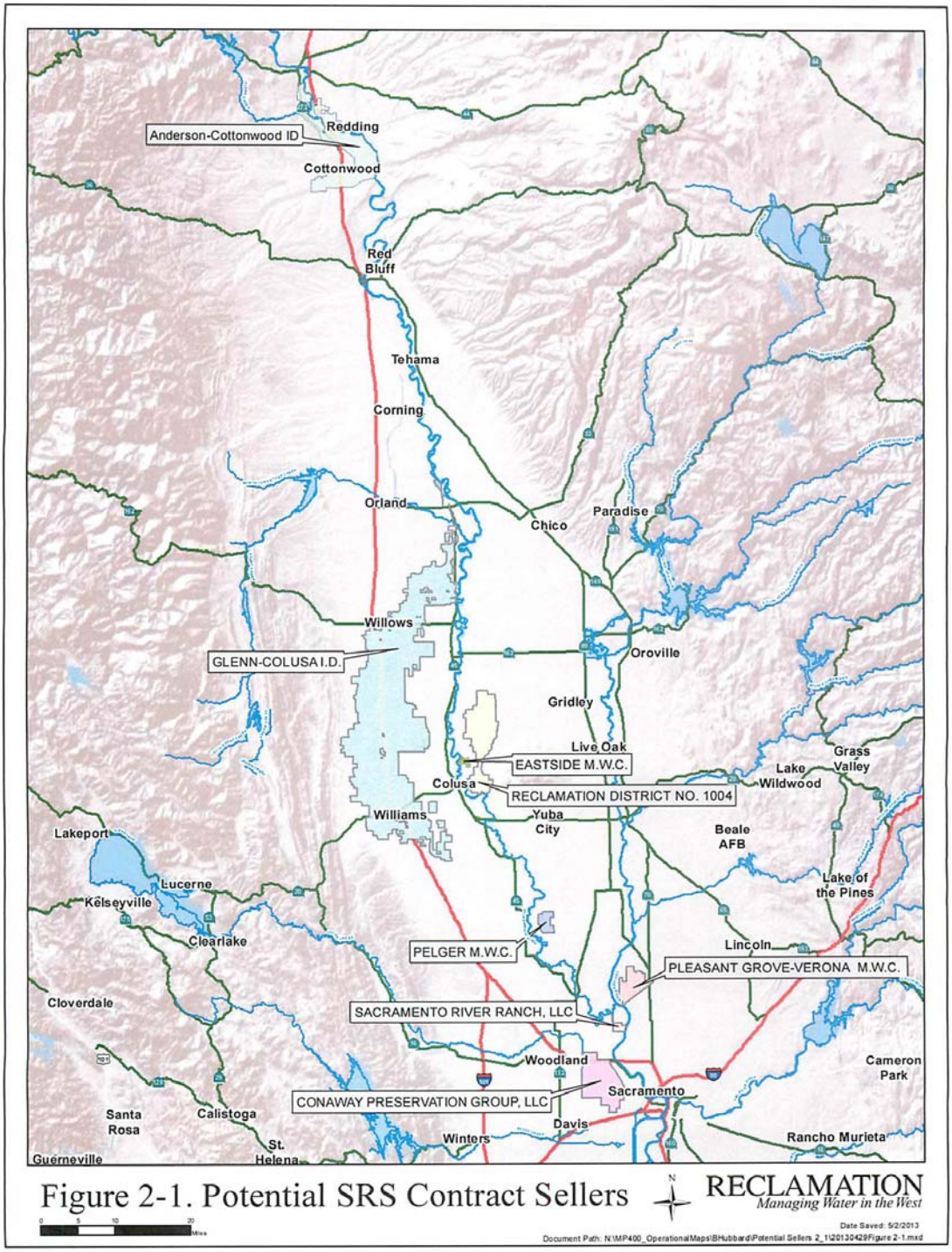

Figure 2-1. Potential SRS Contract Sellers

The Proposed Action would make up to 37,715 acre-feet of Project Water and/or Base Supply water available to buyers south of the Delta from willing sellers upstream of the Delta during 2013. Existing CVP and SWP facilities could be used to convey transfer water to entities that require supplemental water supplies to meet anticipated demands. Water transfers that must move through the Delta would be assumed to lose an estimated 20-30 percent of the water obtained from the Sacramento River and its tributaries to carriage losses (water required to meet water quality and flow related objectives) in the Delta. Additional losses may be assessed for conveyance losses along the California Aqueduct and the Delta Mendota Canal.

Water transfers involving conveyance through the Delta would take place within the operational parameters of the Biological Opinions on the Continued Long-term Operations of the CVP/SWP (Opinions) (National Marine Fisheries Service 2009; U.S. Fish and Wildlife Service 2008) and any other operating rules in place at the time the water transfers are implemented. The key current operational parameter applicable to conveyance of transfer water includes:

- Transfer water will be conveyed through the SWP's Harvey O. Banks Pumping Plant (Banks PP) and CVP's C.W. "Bill" Jones Pumping Plant (Jones PP) during the July through September period only. (USFWS 2008)

DWR and Reclamation will determine availability of Delta pumping capacity at the Banks PP and Jones PP, respectively, throughout the transfer period.

2.2.1 Sellers

Table 2-1 lists agencies under contract with Reclamation that may be willing to sell Base Supply and/or Project Water in 2013. This list represents agencies that have expressed interest in current or prior year programs. The table also identifies potential maximum acre foot estimates for groundwater substitution transfers. The acre foot values reflect the potential upper limit of available water for transfer by each agency; however, actual purchases would depend on hydrology, interested buyers, and compliance with state/federal law and/or CVPIA transfer requirements.

Table 2-1. Potential SRS Contract Sellers (Upper Limits)

	Acre feet
Water Agency (County)	**Groundwater Substitution**
Sacramento River Area	
Anderson-Cottonwood Irrigation District (Shasta)	2,610
Conaway Preservation Group (Yolo)	8,000
Eastside MWC (Colusa)	1,100
Glenn-Colusa Irrigation District (Glenn and Colusa)	5,000
Pelger MWC (Sutter)	1,730
Pleasant Grove-Verona MWC (Sutter)	8,100
Reclamation District 1004 (Glenn and Colusa)	7,175
Sacramento River Ranch (Yolo)	4,000
Totals	**37,715**

The maximum proposed quantity of water for transfer is 37,715 acre feet. Because of the uncertainty of hydrologic and operating conditions in 2013, it is likely that only a portion of the potential transfers identified in Table 2-1 would occur. Entities that are not listed in this table may decide that they are interested in selling water, but those transfers would require separate NEPA analysis.

2.2.2 Buyers

Table 2-2 identifies potential buyers who may be interested in participating in the 2013 water transfers. Not all of these potential buyers may end up actually purchasing water from the sellers. Purchase decisions depend on a number of factors, including, but not limited to, hydrology, water demands, availability of other supplies, and transfer costs. A major concern to potential buyers is the ability to move the purchased water through the Delta to the buyer's service area. Export of the transfer water by Reclamation through the Delta is dependent on availability of capacity at the CVP or SWP pumping facilities and subject to other operational requirements. The current pumping window for transfers through Banks PP and Jones PP is July through September. Pumping within this window can be further reduced based on specific hydrologic conditions, biological conditions, or water quality issues. Reclamation cannot guarantee that a specific quantity of transfer capacity will be available.

Table 2-2. Potential Buyers

Export Service Area Region
San Luis & Delta Mendota Water Authority
Broadview Water District
Byron Bethany Irrigation District
Eagle Field Water District
Laguna Water District
Mercy Springs Water District
Oro Loma Water District
Pacheco Water District
Panoche Water District
San Luis Water District
Westlands Water District

2.2.3 Potential Water Transfer Methods

In 2013, Reclamation could approve transfers of Base Supply and/or Project Water made available through groundwater substitution which is further described below. No other types of water transfers are covered by the evaluation in this EA.

Reclamation approves transfers consistent with provisions of state law and/or the CVPIA that protect against injury to third parties as a result of water transfers. Several important CVPIA principles include requirements that the transfer will not violate the provisions of Federal or State law, will have no significant adverse effect on the ability to deliver CVP water, will be limited to water that would have been consumptively used or irretrievably lost to beneficial use, will have no significant long-term adverse impact on groundwater conditions, and will not adversely affect water supplies for fish and wildlife purposes. Reclamation will not approve any transfer of water for which these basic principles have not been adequately addressed.

