

RECLAMATION

Managing Water in the West

Draft Environmental Assessment

Accelerated Water Transfer Program for Friant Division and Cross Valley Central Valley Project Contractors, 2011-2015

EA-10-052



**U.S. Department of the Interior
Bureau of Reclamation
Mid Pacific Region
South-Central California Area Office
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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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List of Acronyms and Abbreviations

AF	acre-feet
APE	area of potential effects
AWTP	Accelerated Water Transfer Program
cfs	cubic-feet per second
BO	Biological Opinion
Contract Year	March 1 through February 28/29 the following year
CV	Cross Valley
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
Delta	Sacramento-San Joaquin River Delta
DWR	Department of Water Resources
EA	environmental assessment
ESA	Endangered Species Act
FKC	Friant-Kern Canal
FONSI	Finding of No Significant Impact
FWCA	Fish and Wildlife Coordination Act
GHG	green house gases
ITA	Indian Trust Assets
M&I	municipal and industrial
National Register	Nation Register of Historic Places
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
Reclamation	Bureau of Reclamation
RRA	Reclamation Reform Act
SEA	Supplemental Environmental Assessment
USFWS	U.S. Fish and Wildlife Service

Section 1 Purpose and Need for Action

1.1 Background

The Central Valley Project Improvement Act (CVPIA) (Title 34 of Public Law 102-575) was signed into law in 1992 to mandate changes in management of the Central Valley Project (CVP). In addition to protecting, restoring, and enhancing fish and wildlife, one of the other purposes of the CVPIA is to increase water-related benefits provided by the CVP to the State of California through expanded use of voluntary water transfers and improved water conservation. To assist California urban areas, agricultural water users, and others in meeting their future water needs, Section 3405(a) of the CVPIA authorizes all individuals or districts who receive CVP water under water service or repayment contracts, water rights settlement contracts or exchange contracts to transfer, subject to certain terms and conditions, all or a portion of the water subject to such contract to any other California water users or water agency, State or Federal agency, Indian Tribe, or private non-profit organization for project purposes or any purpose recognized as beneficial under applicable State law.

After enactment of the CVPIA, the Bureau of Reclamation (Reclamation) has historically acknowledged water transfers and/or exchanges between CVP contractors geographically situated within the same region and who are provided water service through the same CVP facilities under an accelerated water transfer program (AWTP). The most recent AWTP for Friant Division and Cross Valley (CV) CVP contractors was analyzed under Environmental Assessment (EA) number EA-05-92, which analyzed a five-year AWTP from 2006 through 2010. A Supplemental EA (SEA), SEA-05-92, analyzed the limited expansion of the existing AWTP to increase the total volume of CVP water allowed to be transferred and/or exchanged. Both EA-05-92 and SEA-05-92 are hereby incorporated by reference.

1.2 Purpose and Need

The 2006-2010 AWTP will soon expire, so Friant Division and CV CVP contractors need another AWTP in place to relocate or shift CVP water supplies from areas of low demand (at the time of request) to areas of greater demand. Due to variations in weather and hydrological conditions, agricultural water needs are time sensitive, and usually arise on short-notice.

The purpose of this AWTP is to continue facilitating efficient and timely water management practices between Friant Division and CV CVP contractors through annual water transfers and/or exchanges in order to meet agricultural demands and/or municipal and industrial (M&I) or other water requirements. In addition, an AWTP would reduce costs and redundant environmental reviews associated with CVP water transfers and/or exchanges, thereby streamlining Reclamation's acknowledgement process.

1.3 Scope

In accordance with Section 102 of the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321, et seq.), as amended, this EA has been prepared to examine the potential direct,

indirect, and cumulative impacts to the affected environment associated with the Proposed Action and No Action Alternative. The temporal scope of this EA analysis covers the 2011 through 2015 Contract Years (March 1, 2011 through February 29, 2016).

Eligible participants covered in this EA analysis are Friant Division and CV CVP contractors who can receive water service from Friant Division facilities, and who possess interim or long-term water service contracts, or repayment contracts (a list of eligible participants can be found in Tables 1 and 2 in Section 3). Friant Division facilities include Millerton Lake, Friant Dam, Madera Canal, and the Friant-Kern Canal (FKC). Figure 1 shows an overview map of the Friant Division and CV CVP contractors, and Friant Division facilities.

The analysis of this AWTP covers the acknowledgement process for annual water transfers and/or exchanges of the type or kind historically carried out prior to passage of the CVPIA and any such transfers and/or exchanges subsequent to enactment of the CVPIA which have undergone previous environmental review and have been pre-determined to meet Section 3405(a) provisions of the CVPIA without requiring additional individual environmental review by Reclamation. The AWTP directs the CVP contractor to provide advance notice to Reclamation and then receive Reclamation's written acknowledgement. Up to 255,000 acre-feet (AF) of Friant Division CVP water would be transferred and/or exchanged within each Contract Year (March 1 to February 28/29 the following year) under this AWTP. The AWTP covers actions between Friant Division CVP contractors and transfers from Friant Division contractors to CV contractors.

1.4 Related Environmental Documents

The U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) issued Biological Opinions (BO), which provide Reclamation with guidelines for operation of the CVP and for renewal of CVP contracts.

- *Biological Opinion on U.S. Bureau of Reclamation Long Term Contract Renewal of Friant Division and Cross Valley Unit Contracts* – USFWS, January 19, 2001
- *Biological Opinion on the Coordinated Operations of the Central Valley Project and State Water Project* – USFWS, December 15, 2008
- *Biological Opinion and Conference Opinion on the Long-Term Operations of the Central Valley Project and State Water Project* – NMFS, June 4, 2009

To be exempt from the "take" prohibition of the Endangered Species Act (ESA), Reclamation must comply with terms and conditions which are pertinent to future water transfers and/or exchanges within the CVP. These Terms and Conditions implement reasonable and prudent measures and outline mandatory reporting and monitoring. Reasonable and prudent measures are actions that the USFWS and NMFS believe are necessary to minimize impacts, i.e., amount of or extent, of incidental take and adverse modification or destruction of designated critical habitat. The Terms and Conditions of any applicable BO are hereby incorporated by reference.

Reclamation prepared a five-year EA to analyze an AWTP for Friant Division and CV CVP contractors from 2006 through 2010 Contract Years. In light of new information, Reclamation

prepared an SEA to increase the total amount of CVP water that could be transferred and/or exchanged under the 2006-2010 AWTP from 150,000 AF to 255,000 AF per Contract Year.

- *Final Environmental Assessment for the Accelerated Water Transfers and Exchanges, Central Valley Project Contractors, Friant Division, 2006-2010* – March 3, 2006
- *Final Supplemental Environmental Assessment for the Accelerated Water Transfer Program, Friant and Cross Valley Contractors, 2006-2010* – March 30, 2006

1.5 Reclamation's Legal and Statutory Authorities and Jurisdiction Relevant to the Proposed Federal Action

Several Federal laws, permits, licenses and policy requirements have directed, limited or guided the NEPA analysis and decision-making process of this EA and include the following as amended, updated, and/or superseded:

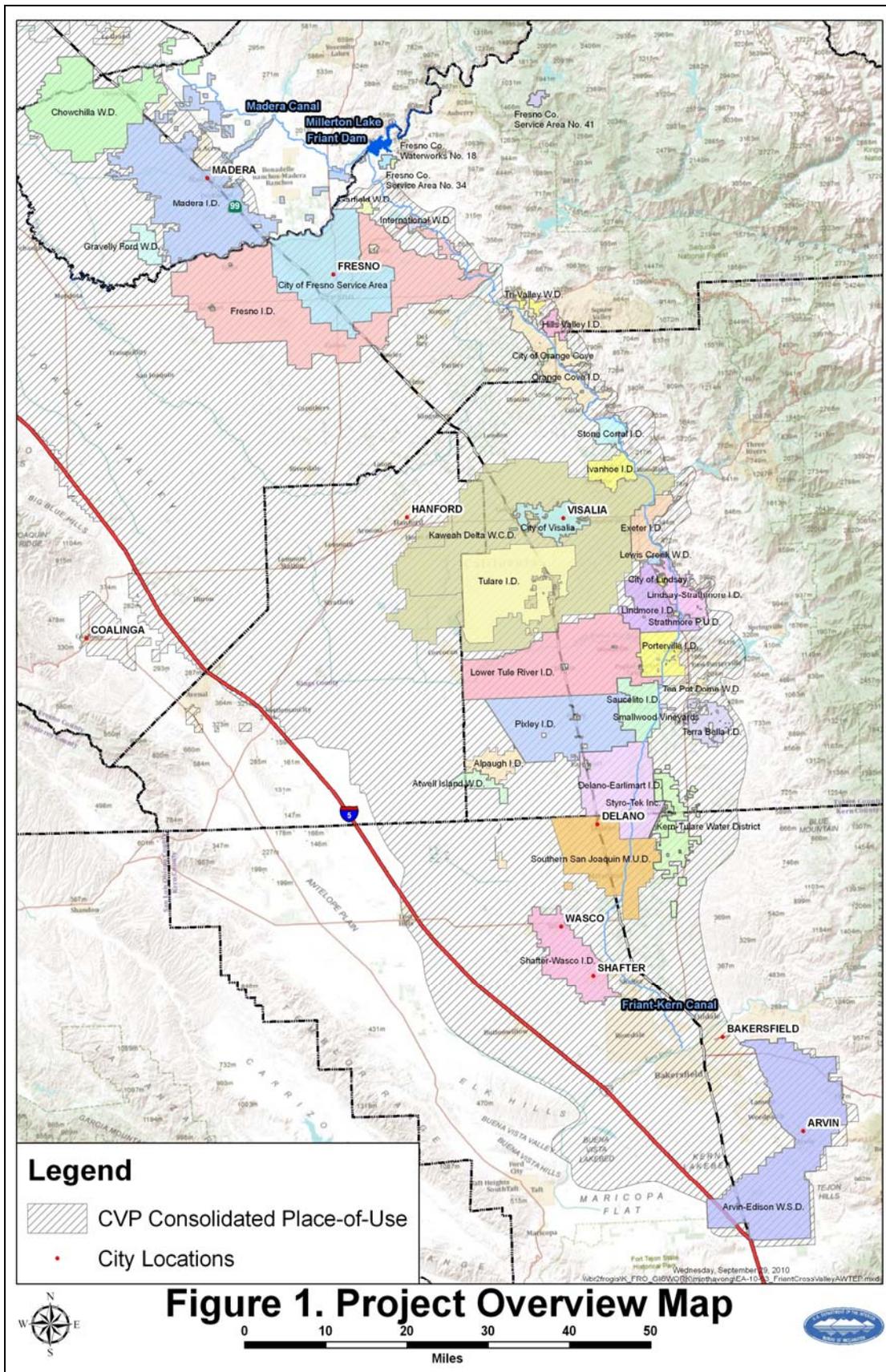
- Title XXXIV CVPIA – October 30, 1992, Section 3405(a);
- Reclamation Reform Act (RRA) – October 12, 1982, Section 226;
- Long-term Water Service Contracts for Friant Division CVP contractors;
- Long-term 9(d) Repayment Contracts for Friant Division CVP contractors;
- Interim Water Service Contracts for CV contractors;
- Long-term Water Service Contracts – replacing the interim contracts for CV contractors if approved during the term of this EA;
- Reclamation and USFWS Region 1, Final Administrative Proposal on Water Transfers – April 16, 1998; and
- Reclamation's Regional Director's Letter Delegation of Regional Functional Responsibilities to the Area Offices - Water Transfers, Number 93-20 – December 14, 1993.

1.6 Potential Issues

Potentially affected resources and cumulative impacts in the project vicinity include: water resources, land use, biological resources, cultural resources, Indian Trust Assets (ITA), Indian sacred sites, socioeconomic resources, environmental justice, and global climate.

The following was eliminated from detailed environmental analysis due to the reasons below:

- Air Quality
 - Comprehensive evaluation of air quality issues were eliminated from detailed environmental analysis because there would be no construction or ground disturbing activities that could lead to the introduction of fugitive dust and exhaust emissions into the Proposed Action areas' air district. Water movement involved with the Proposed Action would be gravity fed through the conveyance facilities and not require the use of any gas and/or diesel pumps that could release emissions to impact air quality.