Additional information about water rights protection and water transfers is located at http://www.waterboards.ca.gov/waterrights/water_issues/ programs/water_transfers/ in a State Water Resources Control Board (SWRCB) staff document titled "A Guide to Water Transfers" (SWRCB 1999).

2.2.3.1 Groundwater Substitution

Groundwater substitution is the proposed method to make water available for transfer. Groundwater substitution transfers occur when sellers forego diversion of their surface water supplies and pump an equivalent amount of groundwater as an alternative supply. For purposes of this EA, Reclamation assumes that stream flow losses during balanced conditions due to groundwater pumping for transfers are 12 percent of the amount pumped for transfer (see Section 3.2 for more information). The quantity of water available for transfer will be reduced by the estimated stream flow losses. Because the potential groundwater substitution transfers are primarily from agricultural users, the water from this acquisition method could be available during the irrigation season of

April through October. Sellers could make water available for transfer during only a part of this time by switching between surface water sources and groundwater pumping if there are issues related to water supply availability or conveyance capacity.

Reclamation and DWR would export transfer water only during the July through September period when capacity is determined to be available at the Jones PP or Banks PP. Project Water made available for transfer and pumped at the Banks PP could occur upon the SWRCB's approval of Joint Points of Diversion. In general, for water to be made available for transfer, Reclamation and DWR will have had to declare the Delta to be in a "balanced" water condition under the terms of the Coordinated Operating Agreement (COA). Reclamation and DWR will strive to facilitate the conveyance of additional transfer water through the export pumps during the summer months based on the availability of unused export capacity, but water made available for transfer can only be moved through the pumping facilities after the CVP and SWP contractors' water needs are met. The risk of unused capacity not being available is born by the transfer parties. Transfer water made available through groundwater substitution may provide up to approximately 37,715 acre feet, but the buyers would receive less because of conveyance losses.

An objective in planning a groundwater substitution transfer is to ensure that groundwater levels recover to their typical spring high levels under average hydrologic conditions and the recovery does not come at the expense of stream flow during balanced conditions. Because groundwater levels generally recover at the expense of stream flow, the wells used in a transfer should be selected such that the stream flow losses resulting from groundwater recharge peak during the wet season, when losses to stream flow should not affect other legal users of water. It is recognized that an increase in groundwater pumping will affect the rate of groundwater recharge during balanced conditions, which will affect stream flow.

2.3 Previous Environmental Documents

The 2010-2011 Water Transfer Program Environmental Assessment was completed by Reclamation in 2010 (2010-2011 WTP EA) (USBR 2010). The 2010-2011 WTP EA provided an assessment of potential impacts to Surface Water Resources, Groundwater Resources, Water Quality, Power Generation, Cultural Resources, Socioeconomics, Indian Trust Assets, Environmental Justice, Climate Change, Visual Resources, Growth Inducing Impacts, and Cumulative Effects associated with potential groundwater substitution water transfers as well as crop idling/crop shifting water transfers. This 2010-2011 WTP EA evaluated annual groundwater substitution transfers of up to 110,409 acre-feet that would originate in the Sacramento River area and the American River area. The 2010-2011 WTP EA also evaluated annual crop idling/crop shifting transfers of up to 109,469 acre-feet that would originate in the Sacramento River area.

On February 26, 2010, Reclamation signed a Finding of No Significant Impact (FONSI) that included Reclamation's findings in accordance with NEPA. The FONSI described all findings related to Surface Water Resources, Groundwater Resources, Water Quality, Power Generation, Cultural Resources, Socioeconomics, Indian Trust Assets, Environmental Justice, Climate Change, Visual Resources, Growth Inducing Impacts, and Cumulative Effects. Some of the main conclusions from the 2010 FONSI include:

- Acquisition of water via groundwater substitution or cropland idling would change the rate and timing of flows in the Sacramento and lower American Rivers. Flow and temperature requirements, including Water Right Orders 90-5 and 91-1 temperature control planning requirements for the Sacramento River, will continue to be met, which would minimize the magnitude of such changes. Although there would be a change in timing and rate of river flows, the annual supply of water to Project or non-Project users that are not participating in transfers would not decrease. Water transfers would be conveyed through existing facilities. Water transfers involving conveyance through the Delta would be implemented within the operational parameters of the Biological Opinions on the Continued Long-term Operations of the CVP/SWP and any other regulatory restrictions in place at the time of implementation of the water transfers. Water transfers would not result in significant impacts to fisheries.

- Groundwater substitution transfers could affect groundwater hydrology. The potential effects would be decline in groundwater levels, interaction with surface water, land subsidence, and water quality impacts. The well reviews and plans were required from sellers for review by Reclamation. Reclamation would not approve transfers without adequate mitigation and monitoring plans. The well review and required monitoring and mitigation plans described would minimize or avoid potential adverse effects to groundwater resources, to water quality and to wildlife habitat.

- Emissions from the operation of diesel engines could exceed emissions thresholds for each air district and de minimis thresholds for General Conformity. Emissions as a result of the Proposed Action were within thresholds for Glenn, Colusa, Sacramento, and Sutter counties. Minimization measures will reduce emissions in Yolo County to meet local thresholds. The emissions associated with the Proposed Action are also expected to be less than the General Conformity de minimis thresholds. Idling rice fields would reduce the use of farm equipment and associated pollutant emissions, resulting in a beneficial impact on air quality. The water transfers would not result in significant impacts to air quality.

The FONSI described the key mitigation and monitoring actions necessary to support Reclamation's decision. To address some of the most prevalent comments received during the comment period concerning potential impacts to groundwater resources, Reclamation included well reviews and monitoring and mitigation plans to be implemented under the Proposed Action to minimize potential effects to groundwater

resources. All plans were to be coordinated and implemented in conjunction with local ordinances, basin management objectives, and all other applicable regulations. The reviews and plans were to be required from sellers for review by Reclamation, and Reclamation would not approve transfers without adequate mitigation and monitoring plans. Reclamation found that the approval of proposed water transfers in support of the 2010-2011 Water Transfer Program was not a major Federal action that would significantly affect the human environment. Therefore, an environmental impact statement was not required. Ultimately, however, no transfer proposals were submitted to Reclamation for approval under the 2010-2011 Water Transfer Program Proposed Action.

As provided in 40 CFR 1502.21, Reclamation incorporates the 2010-2011 WTP EA by reference to the extent practicable. The 2010-2011 WTP EA can be found for review on Reclamation's website at the following address:
http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=13310
This 2013 EA will provide additional analysis of the surface water, groundwater, land subsidence, air quality and biological resources that might result from the Proposed Action of approving up to eight water transfer proposals.

2.4 Environmental Commitments

This section presents a summary of the Environmental Commitments included in the Proposed Action to reduce potential environmental impacts from water transfers in 2013. Appendix A provides a more detailed description of the environmental commitments of the project.

- Transfers will be made in accordance with all applicable sections of the California Water Code.
- As previously described in this section, transfers involving conveyance through the Delta will be implemented within the operational parameters of the Biological Opinions on Continued Long-term Operations of the CVP/SWP or any restrictions in place the time the transfer occurs (National Marine Fisheries Service 2009; U.S. Fish and Wildlife Service 2008), and all water right permit terms and conditions.
- Sellers will be required to maintain flows at the downstream end of their distribution system under the Proposed Action to minimize potential water supply effects to neighboring and downstream water users.
- Water transfers under the Proposed Action will be implemented in accordance with flow and temperature requirements on the Sacramento River.
- Well reviews and monitoring and mitigation plans will be implemented under the Proposed Action to minimize potential

effects of groundwater substitution. Well reviews, monitoring and mitigation plans will be coordinated and implemented in conjunction with local ordinances, basin management objectives, and all other applicable regulations. Reclamation and DWR have published draft technical information related to cropland idling/shifting and groundwater substitution transfers titled Draft Technical Information for Water Transfers in 2013 (Reclamation and DWR 2013). This information is available at http://www.water.ca.gov/drought/transfers/.