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 over the temporal scope of the project 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 continue the AWTP. Friant Division and CV CVP contractors would be required to get Reclamation's written approval for each proposed transfer or exchange, and separate environmental review would be completed for each action.

2.2 Proposed Action

Reclamation proposes to continue a five-year AWTP, which would provide a streamlined process for annual transfers and/or exchanges of Friant Division CVP water between eligible Friant Division and CV CVP contractors within the same geographical area who can receive CVP service from Friant Division facilities and who possess CVP interim or long-term water service contracts, or repayment contracts. Eligible participants in the AWTP are listed in Tables 1 and 2. The Proposed Action would cover transfers and/or exchanges between Friant Division contractors and transfers from Friant Division contractors to Cross Valley contractors. In addition, federal wildlife refuges could also receive transfers of CVP water from eligible contractors participating in the AWTP. The Proposed Action would utilize existing Friant Division facilities including Millerton Lake, Friant Dam, Madera Canal, and the FKC. The AWTP would be limited to 255,000 AF of Friant Division CVP water per Contract Year and be in effect for Contract Years 2011 through 2015 (March 1, 2011 through February 29, 2016).

The AWTP directs the CVP contractor to provide advance notice to Reclamation and then each proposed transfer and/or exchange would be reviewed by the Contracting Officer for consistency with the project description of this EA and with all applicable permits, laws, and regulations. Reclamation would then provide the CVP contractor with written acknowledgement rather than written approval. Additional administrative and environmental reviews would be required if a proposed transfer and/or exchange is inconsistent with the project description in this EA.

The Proposed Action would be subject to the following conditions:

- transfers and/or exchanges that are > 20% of a contractor's supply must be noticed to the public by the contractor to Reclamation's acknowledgement of such transfer and/or exchange;
- there would be no restriction on directionality within the AWTP (transfers do not require return transfers at a later date or year);

- transferred and/or exchanged water could be agricultural, M&I, or other water;
- transferred and/or exchanged water could be used for agricultural, M&I, or other purposes, or for groundwater recharge;
- transfers and/or exchanges would be completed within the same Contract Year;
- transfers would be between willing sellers and willing buyers;
- exchanges would be between willing exchangers;
- exchanges would only count once towards the up to 255,00 AF limit since exchanges would be “bucket-for-bucket”, or those of equivalent amounts where neither district experiences a net gain or loss;
- no new construction or modifications to existing facilities are covered under this AWTP;
- transfers and/or exchanges must occur within the permitted CVP consolidated Place-of-Use;
- transfers and/or exchanges are limited to existing supply and would not increase overall consumptive use;
- transfers and/or exchanges for agricultural use would be used on lands irrigated within the last three consecutive years;
- transfers and/or exchanges would not lead to any land conversions;
- no native or untilled land (fallow for three consecutive years or more) would be cultivated with the water involved in these actions;
- transfers and/or exchanges would comply with all applicable Federal, State, local, and Tribal law and requirements;
- the transferee would comply with the RRA, as applicable;
- water for transfers may not be made available by shifting to alternative surface water sources that could potentially adversely affect CVP operations or other third party interests; and
- transfers and/or exchanges cannot alter the flow regime of natural water bodies such as rivers, streams, creeks, ponds, pools, wetlands, etc., so as to not have a detrimental effect on fish or wildlife, or their habitats.

Friant Division CVP contractors (for the purposes of water transfers only) are deemed to meet the criteria of Section 3405(a)(1)(M) of the CVPIA, therefore, are not required to limit their transfers to the cap of the in-district deliveries in three normal years prior to the CVPIA or meeting the consumptive use criteria. This determination does not address any other issues related to the Friant Division and the area of origin statues, and is subject to change if relevant state law were modified. The CV contractors’ CVP supplies from the Sacramento-San Joaquin River Delta (Delta) do not meet the criteria of this section of CVPIA; therefore, their CVP supplies from the Delta are not a part of the Proposed Action. As a result, Cross Valley contractors could only be on the receiving end of transfers from Friant Division contractors and not involved in exchanges since their supplies from the Delta are not covered under this AWTP.

The type of exchanges of CVP water between eligible contractors in this EA analysis is defined as “bucket-for-bucket” or those of equivalent amounts. Unbalanced exchanges are outside the scope of this EA and would require separate Reclamation approval and environmental review.

The Proposed Action does not cover:

- transfers and/or exchanges that meet the above criteria but are increments of larger actions;
- unbalanced exchanges;
- transfers and/or exchanges involving CV contractors' CVP water from the Delta;
- transfers and/or exchanges that involve previously transferred and/or exchanged water;
- transfers and/or exchanges that involve a third party intermediary as an exchanger or transferor;
- transfers and/or exchanges of Section 215 Water; and
- transfers and/or exchanges to non-CVP contractors.

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Section 3 Affected Environment and Environmental Consequences

3.1 Water Resources

3.1.1 Affected Environment

3.1.1.1 Participating Water Districts

Table 1. Friant Division Contractors and their CVP Contract Supply		
Contractor	Class 1 (AF/year)	Class 2 (AF/year)
Arvin-Edison Water Storage District	40,000	311,675
Chowchilla Water District	55,000	160,000
City of Fresno	60,000	0
² City of Lindsay	2,500	0
City of Orange Cove	1,400	0
County of Madera	200	0
Delano-Earlimart Irrigation District	108,800	74,500
Exeter Irrigation District	11,500	19,000
Fresno County Waterworks No. 18	150	0
Fresno Irrigation District	0	75,000
Garfield Water District	3,500	0
Gravelly Ford Water District	0	14,000
International Water District	1,200	0
Ivanhoe Irrigation District	6,500	500
¹ Kaweah Delta Water Conservation District	1,200	7,400
Lewis Creek Water District	1,450	0
Lindmore Irrigation District	33,000	22,000
Lindsay-Strathmore Irrigation District	27,500	0
² Lower Tule River Irrigation District	61,200	238,000
Madera Irrigation District	85,000	186,000
Orange Cove Irrigation District	39,200	0
Porterville Irrigation District	16,000	30,000
² Saucelito Irrigation District	21,200	32,800
Shafter-Wasco Irrigation District	50,000	39,600
Southern San Joaquin Municipal Utility District	97,000	50,000
² Stone Corral Irrigation District	10,000	0
Tea Pot Dome Water District	7,500	0
Terra Bella Irrigation District	29,000	0
Tulare Irrigation District	30,000	141,000
¹ Kaweah Delta Water Conservation District is comprised of four districts: Lakeside Irrigation Water District, Kings County Water District, Corcoran Irrigation District, and Tulare Irrigation District. ² Lower Tule River ID, Saucelito ID, Stone Corral ID and City of Lindsay receive CVP water under more than one contract, either as a Friant Division and/or Cross Valley Contractor/Sub-Contractor.		