Carriage water will be used to maintain water quality standards in the Delta. Reclamation has incorporated this measure into the Proposed Action to continue with standard CVP and SWP operating procedures and to improve the water quality to users south and downstream of the Delta.

Section 3 Affected Environment and Environmental Consequences

This section identifies the potentially affected environmental resources and the environmental consequences that could result from the Proposed Action and the No Action Alternative.

3.1 Surface Water Resources

3.1.1 Affected Environment

The Proposed Action would involve potential water transfers from CVP contractors in the Sacramento River hydrologic region. Table 2-1 lists the participating CVP sellers, which are further described below.

Sacramento River: The Sacramento River flows south for 447 miles through the northern Central Valley of California, between the Pacific Coast Range and the Sierra Nevada. The chief tributaries to the Sacramento River are the Pit, Feather, McCloud and American Rivers.

Anderson Cottonwood Irrigation District: Anderson-Cottonwood Irrigation District (ACID) was formed in 1914 and holds water rights under pre1914 postings to divert water from the natural flow of the Sacramento River and its tributaries ACID surface water supply provides for a maximum total of 125,000 acre-feet per year during the period of April 1 through October 31 of which 121,000 acre-feet is considered base supply and 4000 acre-feet is CVP or project water. During dry years this supply may be reduced by up to 25%. (ACID, 2013)

ACID is a settlement contractor and is organized under Division 11 of the California Water Code. ACID's diversion from the Sacramento River in Redding California is primarily gravity fed from the river by use of a seasonal ACID Diversion Dam. ACID also operates a pump station on the river approximately four miles downstream to supply the Churn Creek Lateral. The ACID distribution system includes approximately 35 miles of main canal about 98 percent of which is unlined. The main canal flows through six inverted siphons to cross streams, such as Clear Creek, and three flume sections across smaller streams and lowland areas. When flow exceeds the canal capacity ACID water overflows into several wasteways along the canal route. (ACID, 2013)

Conaway Preservation Group: The Conaway Preservation Group (CPG), a private farming company, is the owner of the Conaway Ranch. Conaway Ranch is in Reclamation District (RD) 2035 and constitutes over 80 percent of the 20,445-acre service area of RD 2035. CPG is generally west of the Sacramento River in the

Sacramento Valley in eastern Yolo County. CPG's Settlement Contract water is a major contributor to the Conaway Ranch water supply during its annual operational term of April 1 through October 31. Diversions under water right permits from Willow Slough and Cache Creek, and pumping of groundwater from 23 wells supplements the contract water supply. After the irrigation season, CPG's other water sources, including rights from the Sacramento River, Willow Slough, and Cache Creek, are used to meet Conaway Ranch's water needs. Pursuant to Section 5 of the Conaway Ranch Settlement Agreement with Yolo County, written notification to Yolo County is required for short-term water transfers from Conaway Preservation Group outside of Yolo County.

Eastside Mutual Water Company: The Eastside Mutual Water Company (Eastside MWC) holds a Sacramento River Settlement Contract with Reclamation for diversions of up to 2,804 acre feet of surface water from the Sacramento River during April through October. The point of diversion for Eastside MWC is located approximately 3.5 miles north of Colusa at River Mile 95.25L.

Glenn-Colusa Irrigation District: Glenn-Colusa Irrigation District (ID) has been diverting Sacramento River water since 1883 and was one of the first large-scale water users within the Sacramento Valley. Glenn-Colusa ID has a Settlement Contract with Reclamation. The district diverts up to 720,000 acre feet annually of Base Supply and 105,000 acre feet annually of Project Water, as defined under the Settlement Contract. Glenn-Colusa ID conveys Sacramento River water through irrigation canals to approximately 141,000 acres. In addition, Glenn-Colusa ID conveys water to 20,000 acres of wildlife habitat comprising the Sacramento, Delevan, and Colusa National Wildlife Refuges. Glenn-Colusa ID's Hamilton City pump station is approximately 100 miles north of the City of Sacramento. The pump station is on an oxbow off the main stem of the Sacramento River. Glenn-Colusa ID diverts a maximum of 3,000 cubic feet per second (cfs) from the Sacramento River, with the peak demand occurring in the spring (Glenn-Colusa ID 2009).

Pelger Mutual Water Company: Pelger MWC diverts surface water from the Sacramento River near Robbins. This entity has a Sacramento River Settlement Contract with Reclamation for 8,860 acre feet. Pelger MWC recycles drain water back to irrigation ditches. During dry years, Pelger MWC's water supply is supplemented by groundwater from private landowners' wells.

Pleasant Grove-Verona Mutual Water Company: Pleasant Grove-Verona MWC provides irrigation water for 7,330 acres of farmland through a contract with Reclamation for a total of 26,290 acre feet. Shareholders divert surface water from the Sacramento River and the Natomas Cross Canal pursuant to the Settlement Contract with Reclamation.

Reclamation District 1004: Reclamation District 1004 (RD 1004) is between the Sacramento River and Butte Creek, between Princeton to the north and Colusa to the south. RD 1004 has a Sacramento River Settlement Contract with Reclamation. Surface water sources available to RD 1004 include the Sacramento River, Butte Creek, and

extensive recirculation of tail water. RD 1004's main pumping plant on the Sacramento River is near Princeton. RD 1004's water rights on Butte Creek allow diversions at several locations between White Mallard Dam and Butte Slough.

Sacramento River Ranch: Sacramento River Ranch is northwest of Sacramento in an unincorporated area of Yolo County and comprises 3,985 acres. Sacramento River Ranch's source of surface water is the Sacramento River and Knights Landing Ridge Cut.

3.1.1.2 Conveyance Facilities

In California, lakes, rivers, and reservoirs receive their water from precipitation and runoff, which is available during the rainy season (typically November through April). Water users need water year-round, with increased water needs during the summer because of increased temperatures and agricultural uses. This imbalance is exacerbated by the differences in precipitation and demand between northern California and southern California. More than 70 percent of runoff originates in northern California, but more than 75 percent of urban and agricultural demand is south of Sacramento (DWR 1998). Due to the uneven distribution of the location of water supply and water demand, aqueducts and canals are used to transport water to users. The amount of water that can be transported south is dependent on annual hydrology, Delta pump capacity and regulatory restrictions.

Direct flows to the Delta drain over 40 percent of the State of California. The Sacramento River contributes roughly 75 to 80 percent of the Delta inflow in most years, while the San Joaquin River contributes about 10 to 15 percent. Precipitation also contributes an annual average inflow of 990,000 acre feet, approximately 5 percent of the annual inflow. The rivers flow through the Delta and into Suisun Bay. From Suisun Bay, water flows through the Carquinez Strait into San Pablo Bay, then south into San Francisco Bay, and then out to sea through the Golden Gate. In general, water that is not consumed or stored in northern California or pumped through the Delta to central and southern California flows out to the Bay and into the ocean.

Most water transfers originating upstream from the Delta and going to service areas in the San Francisco Bay Area, San Joaquin Valley, and Southern California require moving water through the Delta. Water conveyance through the Delta is a significant constraint. Constraints to conveying water through the Delta range from physical limitations to regulatory requirements. A series of regulations and agreements with the SWRCB, U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), California Department of Fish and Wildlife (CDFW), and U.S. Army Corps of Engineers (Corps) govern current SWP and CVP operations in the Delta. These regulations and agreements limit the schedule and volume of water that can be exported from the Delta based on Delta hydrodynamics, water quality, and potential impacts on fisheries. Reclamation and DWR will ensure careful coordination of transfers with existing CVP and SWP operations in meeting water rights, water quality, and fishery protection measures when approving proposed water transfers.

CVP/SWP facilities that could potentially be utilized under the Proposed Action include Shasta Reservoir, and SWP and CVP pumping and conveyance facilities, which would be used for conveying transfer water. The SWP operates its Banks PP in the southern Delta to lift water into the California Aqueduct for delivery to SWP customers in the south San Francisco Bay Area, San Luis Obispo and Santa Barbara Counties, the San Joaquin Valley, and southern California; and the Barker Slough PP into the North Bay Aqueduct for delivery to SWP customers in Solano and Napa Counties. The CVP operates the Jones PP to lift water from the Southern Delta into the Delta-Mendota Canal to service CVP contractors in the San Joaquin Valley, San Benito County, Santa Clara County, and the Tulare Basin.