In summary, there are 29 Friant Division CVP contractors located on the eastern side of the San Joaquin Valley in Merced, Madera, Fresno, Tulare, Kings, and Kern Counties. CVP water for these contractors comes from Millerton Lake via the FKC or the Madera Canal. Water conveyed to these contractors is categorized as either Class 1 or Class 2 water depending on its reliability and allocation circumstances. A narrative description of the Friant Division CVP contractors can be found in Appendix D.

Table 2. Cross Valley Contractors and their CVP Contract Supply	
Contractor	CVP Contract Supply (AF/y)
¹ County of Fresno	3,000
² County of Tulare	5,308
Hills Valley Irrigation District	3,346
³ Kern Tulare Water District	53,300
⁴ Lower Tule River Irrigation District	31,102
Pixley Irrigation District	31,102
Tri-Valley Water District	1,142
¹ County of Fresno includes Fresno County Service Area #34 ² County of Tulare customers include Alpaugh Irrigation District, Atwell Water District, Hills Valley ID, Saucelito ID ⁴ , Fransinetto Farms, Stone Corral ID ⁴ , City of Lindsay ⁴ , Strathmore Public Utility District, Styrotek, Inc., and City of Visalia ³ Kern Tulare Water District and Rag Gulch Water District consolidated on January 1, 2009. ⁴ Lower Tule River ID, Saucelito ID, Stone Corral ID and City of Lindsay receive CVP water under more than one contract, as a Friant Division long-term contractor and either Cross Valley interim contractor or sub-contractor.	

CV contractors are CVP contractors that are geographically located within the Friant Division on the eastern side of the San Joaquin Valley in Fresno, Kern, Kings, and Tulare Counties. In summary, there are seven CV contractors with a total CVP supply of 128,300 AF/y from the Delta; however, their CVP supplies from the Delta are not a part of the Proposed Action. One of the CV contractors, the County of Tulare, has 10 customers which are identified in Table 2. The County of Tulare is in the process of assigning a portion of the contract to each of these customers. A narrative description of the CV contractors can be found in Appendix C.

3.1.1.2 Groundwater Resources

San Joaquin River Hydrologic Region The San Joaquin River Hydrologic Region covers approximately 9.7 million acres (15,200 square miles) and includes all of Calaveras, Tuolumne, Mariposa, Madera, San Joaquin, and Stanislaus counties, most of Merced and Amador counties, and parts of Alpine, Fresno, Alameda, Contra Costa, Sacramento, El Dorado, and San Benito Counties. The region is heavily reliant on groundwater. Changes in groundwater levels are evaluated on annual water level measurements by the Department of Water Resources (DWR) and cooperators. Water level changes were evaluated at the quarter-township level using a DWR computer program. On average, the subbasin water level has increased by 2.2 feet total from 1970 through 2000. The period from 1970 through 1985 showed a general increase, topping out in 1985 at 7.5 feet above the 1970 water level. The nine-year period from 1985 to 1994 saw general declines in groundwater levels, reaching back down to the 1970 groundwater level in 1994. Groundwater levels rose in 1995 to about 2.2 feet above the 1970 groundwater level, then water levels fluctuated around this value until 2000. (DWR 2003)

Tulare Lake Hydrologic Region The Tulare Lake Hydrologic Region covers approximately 10.9 million acres (17,000 square miles) and includes all of Kings and Tulare Counties and most of Fresno and Kern Counties. The extensive use of groundwater has historically caused subsidence of the land surface primarily along the west side and south end of the San Joaquin Valley. Groundwater levels were generally at their lowest levels in the late 1960s, prior to importation of surface water. Water levels gradually increased to a maximum in about 1987-88 and falling briefly during the 1976-77 drought. Water levels began dropping again during the 1987-92 drought, with water levels showing the effects until 1994. Through a series of wet years after the drought, 1998 water levels recovered nearly to 1987-88 levels. (DWR 2003)

3.1.1.3 Friant Division Facilities

In addition to providing M&I water, the Friant Division of the CVP diverts water from the San Joaquin River to provide supplemental irrigation water to over 1 million acres of farmlands across six counties: Merced, Madera, Fresno, Tulare, Kings, and Kern. The main features of the Friant Division are Friant Dam, FKC, and Madera Canal, which were all constructed by Reclamation between the early 1940s and 1950s.

Friant Dam/Millerton Lake Friant Dam is located on the San Joaquin River, 25 miles northeast of Fresno, California. Completed in 1942, the dam is a concrete gravity structure, 319 feet high, with a crest length of 3,488 feet. Millerton Lake was created as a result of Friant Dam and first stored water on February 21, 1944. Millerton Lake has a total capacity of 520,528 AF, a surface area of 4,900 acres, and is approximately 15 miles long. The reservoir provides for recreation such as boating, fishing, picnicking, and swimming.

Madera Canal The Madera Canal carries water over 35.9 miles northerly from Friant Dam to furnish lands in Madera County and Merced County with supplemental and new irrigation supply. The Madera Canal was completed in 1945, has an initial capacity of 1,000 cubic-feet per second (cfs), decreasing to 625 cfs at the Chowchilla River. In 1965, the canal lining from the headworks to milepost 2.09 was raised so that 1,250 cfs could be delivered.