3.1.1.3 Receiving Areas

Under the Proposed Action, water would be transferred to entities as identified in Table 2-2. These entities receive water from multiple sources, including the SWP, the CVP, local surface water sources, and groundwater.

San Luis Delta Mendota Water Authority

SLDMWA consists of 29 member agencies representing both federal and exchange water service contractors. Figure 3-1 shows the SLDMWA service area and identifies member agencies included in Table 2-2. Not all of SLDMWA member agencies are participating in this EA.

SLDMWA operates and maintains, under contract with Reclamation, certain portions of the Delta Division, San Luis Unit, and West San Joaquin Divisions of the CVP, including the Jones PP, O'Neill Pumping and Generating Plant, San Luis Drain, Delta Cross Channel, Tracy Fish Facility, Mendota Pool, and Kesterson Reservoir. One function SLDMWA serves is to help negotiate water transfers with and on behalf of its member agencies when CVP allocations have been reduced and there is a need for additional water.

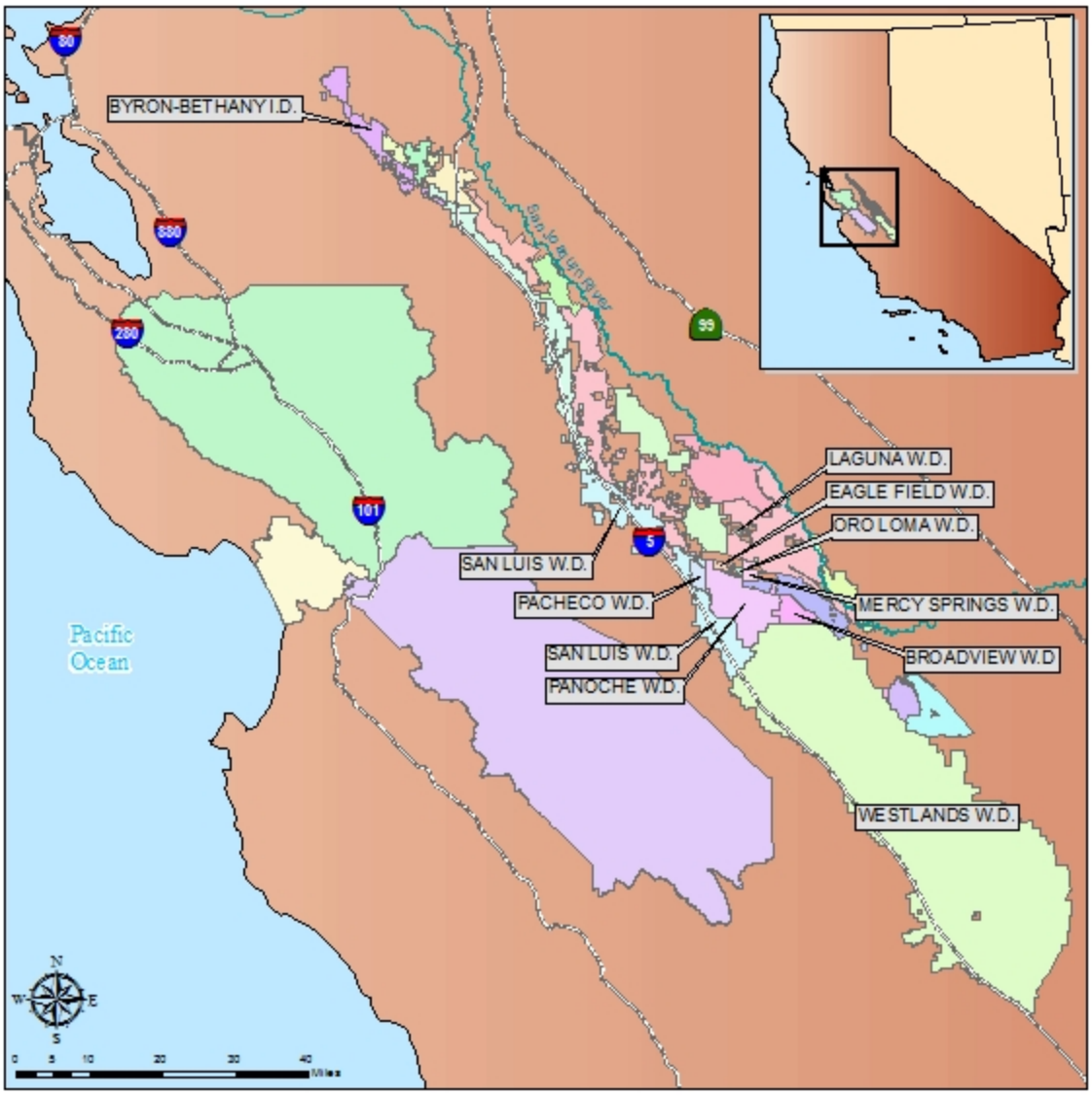

Figure 3-1. SLDWMA Service Area and Participating Member Agencies

The SLDMWA service area consists primarily of agricultural lands on the west side of the San Joaquin Valley. Agricultural water use occurs on approximately 850,000 irrigated acres. Water for habitat management occurs on approximately 120,000 acres of refuge lands, which receive approximately 243,845 to 300,000 acre-feet of water per year. Relative to agricultural uses, there is limited municipal and industrial (M&I) water use in the San Joaquin Valley area. The majority of the M&I use in the SLDMWA service area occurs in the San Felipe Division, primarily the Santa Clara Valley Water District. From 2001 to 2010, average annual M&I water use in the San Joaquin Valley area was about 22,000 acre-feet and approximately 86,000 acre-feet in the San Felipe Division.

3.1.2 Environmental Consequences

3.1.2.1 No Action

Under the No Action Alternative, other water transfers outside of the Proposed Action would likely occur and buyers would implement other projects and programs to increase water supplies, including conservation, recycled water, and groundwater use. However, during a dry water year like 2013, potential buyers could experience water shortages that would affect their ability to meet customer demands.

3.1.2.2 Proposed Action

Acquisition Areas

Acquisition of water via groundwater substitution would change the rate and timing of flows in the Sacramento River compared to the No Action Alternative. The rate and timing of changes to flows in the Sacramento River would depend on the amount of water potential sellers in this region will make available and the scheduled release of that water. However, all flow and temperature requirements, including Water Right Orders 90-5 and 91-1 temperature control planning requirements for the Sacramento River, would continue to be met under the Proposed Action. Buyers will require water to be moved through the Delta and pumped at Jones PP or Banks PP, which do not have capacity for transfer water between April and June. Depending on hydrologic conditions, Reclamation could attempt to retain surface water made available through groundwater substitution in Shasta Reservoir until Delta export pumps have the capacity to convey water south. Reclamation could only store water if the Delta is in a “balanced” water condition under the terms of the COA.

During July through September, water from Shasta Reservoir would be released into the Sacramento River; and those agencies that transferred water would divert less water from the river than they otherwise would under the No Action Alternative. The Sacramento River would therefore have increased flows downstream from those historic points of diversion; upstream from those points of diversion, Sacramento River flows would be the same as the No Action Alternative. Although there would be a change in timing and rate of river flows, the annual supply of water to users that are not participating in transfers would not decrease due to the Proposed Action.

Receiving Area

The Proposed Action would likely result in increased water supplies in 2013 in the buyers' service area. Under the Proposed Action, the additional water supply would benefit water users who receive the transferred water. For transfers to agricultural users, water would only be delivered to lands that were previously irrigated within the past three years; therefore, the transfer water would help provide supplemental water to lands that are experiencing substantial shortages. Water transfers to M&I users would also help relieve shortages. Any water transferred to buyers would need to be used for beneficial uses. The increased water supply would be a beneficial effect.