Friant-Kern Canal The FKC carries water over 151.8 miles in a southerly direction from Friant Dam to its terminus at the Kern River, four miles west of Bakersfield. The FKC has an initial capacity of 5,000 cfs that gradually decreases to 2,000 cfs at its terminus in the Kern River (Reclamation 2010). The water is used for municipal and industrial, and agricultural purposes in Fresno, Tulare, Kings, and Kern Counties. The FKC is a part of the CVP, which annually delivers about seven million AF of water for agricultural, urban, and wildlife use.

3.1.2 Environmental Consequences

3.1.2.1 No Action Alternative

The No Action Alternative envisions the transfers and exchanges of Friant Division CVP water to continue as has historically occurred between Friant Division and CV contractors; however, each action would require separate approval and environmental review. Since the request to transfer and/or exchange water is usually driven by time sensitive needs, requires coordination, and could sometimes only be completed within a short window of opportunity, the delay in the approval process could render some of the transfers or exchanges infeasible.

Individual landowners would continue to pump groundwater in order to make up for any potential shortages in surface water supplies, which could contribute to declining groundwater levels in both the San Joaquin River and Tulare Lake Hydrologic Regions. Any potential approved transfers or exchanges would need to be coordinated with Reclamation and the Friant Water Authority in order to make sure that there is excess capacity within the conveyance facilities to allow for these actions without impacting Reclamation's obligations to deliver water to other CVP contractors, wildlife refuges, and other requirements. The No Action Alternative would not increase or decrease the amount of CVP water each district receives under contract with Reclamation, respectively. What transfers and/or exchanges that could be approved under the No Action Alternative would help supplement any surface water shortage that a particular water district, or districts, could be experiencing at that current time.

3.1.2.2 Proposed Action

Similar to the No Action Alternative, the Proposed Action would not increase or decrease the amount of CVP water each district receives under contract with Reclamation. Transfers would help supplement any surface water shortage that a particular water district, or districts, could be experiencing at that current time. Exchanges under the AWTP would be "bucket-for-bucket". There would be no adverse impacts to participating districts and their respective Friant Division CVP water supplies.

Due to variations in weather and hydrological conditions, agricultural water needs are time sensitive, and usually arise on short-notice. The AWTP would allow Friant Division and CV CVP contractors to efficiently shift CVP water supplies from areas of low demand (at the time of approval) to areas of greater demand. The Proposed Action would help alleviate the need of some landowners to pump groundwater since surface water supplies would be more available to districts in need of supplemental supplies. There would be beneficial impacts to groundwater resources.

The AWTP requires that the CVP contractor provide Reclamation with advance notice of any proposed transfer and/or exchange so that Reclamation could determine if the action is consistent with the Proposed Action description and coordinate with the Friant Water Authority to make sure that excess capacity exists within Friant Division facilities. In addition, coordination would ensure that Reclamation's obligations to deliver water to other CVP contractors, wildlife refuges, and other requirements would not be adversely impacted by the Proposed Action. There would be no adverse impacts to Friant Division facilities.

3.2 Land Use

3.2.1 Affected Environment

A narrative of the land uses in the water districts involved with the exchanges are contained in the incorporated documents and in Appendices B and C. Generally, the land use is mainly comprised of irrigated agriculture. Cities along the Highway 99 corridor are expected to expand over the next years.

3.2.2 Environmental Consequences

3.2.2.1 No Action

Under the No Action Alternative, conditions would remain the same as existing conditions. Landowners would resort to pumping groundwater in order to make up for any shortages in surface water supplies that would be used to irrigate and maintain crop production.

3.2.2.2 Proposed Action

The Proposed Action would utilize existing facilities to convey waters allowed under the AWTP and would not require construction of new facilities or modifications to existing facilities that would result in ground disturbance. Exchanges would be “bucket for bucket” so participating districts would not experience a net gain or loss in water supply. Transfers would help supplement any shortage of surface water supplies that would be used to irrigate and maintain existing agricultural production. Waters involved with the Proposed Action would be used on existing farmland and would not be used to put new land into production. There would be no impacts to land use.

3.3 Biological Resources

3.3.1 Affected Environment

By the mid-1940s, most of the valley’s native habitat had been altered by man, and as a result, was severely degraded or destroyed. When the CVP began operations, over 30 percent of all natural habitats in the Central Valley and surrounding foothills had been converted to urban and agricultural land use (Reclamation 1999). Prior to widespread agriculture, land within the Proposed Action area provided habitat for a variety of plants and animals. With the advent of irrigated agriculture and urban development over the last 100 years, many species have become threatened and endangered because of habitat loss. Of the approximately 5.6 million acres of valley grasslands and San Joaquin saltbrush scrub, the primary natural habitats across the valley, less than 10 percent remains today. Much of the remaining habitat consists of isolated fragments supporting small, highly vulnerable populations (Reclamation 1999).

Reclamation requested an official species list from USFWS via the Sacramento Field Office’s website: http://www.fws.gov/sacramento/es/spp_lists/auto_list_form.cfm on November 3, 2010. The list is for Madera, Fresno, Kings, Kern (San Joaquin Valley portion), and Tulare Counties (document number: 101103042953). Reclamation further queried the California Natural Diversity Database for additional data (CNDDDB 2010). This information, in addition to other information within Reclamation’s files, was compiled into Table 3.

Table 3. Federally listed species, candidate species, and critical habitat

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>	<u>ESA det.</u>	<u>Summary basis for ESA determination</u>
Bakersfield cactus	<i>Opuntia treleasei</i>	E	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
Buena Vista Lake shrew	<i>Sorex ornatus relictus</i>	E	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
Buena Vista Lake shrew critical habitat			NE	Critical habitat for this species does not occur in the Proposed Action area.
Blunt-nosed leopard lizard	<i>Gambelia sila</i>	E	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
California condor	<i>Gymnogyps californianus</i>	E	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
California condor critical habitat			NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
California jewelflower	<i>Caulanthus californicus</i>	E	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
California red-legged frog	<i>Rana draytonii</i>	T	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.; species likely extirpated from valley floor and southern Sierra Nevada foothills.
California red-legged frog critical habitat			NE	Critical habitat for this species does not occur in the Proposed Action area.
California tiger salamander, central DPS	<i>Ambystoma californiense</i>	T	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
California tiger salamander, central DPS critical habitat			NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
Central Valley steelhead (NMFS)	<i>Oncorhynchus mykiss</i>	T	NE	No change in Delta pumping or San Joaquin River flows would occur as a result of the Proposed Action.
Conservancy fairy shrimp	<i>Branchinecta conservatio</i>	E	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
Delta smelt	<i>Hypomesus transpacificus</i>	T	NE	No change in Delta pumping or San Joaquin River flows would occur as a result of the Proposed Action.
Fisher	<i>Martes pennanti</i>	C	NE	This species does not occur at the lower elevations within the Proposed Action area.
Fresno kangaroo rat	<i>Dipodomys nitratooides exilis</i>	E	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.

Table 3. Federally listed species, candidate species, and critical habitat				
Fresno kangaroo rat critical habitat			NE	Critical habitat for this species does not occur in the Proposed Action area.
Giant garter snake	<i>Thamnophis gigas</i>	T	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action; species believed to have been extirpated from Tulare Basin except Burrel/Lanare.
Greene's tuctoria	<i>Tuctoria greenei</i>	E	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
Greene's tuctoria critical habitat			NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
Hairy Orcutt grass	<i>Orcuttia pilosa</i>	E	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
Hairy Orcutt grass critical habitat			NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
Hartweg's golden sunburst	<i>Pseudobahia bahiifolia</i>	E	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
Hoover's spurge	<i>Chamaesyce hooveri</i>	T	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
Hoover's spurge critical habitat			NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
Keck's checker-mallow	<i>Sidalcea keckii</i>	E	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
Keck's checker-mallow critical habitat			NE	Critical habitat for this species does not occur in the Proposed Action area.
Kern mallow	<i>Eremalche kernensis</i>	E	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
Kern primrose sphinx moth	<i>Euproserpinus euterpe</i>	T	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action; species unlikely to occur in Proposed Action area as it is only known from the Walker Basin and Carrizo Plain.
Lahontan cutthroat trout	<i>Oncorhynchus clarki henshawi</i>	T	NE	Species occurs at a higher elevation than the Proposed Action area.
Least Bell's vireo	<i>Vireo bellii pusillus</i>	E	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.

Table 3. Federally listed species, candidate species, and critical habitat				
Little Kern golden trout	<i>Oncorhynchus aquabonita whitei</i>	T	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
Little Kern golden trout critical habitat			NE	Critical habitat for this species does not occur in the Proposed Action area.
Longhorn fairy shrimp	<i>Branchinecta longiantenna</i>	E	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
Longhorn fairy shrimp critical habitat			NE	Critical habitat for this species does not occur in the Proposed Action area.
Mariposa pussy-paws	<i>Calyptridium pulchellum</i>	T	NE	Critical habitat for this species does not occur in the Proposed Action area; species likely occurs only at too high an elevation to be within the Proposed Action area.
Mountain yellow-legged frog	<i>Rana muscosa</i>	C	NE	Species occurs at a higher elevation than the Proposed Action area.
Paiute cutthroat trout	<i>Oncorhynchus clarki seleniris</i>	T	NE	Species occurs at a higher elevation than the Proposed Action area.
Palmate-bracted bird's-beak	<i>Cordylanthus palmatus</i>	E	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
Ramshaw Meadows sand-verbena	<i>Abronia alpine</i>	C	NE	Species occurs at a higher elevation than the Proposed Action area.
San Benito evening-primrose	<i>Camissonia benitensis</i>	T	NE	Not within Proposed Action area; limited to serpentine-derived alluvial terraces and deposits near San Benito Mountain, southern San Benito Co. and western Fresno Co.
San Joaquin adobe sunburst	<i>Pseudobahia peirsonii</i>	T	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
San Joaquin kit fox	<i>Vulpes macrotis mutica</i>	E	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
San Joaquin Valley Orcutt grass	<i>Orcuttia inaequalis</i>	T	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
San Joaquin Valley Orcutt grass critical habitat			NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
San Joaquin woolly-threads	<i>Monolopia congdonii</i>	E	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
Sierra Nevada bighorn sheep	<i>Ovis Canadensis californiana</i>	E	NE	Species occurs at a higher elevation than the Proposed Action area.

Table 3. Federally listed species, candidate species, and critical habitat				
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	E	NE	Species primarily would use higher elevation habitat and only fly over the Proposed Action area.
Southwestern willow flycatcher critical habitat			NE	Critical habitat for this species does not occur in the Proposed Action area.
Springville clarkia	<i>Clarkia springvillensis</i>	T	NE	Species occurs at a higher elevation than the Proposed Action area.
Succulent owl's-clover	<i>Castilleja campestris</i> ssp. <i>succulenta</i>	T	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
Succulent owl's-clover critical habitat			NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
Tipton kangaroo rat	<i>Dipodomys nitratooides nitratooides</i>	E	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	T	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	T	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
Vernal pool fairy shrimp critical habitat			NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
Vernal pool tadpole shrimp	<i>Lepidurus packardii</i>	E	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
Vernal pool tadpole shrimp critical habitat			NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
Western snowy plover	<i>Charadrius alexandrinus nivosus</i>	T	NE	No lands fallowed or untilled for three or more years would be converted as a result of the Proposed Action.
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	C	NE	Species would at most only fly over the Proposed Action area; suitable nesting habitat no longer exists in the San Joaquin Valley.
Yosemite toad	<i>Bufo canorus</i>	C	NE	Species occurs at a higher elevation than the Proposed Action area.
C = Candidate E = Endangered NE = No Effect T = Threatened				

3.3.2 Environmental Consequences

3.3.2.1 No Action

The No Action Alternative would result in continued transfers and exchanges of water that are approved on a case by case basis. As such the impacts would be the same as described under the Proposed Action. There would be no impacts to fish and wildlife, listed species or critical habitat.