3.2 Groundwater Resources

3.2.1 Affected Environment

3.2.1.1 Redding Groundwater Basin

Some of the water made available for transfer through groundwater substitution transfers would originate from the Redding Groundwater Basin in Shasta county. The relevant depositional history of the basin is the simultaneous deposition of two formations: the Tehama Formation from the Coast Range to the west and northwest and the Tuscan Formation from the Cascade Range to the east. These formations are permeable and productive and are the principal freshwater-bearing units in the basin, reaching up to 2,000 feet in thickness near the confluence of Cottonwood Creek and the Sacramento River.

Acquisition Area: The following agency is listed in Section 2.2.1 as a potential seller of water made available via groundwater substitution.

Anderson Cottonwood Irrigation District: The proposed ACID transfer would extract up to 2,400 acre-feet of groundwater from production wells within ACID. These wells have production capacities ranging from 1000 gallons per minute (gpm) to 5600 gpm. ACID has 13 groundwater monitoring wells and uses these wells to monitor groundwater levels in the vicinity of the production wells to ensure that no substantial depletion of groundwater supplies occurs as a result of groundwater production. ACID could transfer up to 2,610 acre feet through groundwater substitution. (ACID, 2013)

3.2.1.2 Sacramento Valley Groundwater Basin

Most of the water made available for transfer through groundwater substitution transfers would originate from the Sacramento Valley Groundwater Basin in Glenn, Colusa, Sutter, Yolo and Sacramento counties. The entire groundwater basin is within Tehama, Glenn, Butte, Yuba, Colusa, Placer and Yolo Counties. The basin is bordered by the Red Bluff Arch to the north (separating the basin from the Redding Basin), the Coast Ranges to the west, the Sierra Nevada to the east, and the Delta to the south.

Acquisition Areas: The following agencies are listed in Section 2.2.1 as potential sellers of water made available via groundwater substitution.

Conaway Preservation Group: CPG purchased the 17,300-acre Conaway Ranch in 2004. The Ranch has considerable groundwater resources, and currently holds rights to more than 50,000 acre-feet annually of water from the Sacramento River. Farming activities on the ranch include mainly rice, but alfalfa, wheat, tomatoes, and safflower are also grown. This agency could transfer 8,000 acre feet through groundwater substitution. Yolo County Export Ordinance No. 1617 applies to CPG.

Eastside Mutual Water Company: Eastside MWC diverts surface water supplies from the Sacramento River and could transfer up to 1,100 acre feet through groundwater substitution.
Glenn-Colusa Irrigation District: Glenn-Colusa ID diverts surface water supplies from the Sacramento River and could transfer up to 5,000 acre feet through groundwater substitution.

Pelger Mutual Water Company: Pelger MWC receives surface water supplies from the Sacramento River and could transfer up to 1,730 acre feet through groundwater substitution. Pelger MWC's water supply for irrigation may be supplemented by groundwater from private landowners' wells.

Pleasant Grove-Verona Mutual Water Company: Pleasant Grove-Verona MWC holds a Settlement Contract with Reclamation on behalf of its shareholders for diversions from the Sacramento River and the Natomas Cross Canal; and could transfer up to 8,100 acre feet through groundwater substitution. In the Pleasant Grove-Verona MWC area, groundwater is usually only used by individual shareholders to supplement surface water supply for short periods of time, typically during peak demand periods. Exceptions to this may occur in cases of reduced surface water availability. During these periods, shareholders may pump additional groundwater to make up for the reduced surface water availability. All groundwater wells within Pleasant Grove-Verona MWC are owned and operated by the individual shareholders.

Reclamation District 1004: RD 1004 receives surface water from the Sacramento River and Butte Creek. RD 1004 could transfer up to 7,175 acre feet through groundwater substitution. Groundwater for the Proposed Action would be pumped from privately owned wells within RD 1004. RD 1004 maintains no records of pumping from the approximately 50 privately owned wells within the District. Colusa County Ordinance No. 615 is applicable to RD 1004.

Sacramento River Ranch: Sacramento River Ranch's service area comprises approximately 3,985 acres in Yolo County and receives surface water from the Sacramento River to irrigate permanent and row crops, such as alfalfa, orchard grass, wheat, rice, tomatoes, corn, oats, and safflower. Sacramento River Ranch could transfer up to 4,000 acre feet through groundwater substitution. Sacramento River Ranch would

pump groundwater for irrigation instead of diverting surface water, under its appropriative water rights licenses (1200, 9994, 9995, 9996, 9997) and Sacramento River Settlement Contract (Contract No. 14-06-200-2149A-R-1 with Reclamation, dated April 5, 2005). This contract approved the diversion and use of 4,000 acre-feet per year (1,300 acre-feet from July through September) from the Sacramento River. Sacramento River Ranch would likely use the same wells as used in past transfers (Wells GW-1 123448, GW-9 123447, and GW-10 33839). These wells are irrigation wells that are at least 150 feet deep and have pumping capacities of 3,500, 2,500, and 3,000 gpm, respectively.

3.2.2 Environmental Consequences

No Action

Under the No Action Alternative, Reclamation would not approve the proposed water transfers to buyers in 2013. However, other transfers may occur under the No Action Alternative. Some users in the export service area will face potential shortages in the absence of water transfers. These users will take alternative water supply actions in response to shortages, including increased groundwater pumping, cropland idling, reduction of landscape irrigation, or water rationing. These actions, particularly increased groundwater pumping, could cause groundwater levels to decline in the areas of the Central Valley and southern California served by the CVP and SWP.

Proposed Action

Groundwater Levels

Groundwater drawdown impacts associated with groundwater pumping that would occur with the Proposed Action were evaluated in the 2010-2011 WTP EA (USBR 2010, see Section 3.2.2.2). The 2010-2011 WTP EA evaluated the environmental impacts of implementing groundwater substitution transfers that are very similar to the Proposed Action, but included a substantially larger volume of substitution pumping. The 2010-2011 WTP EA evaluated groundwater substitution pumping of up to 110,409 acre-feet per year. The groundwater analysis included in the 2010-2011 WTP EA concluded that during normal and wet years, groundwater levels tend to recover to pre-irrigation levels. During dry years, however, groundwater use is typically increased and percolation from natural runoff is often lower than normal, causing groundwater levels to decline more than in normal and wet years. Furthermore, when dry years occur consecutively, groundwater levels are likely to decline throughout the dry period and then only recover after several normal or wet years. Historical water-level data illustrates this trend: groundwater levels tend to recover during normal and wet years, but the likelihood of full recovery decreases during dry years. The analysis of impacts to groundwater levels contained in the 2010-2011 WTP EA (Section 3.2.2.2) is incorporated by reference into this analysis.

Since ACID's proposed transfer was not included in the 2010-2011 WTP EA, the following information is provided: ACID has tested operation of these wells in the past

at similar production rates and has observed no substantial impacts on groundwater levels or groundwater supplies (ACID, 2013). ACID does not anticipate any adverse impacts resulting from depletion of groundwater supplies or interference with groundwater recharge resulting in a net deficit in aquifer volume or lowering of local groundwater table level. ACID will collect data from the monitoring welts during the production period and will cease operation of the production wells if monitoring data indicate any adverse depletion of groundwater levels. If any party claims an impact related to or caused by ACID's project, ACID will promptly investigate the claim and determine if the alleged impact is caused or related to ACID's project. If ACID determines that its project is causing impacts to third parties, ACID will immediately cease utilizing the well or wells causing the impact.

Land Subsidence: Inelastic land subsidence can occur where groundwater extraction causes consolidation of clay beds within an aquifer system. Although land subsidence may result in a substantial decline in ground surface elevation over a long period of time, it generally occurs very gradually and over a large area of the ground surface. As a consequence, substantial change to the appearance of the landscape may not result. It can, however, cause problems with flood control and water distribution systems. Subsidence can reduce the freeboard of levees, allowing water to over top them more easily. It also can change the grade, or even the direction of flow, in canals. In addition, subsidence may damage wells by collapsing well casings.

Groundwater extraction for groundwater substitution transfers would decrease groundwater levels, increasing the potential for subsidence. The potential for subsidence is small if the groundwater substitution pumping is small compared to overall pumping in a region. The minimization measures in Section 3.2.2.3 require all groundwater substitution transfers to monitor for subsidence or provide a credible analysis why it would be unlikely. The process of real-time subsidence monitoring will measure any changes in the ground surface elevation, whether subsidence is short-term or long-term.

Groundwater Quality: The changes in groundwater flow patterns (e.g., direction, gradient) due to increased groundwater substitution pumping may result in changes in groundwater quality from the migration of reduced quality water. Groundwater extraction under the Proposed Action would be limited to withdrawals during the irrigation season of the 2013 water years. Extraction near areas of reduced groundwater quality concern would be avoided through the review of well data during the transfer approval process. Consequently, adverse effects from the migration of reduced groundwater quality would be anticipated to be minimal.

If monitoring indicated that adverse effects related to the degradation of groundwater quality from the transfer occurred, willing sellers in the region will be responsible for monitoring this degradation and mitigating any adverse effects in accordance with all applicable regulations.

Receiving Areas

Water transfers could increase groundwater levels in the buyer's service areas. Increased surface water supplies from water transfers could decrease groundwater pumping in the buyer's service area. Under the No Action Alternative, some district and water users would pump groundwater to meet water demands. The Proposed Action could allow users to reduce groundwater production and instead use surface water provided by the transfer. Groundwater levels would stop declining or decline less relative to the No Action Alternative. This would be a benefit to groundwater resources in the buyers' service areas.

3.2.2.3 Minimization Measures

The Draft Technical Information Papers for Water Transfers in 2013 (Reclamation and DWR 2013) provides guidance for the development of proposals for groundwater substitution water transfers. The objectives of this process are: to mitigate adverse environmental effects that occur; to minimize potential effects to other legal users of water; to provide a process for review and response to reported third party effects; and to assure that a local mitigation strategy is in place prior to the groundwater transfer. The seller will be responsible for assessing and minimizing or avoiding adverse effects resulting from the transfer within the source area of the transfer.

Each district will be required to confirm that the proposed groundwater pumping will be compatible with state and local regulations and groundwater management plans. Reclamation's transfer approval process and groundwater minimization measures set forth a framework that is designed to avoid and minimize adverse groundwater effects. Reclamation will verify that sellers adopt these minimization measures to minimize the potential for adverse effects related to groundwater extraction.

Well Review Process: Potential sellers will be required to submit well data for Reclamation and, where appropriate, DWR review, as part of the transfer approval process. Required information is detailed in the Draft Technical Information for Preparing Water Transfer Proposals in 2013 for groundwater substitution transfers.

For purposes of this EA, Reclamation assumes that stream flow losses due to groundwater pumping to make water available for transfer are 12 percent of the amount pumped. Sellers may submit modeling information from approved models to demonstrate that this percentage should be different. Reclamation continues to require well location and construction information to ensure that the criteria in the Draft Technical Information for Preparing Water Transfer Proposals in 2013 are met.

Monitoring Plan: Potential sellers will be required to complete and implement a monitoring plan that must, at a minimum, include the following components:

- *Monitoring Well Network*. The monitoring program will incorporate a sufficient number of monitoring wells to accurately

characterize groundwater levels and response in the area before, during, and after transfer pumping takes place.

- *Flow Measurements*. All wells pumping to replace surface water designated for transfer shall be configured with a permanent instantaneous and totalizing flow meter (capable of measuring well discharge rates and volumes). Flow meter readings will be recorded upon initiation of pumping and at designated times, but no less than monthly, during the duration of the transfer.

- *Groundwater Levels*. The selling agency will collect measurements of groundwater levels in both production and monitoring wells. The seller will measure groundwater levels, no less than monthly, before, during and after the transfer. Post-transfer monitoring will continue until groundwater levels recover to pre-pumping levels or groundwater levels recover to seasonal highs in the spring of the year following the transfer.

- *Groundwater Quality*. For municipal sellers, the comprehensive water quality testing requirements of Title 22 should be sufficient for the water transfer monitoring program. Agricultural sellers shall measure specific conductance in samples from each participating production well. Samples shall be collected when the seller first initiates pumping, monthly during the transfer period, and at the termination of transfer pumping.

- *Land Subsidence*. Reclamation will work with the seller to develop the specifics of a mutually agreed upon subsidence monitoring effort. The extent of required land subsidence monitoring will depend on the expected susceptibility of the area to land subsidence. Areas with documented land subsidence will require more extensive monitoring than other areas.

- *Coordination of Monitoring*. The monitoring program will include a plan to coordinate the collection and organization of monitoring data, and communication with the well operators and other decision makers.

- *Monitoring Reports*. The proposed monitoring program will describe the method of reporting monitoring data. At a minimum, sellers will provide data summary tables to Reclamation, both during and after program pumping. Post-program reporting will continue until water levels recover to pre-pumping levels or water levels recover to seasonal highs in the spring of the year following the transfer. Sellers will provide a

final summary report to Reclamation evaluating the effects of the water transfer.

Mitigation Plan Potential sellers will also be required to complete and implement a mitigation plan. If the seller's monitoring efforts indicate that the operation of wells for groundwater substitution pumping are causing substantial adverse impacts, the seller will be responsible for mitigating any significant environmental impacts that occur. Mitigation actions could include:

- Curtailment of pumping until natural recharge corrects the issue.
- Lowering of pumping bowls in third party wells affected by transfer pumping.
- Reimbursement for significant increases in pumping costs due to the additional groundwater pumping to support the transfer.
- Other actions as appropriate.

To ensure that mitigation programs will be tailored to local conditions, the mitigation plan must include the following elements:

1. A procedure for the seller to receive reports of purported environmental or third party effects;
2. A procedure for investigating any reported effect;
3. Development of mitigation options, in cooperation with the affected third parties, for legitimate effects; and
4. Assurances that adequate financial resources are available to cover reasonably anticipated mitigation needs.

3.3 Air Quality

3.3.1 Affected Environment

Groundwater substitution would require the use of pumps to retrieve groundwater in Glenn, Colusa, Yolo, and Sutter counties by the SRS contractors. In general, these counties are within the Sacramento Valley Air Basin (SVAB), and depending on the county, are regulated by an air pollution control district or air quality management district. In the SVAB, ozone (O_3), respirable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$) are the main pollutants of concern, which would be emitted from groundwater pumps as a result of the Proposed Action. Refer to Section 3.9.1 of the 2010-2011 WTP EA for more discussions and tables regarding pollutants of concern and the attainment status of each county.

According to a 2003 U.S. Department of Agriculture survey (DOA 2003), there are 83,216 electric or fuel-powered irrigation pumps in California, of which 12,535 (or approximately 14.1 percent) are powered with diesel engines.

3.3.2 Environmental Consequences

No Action

Under the No Action Alternative, some agricultural and urban water users will face shortages in the absence of water transfers. These users may take alternative water supply actions in response to shortages, including increased groundwater pumping, cropland idling, reduction of landscape irrigation, or water rationing. These subsequent actions do not require Reclamation approval and are outside the scope of this EA analysis.

Proposed Action

Under the Proposed Action, diesel-fueled pump emissions would vary from day to day, depending on the timing and intensity. Exhaust from diesel-fueled pumps emit particulate matter (both PM_{10} and $PM_{2.5}$), non-methane hydrocarbons and NO_x (as O_3 precursors), and carbon monoxide (CO) – these are the pollutants which will be used to discuss air quality impacts to the SVAB. Electric-powered groundwater pumps do not have emissions. The proposed groundwater substitution of up to 2,400 acre-feet by ACID would have no effect to the SVAB air quality since all of the pumps they would use are electric-powered. While it is unknown exactly how many of the groundwater pumps that could be used by the other SRS contractors are powered by diesel or electricity, a conservative assumption can be applied from the 2003 U.S. Department of Agriculture survey to estimate that approximately 15 percent of the groundwater pumps being used as part of this Proposed Action are diesel-operated. In addition, the up to 37,715 acre-feet of groundwater substitution that could be pumped from the Proposed Action is roughly 60 percent less than what was previously proposed in the 2010-2011 WTP EA. As a result, the emissions shown in Tables 3.9-4 and 3.9-5 from the 2010-2011 WTP EA can be used to determine if estimated emissions from the Proposed Action would violate any Federal, State, or local thresholds.