3.3.2.2 Proposed Action

The Proposed Action would not alter CVP operations, water storage or release patterns from CVP facilities, or the maximum volume of water delivered to the contractors as compared to the No Action Alternative. The transfers and exchanges are water management actions to support existing uses and conditions. No native lands would be cultivated as a result of the Proposed Action. Lands fallowed for three or more years would require surveys for wildlife species including threatened and endangered species prior to application of this water. Subsequent environmental review and consultations, if applicable would be required to irrigate lands fallowed three or more years.

Therefore, biological resource conditions under the Proposed Action would have no effect on federally listed species, critical habitat, or candidate species. Diversions from Millerton Lake would not change. The Proposed Action would not interfere with other management decisions for the Friant Division facilities.

3.4 Cultural Resources

Cultural resources is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. The National Historic Preservation Act (NHPA) of 1966 is the primary Federal legislation that outlines the Federal Government's responsibility to cultural resources. Section 106 of the NHPA requires the Federal Government to take into consideration the effects of an undertaking on cultural resources listed on or eligible for inclusion in the National Register of Historic Places (National Register). Those resources that are on or eligible for inclusion in the National Register are referred to as historic properties.

The Section 106 process is outlined in the Federal regulations at 36 Code of Federal Regulations (CFR) Part 800. These regulations describe the process that the Federal agency (Reclamation) takes to identify cultural resources and the level of effect that the proposed undertaking would have on historic properties. In summary, Reclamation must first determine if the action is the type of action that has the potential to affect historic properties. If the action is the type of action to affect historic properties, Reclamation must identify the area of potential effects (APE), determine if historic properties are present within that APE, determine the effect that the undertaking will have on historic properties, and consult with the State Historic Preservation Office (SHPO), to seek concurrence on Reclamation's findings. In addition, Reclamation is required through the Section 106 process to consult with Indian Tribes concerning the identification of sites of religious or cultural significance, and consult with individuals or groups who are entitled to be consulting parties or have requested to be consulting parties. Reclamation uses the Section 106 process to identify and consider impacts to cultural resources that may be affected by actions outlined in this EA.

3.4.1 Affected Environment

The San Joaquin Valley is rich in historical and prehistoric cultural resources. Cultural resources in this area are generally prehistoric in nature and include remnants of native human populations that existed before European settlement. Prior to the 18th Century, many Native American tribes inhabited the Central Valley. It is possible that many cultural resources lie undiscovered across the valley. The San Joaquin Valley supported extensive populations of Native Americans,

principally the Northern Valley Yokuts, in the prehistoric period. Cultural studies in the San Joaquin Valley have been limited. The conversion of land and intensive farming practices over the last century has probably disturbed many Native American cultural sites.

Resources within the scope of this project include historic features of the built environment, primarily those of the CVP. Components of the CVP have been determined eligible for inclusion in the National Register and have been prepared for inclusion in the National Register through a multiple property nomination. The CVP multiple property nomination is currently being reviewed for submission to the Keeper of the National Register for inclusion in the National Register.

Both Friant Dam and the FKC are considered contributing elements of the CVP multiple property listing and are considered eligible for inclusion in the National Register. Additional information regarding these facilities can be found in Section 3.1.1.3.

3.4.2 Environmental Consequences

3.4.2.1 No Action

Under the No Action Alternative, the AWTP would not be renewed, all operations would remain the same, and no potential impacts to cultural resources would occur.

3.4.2.2 Proposed Action

The Proposed Action involves the transfer and/or exchange of water through existing facilities, which would not result in modifications, new construction, or changes in land use. Because the Proposed Action would result in no physical alterations of existing facilities and no ground disturbance as stipulated in Section 2.2 of this EA, Reclamation concludes that the Proposed Action has no potential to cause effect to historic properties pursuant to the regulations at 36 CFR Part 800.3(a)(1), and would result in no impacts to cultural resources.

3.5 Indian Trust Assets

ITA are legal interests in assets that are held in trust by the U.S. Government for federally recognized Indian tribes or individuals. The trust relationship usually stems from a treaty, executive order, or act of Congress. The Secretary of the Interior is the trustee for the United States on behalf of federally recognized Indian tribes. “Assets” are anything owned that holds monetary value. “Legal interests” means there is a property interest for which there is a legal remedy, such a compensation or injunction, if there is improper interference. ITA cannot be sold, leased or otherwise alienated without the United States’ approval. Assets can be real property, physical assets, or intangible property rights, such as a lease, or right to use something; which may include lands, minerals and natural resources in addition to hunting, fishing, and water rights. Indian reservations, rancherias, and public domain allotments are examples of lands that are often considered trust assets. In some cases, ITA may be located off trust land. Reclamation shares the Indian trust responsibility with all other agencies of the Executive Branch to protect and maintain ITA reserved by or granted to Indian tribes, or Indian individuals by treaty, statute, or Executive Order.

3.5.1 Affected Environment

The nearest ITA is Table Mountain Rancheria, which is located within the Proposed Action area.

3.5.2 Environmental Consequences

3.5.2.1 No Action Alternative

Under the No Action Alternative, Reclamation would not continue the AWTP and conditions would remain the same as existing conditions. Transfers and/or exchanges would be approved on a case-by-case basis and would utilize existing facilities. There would be no impacts to ITA.

3.5.2.2 Proposed Action

Continuation of the AWTP would not involve any construction on lands or impact water, hunting, and fishing rights associated with the nearest ITA listed in the affected environment. Therefore, the Proposed Action does not have a potential to impact ITA (see Appendix B for ITA determination).

3.6 Indian Sacred Sites

Sacred sites are defined in Executive Order 13007 (May 24, 1996) as "any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site".

Executive Order 13007 requires Federal land managing agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of such sacred sites. It also requires agencies to develop procedures for reasonable notification of proposed actions or land management policies that may restrict access to or ceremonial use of, or adversely affect, sacred sites.

3.6.1 Affected Environment

There are no known Indian sacred sites or access roads/paths leading to Indian sacred sites within the Proposed Action location.

3.6.2 Environmental Consequences

3.6.2.1 No Action

Under the No Action Alternative, there would be no impacts to Indian sacred sites since conditions would remain the same as existing conditions. Transfers and/or exchanges would utilize existing facilities and would not require any ground disturbance.