If 60 percent of the emissions from Tables 3.9-4 and 3.9-5 were subtracted (due to 60 percent less groundwater being pumped), and another 85 percent of emissions subtracted (due to the estimate that roughly 15 percent of the pumps being used are diesel-operated and the rest are electric pumps, which have no emissions), then the estimated emissions for the Proposed Action would not violate any annual or daily federal, state, and local threshold for PM, O_3, and CO.

3.4 Biological Resources

3.4.1 Affected Environment

Discussions from Sections 3.6.1, 3.7.1, 3.8.1, and Appendices B and C from the 2010-2011 WTP EA were reviewed, determined to still adequately describe the affected environment for biological resources, and are incorporated by reference.

3.4.2 Environmental Consequences

No Action

Groundwater substitution and the conveyance of transferred surface water from north to south of the Delta would not occur. There will be no effect to the biological resources described in the affected environment.

Proposed Action

The conveyance of surface water down the Sacramento River and through the Delta system would not result in additional adverse effects to listed aquatic species or critical habitat, or increase the incidental take authorized, beyond what was already evaluated in the 2008 U.S. Fish and Wildlife Service and 2009 National Marine Fisheries Service biological opinions on the Continued Long-term Operations of the CVP/SWP (USFWS 2008, NMFS 2009). Refer to Section 2.4 of this EA for environmental commitments that will be implemented as part of the Proposed Action.

The Proposed Action involves the transfers of up to 37,715 acre-feet of water that would be used mostly by agricultural districts. The transferred water is meant to supplement, for 2013, water that the potential buyers are currently short, due to dry hydrological conditions limiting their CVP contractual amounts to currently 20 percent for south of Delta CVP contractors. The Proposed Action is temporary and would only provide supplemental surface water to existing agriculture that would result in no land conversion. No native lands, or those that have been untilled for three or more years would receive water under these transfers. When added to each buyer's CVP diversion for 2013, the supplemental water from the Proposed Action would not exceed each of the buyers' respective CVP contractual limits. Similar to the discussion above for listed aquatic species, the Proposed Action would not result in additional adverse effects to listed terrestrial species or critical habitat, beyond what was already evaluated in formal and informal consultations with the USFWS and NMFS for the buyers' respective CVP interim renewal contracts or long-term contracts (USFWS 2013, USFWS 2012, USFWS 2005, NMFS 2013).

3.5 Potential Cumulative Impacts

3.5.1 Projects in the Cumulative Impacts Analysis

The cumulative analysis considers other potential water transfers that could occur in the 2013 transfer season, including non-CVP water transfers and other existing water transfer programs. Table 3.5 lists non-CVP water agencies who have indicated interest in providing water for transfer in 2013. The cumulative total amount potentially transferred from all sources would be up to 190,906 acre feet. As previously described for potential SRS Contract sellers, the numbers presented in Table 3.5 are estimates and do not necessarily reflect the amount of water that would be available. These estimates reflect the potential upper limit of available water in order to include the maximum extent of potential transfers in the environmental analysis.

Reservoir re-operation is an available transfer method that is not proposed for SRS Contract sellers in 2013, but may be used by other non-CVP Contractor sellers. Under this transfer method, sellers would sell water available from local storage reservoirs. Programs that allow stored reservoir transfers typically require sellers to demonstrate that stored water released for transfer would be in addition to the quantity of water normally released under historical and projected reservoir operations.

As previously mentioned, other transfers may occur in 2013, including water transferred under the Lower Yuba River Accord. As of April 2013, DWR estimates that the Yuba Accord quantities for 2013 include: surface releases, beginning mid-April, are to be about 100,000 acre-feet through September 30, about 55,000 acre-feet before July 1, and 45,000 acre-feet in the July-September transfer window. The total Yuba County Water Agency member unit groundwater substitutions are estimated at 72,000 acre-feet.

Conservation is another potential water transfer method included in the cumulative analysis. Sellers would reduce consumptive water use and sell conserved water to buyers. For conservation to be approved, sellers must provide evidence of a measurable quantity of consumptive use savings. The Browns Valley ID transfer via conservation has been documented in the Analysis of Water Conserved under the Upper Main Water Conservation Project (2002) and was approved in past transfer programs in 2004 and 2007 through 2011.

Local projects involving groundwater may be implemented, such as the Stony Creek Fan Aquifer Performance Testing Plan and further investigations of the Lower Tuscan Aquifer. It is anticipated that groundwater use may increase in 2013, given the current hydrologic forecast and anticipated shortages in surface water supplies.

Cropland idling actions would also likely occur as part of routine crop rotation practices and in response to hydrologic conditions. Farmers may also continue to use groundwater to supplement surface water supplies.

Table 3.5 Potential Non-CVP Contractor Sellers (Upper Limits)

Acre feet			
Water Agency (County)	**Groundwater Substitution**	**Stored Reservoir Water**	**Other**
Sacramento River Area of Analysis			
Tule Basin Farms (Sutter)	3,520		
Sac River Area Totals	**3,520**		
Feather River Area of Analysis			
Butte Water District	5,350		
Garden Highway MWC (Sutter)	5,000		
Sutter Extension Water District	3,136		
Feather River Area Totals	**13,486**		
American River Area of Analysis			
City of Sacramento (Sacramento) Sacramento Suburban Water District (Sacramento)	3,800		
Placer County Water Agency (Placer)		20,000	
American River Area Totals	**3,800**	**20,000**	
Yuba River Area of Analysis			
Browns Valley ID (Yuba)			3,100 conserved water
Yuba County Water Agency Member Units	72,000	45,000	
Yuba River Area Totals	**72,000**	**45,000**	**3,100**
Water from the San Joaquin River Region			
Merced Irrigation District (Merced)		30,000	
San Joaquin River Area Totals		**30,000**	
Totals	**92,806**	**95,000**	**3,100**

3.5.2 Environmental Consequences

The potential cumulative impacts associated with groundwater pumping that could occur with the Proposed Action were evaluated in the 2010-2011 WTP EA (USBR 2010, see Sections 3.18.2 – 3.18.17). The 2010-2011 WTP EA evaluated the potential impacts of implementing groundwater substitution transfers that are very similar to the Proposed Action, but included a substantially larger volume of substitution pumping. The 2010-2011 WTP EA evaluated groundwater substitution pumping of up to 110,409 acre-feet per year. The cumulative impacts analysis included in the 2010-2011 WTP EA concluded that with the required groundwater mitigation and monitoring for transfer approval, the Proposed Action would not contribute to cumulative impacts to water supply, surface water, groundwater, water quality and other key resources. The analysis of cumulative impacts contained in the 2010-2011 WTP EA (Section 3.18) are incorporated by reference into this analysis to the extent practicable.

Section 4 Consultation and Coordination

4.1 2010-2011 WTP EA Stakeholder Involvement and Public Review

4.1.1 2010 Stakeholder Involvement

DWR and Reclamation held "roundtable discussion" meetings for all buyers and sellers interested in 2010 water transfers. The meetings were held on July 2, 2009. Discussions involved review of the 2009 Drought Water Bank and planning for water transfers in 2010 and 2011.

DWR and Reclamation also developed "Issue Papers" for cropland idling and groundwater substitution transfers. The issue papers discussed various challenges and improvements to implementing cropland idling and groundwater substitution transfers and proposed temporary solutions for the 2010-2011 Water Transfer Program. The issue papers were released for public review and comment. DWR and Reclamation held a meeting on October 9, 2009 to receive public comment on the issue papers. Written comments were also accepted. DWR and Reclamation incorporated comments into the Draft Technical Information for Water Transfers in 2010, which was released to the public on November 6, 2009. The document can be found on DWR's website at http://www.water.ca.gov/drought/transfers/#.

4.1.2 2010 Public Review

The 2010-2011 Draft WTP EA and Finding of No Significant Impact (FONSI) were released for a 15-day public review period beginning January 5, 2010 and ending January 19, 2010. The documents were posted on Reclamation's website. A press release was issued on January 4, 2010 by the Bureau of Reclamation's Mid-Pacific Regional Public

Affairs Office. Reclamation received comments on the Draft EA. The Final EA reflects edits based on comments received. Appendix D includes responses to comments and copies of the comment letters are in Appendix E (USBR, 2010).

Table 4-1 Commenters and associated agencies or groups that submitted comments on the 2010-2011 Water Transfer Program Draft EA

Table 4-1. List of Commenters

Commenter	Agency/Group
Erick Johnson	Not Available
Barbara Vlamis, Bill Jennings, and Carolee Krieger	California Water Impact Network, California Sportfishing Protection Alliance, Center for Biological Diversity, and AquAlliance (Coalition)
Carol Perkins	Butte Environmental Council
Darren Cordova	MBK Engineers
Theodore A. Chester	Smiland & Chester

The public review comments received in 2010 addressed a wide range of topics and concerns. The comments raised questions, concerns and clarifications on over one hundred different items, including but not limited to the following:

- the transfer period,
- the adequacy of meeting NEPA requirements,
- the need to prepare an EIS,
- California Environmental Quality Act compliance,
- the need for the Project,
- an assertion that the proposed Project will have significant effects on the environment both standing alone and when reviewed in conjunction with the multitude of other plans and programs (including the non-CVP water that is mentioned in the EA cumulative impacts section) that incorporate and are dependent on Sacramento Valley water,
- the adequacy of the proposed mitigation and monitoring,
- consideration of other documents,
- cumulative effects,
- clarity of the Proposed Action Alternative and purpose and need,
- alternatives analysis,
- transfer water priorities,
- quantities of water transferred to potential urban and agricultural buyers,

- economic considerations associated with crop idling,
- water price setting,
- the distribution of the transferred water to various buyers and uses,
- buyers' needs,
- water rights issues,
- environmental effects analysis and methods,
- investment in agricultural and urban water conservation and demand management among CVP and SWP contractors,
- environmental baselines,
- existing conditions,
- the relationship of the proposed action to the EWA program and EWA agencies,
- tiering from the EWA EIS/EIR,
- characteristics of the aquifers,
- groundwater levels,
- the Tuscan formation characteristics,
- the lower Tuscan aquifer,
- individual wells,
- domestic wells,
- recharge data,
- isotopic groundwater data,
- Reclamation and DWR policy,
- independent third-party monitors,
- long-term conditions of overdraft,
- land subsidence,
- real time monitoring,
- groundwater quality,
- the hydrologic regime of wetlands and/or streams,
- 2009 DWR Biological Opinion,
- stream flow monitoring,
- injury to other groundwater users,
- legal injury,
- consideration of local groundwater management plans and ordinances,
- impacts to special status fish,
- salmon habitat,
- the Southern Cascade Range,
- major tributaries,
- citations,
- historical trends,
- arsenic and selenium levels,
- the State Water Code Sections 1745.10 and 1810,
- CDFG Code 5937,
- fisheries,
- social and economic effects,

- public health and safety,
- cumulative impacts,
- consideration of the Sacramento Valley Water Management Program and the Yuba River Accord Program,
- precedence for future actions,
- giant garter snake and its habitat,
- drought conditions,
- 2005 California Water Plan,
- 2000 Critical Water Shortage Reduction Marketing Program,
- the state's current allocation system,
- San Joaquin Valley agricultural land retirement,
- Delta pumping,
- new capital facilities,
- public notice,
- advanced public notification,
- streamflow depletion,
- public review period,
- project duration,
- Butte County,
- Butte Creek,
- drainage-impaired lands,
- lands in the camp 12 area of Central California Irrigation District

In preparing this EA, Reclamation has considered all of the comments received to date including the comments listed in Table 4-1 as they relate to the 2013 Proposed Action. The primary differences between the 2010-2011 WTP EA proposed action and the 2013 Water Transfers EA proposed action are: the 2013 Water Transfers Proposed Action does not include crop idling/crop shifting, the 2013 Water Transfer Proposed Action assesses a maximum proposed quantity of 37,715 acre-feet (this is 182,373 acre-feet less than the total transfer water that was assessed in 2010); the 2010-2011 WTP included several more buyers (including SWP potential buyers) than the 2013 Proposed Action; and the cumulative analysis considered 195,910 acre-feet in 2010 and now includes a maximum of 190,906 acre-feet. Reclamation incorporates by reference all of the comments received in 2010 and all of the responses provided in Appendix D of the 2010-2011 WTP EA to the extent practicable.

4.2 2013 Public Review

The Draft EA and FONSI were released for a 15-day public review period beginning May 6, 2013 and ending May 21, 2013. The documents were posted on Reclamation's website. A press release was issued on May 6, 2013 by the Bureau of Reclamation's Mid-Pacific Regional Public Affairs Office.

4.3 2013 Stakeholder Involvement

Reclamation and DWR continue to work with interested buyers and sellers to implement water transfers in 2013. Reclamation and DWR have been in contact with buyers and sellers to determine the level of interest in water transfer proposals. Tables 2-1, 2-2, and 3.5 are the result of coordination with potential sellers and buyers.

4.4 Long-Term Water Transfers

Reclamation and the SLDMWA are currently preparing a joint EIS/EIR to analyze the effects of water transfers from water agencies in northern California to water agencies south of the Delta and in the San Francisco Bay Area. The EIS/EIR will address transfers of Central Valley Project (CVP) and non-CVP water supplies that require use of CVP or SWP facilities to convey the transferred water. Water transfers would occur through various methods, including, but not limited to, groundwater substitution and cropland idling, and would include individual and multiyear transfers over a ten year period. Scoping has been completed for this project and all of the scoping information is available on Reclamation's website at http://www.usbr.gov/mp/cvp/ltwt/.

Section 5 References

Anderson-Cottonwood Irrigation District (ACID) 2013. Initial Study and Proposed Negative Declaration for Anderson-Cottonwood Irrigation District's 2013 Water Transfer Program. Available at: http://www.andersoncottonwoodirrigationdistrict.org/library.html or at: http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=13310

National Marine Fisheries Service (NMFS). 2013. Biological Opinion of the San Luis Water District and Panoche Water District Interim Renewal Contracts, 2013-2015. 2012/05021. February 28, 2013.

National Marine Fisheries Service (NMFS). 2009. Biological Opinion and Conference Opinion on the Long-Term Operations of the Central Valley Project and State Water Project. 4 June 2009. Accessed on December 10, 2009. Available from http://swr.nmfs.noaa.gov/ocap/NMFS_Biological_and_Conference_Opinion_on_the_Long-Term_Operations_of_the_CVP_and_SWP.pdf

U.S. Department of Fish and Wildlife Service (USFWS). 2008. Formal Endangered Species Act Consultation on the Proposed Coordinated Operations of the Central Valley Project (CVP) and State Water Project (SWP). 15 December 2008. Accessed on May 3, 2013. Available from http://www.fws.gov/sfbaydelta/cvp-swp/cvp-swp.cfm

U.S. Department of Agriculture (DOA). 2003. National Agricultural Statistics Service, 2003 Farm and Ranch Irrigation Survey (On the internet at: http://www.nass.usda.gov/census/census02/fris/fris03.htm) and California Well Pump Data by County (Special Request by the Air Resources Board), June 2005.

U.S. Department of the Interior, Bureau of Reclamation. 2010. Environmental Assessment, 2010-2011 Water Transfer Program. February 2010, Available at http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=13310

U.S. Fish and Wildlife Service (USFWS). 2005. Informal Consultation on Long Term Renewal of Water Service Contracts in the Delta-Mendota Canal Unit. 1-1-04-I-0707. February 15, 2005.

U.S. Fish and Wildlife Service (USFWS). 2008. Formal Endangered Species Act Consultation on the Proposed Coordinated Operations of the Central Valley Project (CVP) and State Water Project (SWP). 15 December 2008. Accessed on December 10, 2009. Available from http://www.fws.gov/sacramento/es/documents/SWP-CVP_OPs_BO_12-15_final_OCR.pdf

U.S. Fish and Wildlife Service (USFWS). 2012. Consultation on One Delta and Five San Luis Unit Water Service Interim Renewal Contracts 2012-2014. 08ESMFOO-2012-F-0256-1. February 29, 2012.

U.S. Fish and Wildlife Service (USFWS). 2013. Informal Consultation on the Interim Renewal of Water Service Contracts with San Luis Water District and Panoche Water District, 2013-2015. 08ESMFOO-2013-I-0073. January 28, 2013.