3.6.2.2 Proposed Action

The Proposed Action involves conveying and storing water utilizing existing conveyance facilities. No construction or ground disturbing activities would be required that would impact known or unknown Indian sacred sites and/or prohibit access to and ceremonial use of this resource. There would be no impacts to Indian sacred sites.

3.7 Socioeconomic Resources

3.7.1 Affected Environment

The agricultural industry significantly contributes to the overall economic stability of the San Joaquin Valley. The CVP allocations each year allow farmers to plan for the types of crops to grow and to secure loans to purchase supplies. Depending upon the variable hydrological and economical conditions, water transfers and exchanges could be prompted. The economic variances may include fluctuating agricultural prices, insect infestation, changing hydrologic conditions, increased fuel and power costs.

3.7.2 Environmental Consequences

3.7.2.1 No Action Alternative

The need for irrigation supplies is usually time sensitive; therefore, the No Action Alternative could have minor impacts on agricultural production due to potential transfers and/or exchanges being delayed and/or cancelled. However, landowners would resort to pumping groundwater in order to make up for shortages in surface water supplies in order to maintain their crops. Groundwater pumping, in addition to individual Reclamation approval and environmental review for each transfer or exchange would result in additional costs to the districts.

3.7.2.2 Proposed Action

Agricultural practices within the affected environment would be within historical conditions and would not be adversely impacted by the implementing the Proposed Action. Participating districts would not have to continue paying for redundant approval and environmental review associated with individual transfer and/or exchange actions. The availability of supplemental surface water supplies would allow landowners to maintain their crop production and would alleviate some of the need to pump groundwater. The Proposed Action would have slight beneficial impacts on socioeconomics.

3.8 Environmental Justice

3.8.1 Affected Environment

The February 11, 1994, Executive Order 12898 requires federal agencies to ensure that their actions do not disproportionately impact minority and disadvantaged populations. The market for seasonal workers on local farms draws thousands of migrant workers, commonly of Hispanic origin from Mexico and Central America, into the San Joaquin Valley. Agriculture and related businesses are the main industry within the east side of the Central San Joaquin Valley, which provides employment opportunities for minority and/or disadvantaged populations.

3.8.2 Environmental Consequences

3.8.2.1 No Action

The No Action Alternative would not result in harm to minority or disadvantaged populations within the affected environment since landowners would supplement any shortages of water supply with groundwater pumping in order to irrigate farmlands, which provide minority or disadvantaged populations with employment opportunities.

3.8.2.2 Proposed Action

The Proposed Action would not cause dislocation, changes in employment, or increase flood, drought, or disease within the affected environment. The Proposed Action would not disproportionately impact economically disadvantaged or minority populations. The AWTP is intended to allow for the expeditious delivery of available supplemental surface water supplies to requesting districts in lieu of groundwater it otherwise would have extracted and used to irrigate crops. Farmlands would be able to maintain their crop production and continue to provide employment opportunities for minority or disadvantaged populations.

3.9 Global Climate

3.9.1 Affected Environment

Climate change refers to significant change in measures of climate that last for decades or longer. Burning of fossil fuels is considered a major contributor to perceived global climate change. Carbon dioxide, which is produced when fossil fuels are burned, is a greenhouse gas (GHG) that effectively traps heat in the lower atmosphere. Some carbon dioxide is liberated naturally, but this may be augmented greatly through human activities. Increases in air temperature may lead to changes in precipitation patterns, runoff timing and volume, sea level rise, and changes in the amount of irrigation water needed due to modified evapotranspiration rates. These changes may lead to impacts to California's water resources and project operations. While there is general consensus in their trend, the magnitudes and onset-timing of impacts are uncertain and are scenario-dependent (Anderson et al. 2008).

3.9.2 Environmental Consequences

3.9.2.1 No Action Alternative

Individually approved transfers and/or exchanges would be conveyed via gravity and would not result in adverse impacts to global climate.

3.9.2.2 Proposed Action

GHG generated by the Proposed Action is expected to be extremely small, if any, compared to sources contributing to potential climate change since the exchange of water would be conveyed via gravity and no additional pumping from electric motors would be required. 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 and a net increase in GHG emissions among the pool of GHG would not be detectable.

3.10 Cumulative Impacts

Impacts analyzed in Section 3 of this EA are considered part of the cumulative impacts analysis since the AWTP itself is a program which streamlines the acknowledgement process for several transfer and/or exchange actions. In addition, Reclamation has and is reasonably assumed to continue approving other transfers, exchanges, and Warren Act contracts – all of which are actions outside the scope of this EA but could still potentially contribute to cumulative impacts on the affected environment. These will be referred to as similar past, existing, and reasonably foreseeable actions.

The Proposed Action, when taken into consideration similar past, existing, and reasonably foreseeable actions would have beneficial impacts to groundwater resources since landowners would not have to rely on groundwater pumping to irrigate their crops. There would be no adverse impacts to Friant Division facilities since coordination with Reclamation and the Friant Water Authority is required to make sure that excess capacity exists within Friant Division facilities. In addition, coordination would ensure that Reclamation's obligations to deliver water to other CVP contractors, wildlife refuges, and other requirements would not be adversely impacted or indirectly impact third parties. Most transfers, exchanges, and/or Warren Act contracts that receive Reclamation approval within the affected environment is intended to help supplement a particular district's, or districts', water supply in order to irrigate and maintain existing agriculture. Cumulative projects would not increase or decrease the amount of CVP water each district receives under contract with Reclamation. Transfers and/or exchanges would be between willing participants. The Proposed Action would not contribute to cumulative adverse impacts to water resources.

When taken into consideration with other similar past, existing, and reasonably foreseeable actions, the Proposed Action would have slight beneficial impacts to socioeconomics; however, the impacts would be short-term and within historical variations.

The Proposed Action is found to not have any impacts on land use, biological resources, ITA, Indian sacred sites, and environmental justice; therefore, would not contribute to adverse cumulative impacts these resources when taken into consideration other similar past, existing, and reasonably foreseeable actions. GHG impacts are considered to be cumulative impacts. The Proposed Action, when added to other existing and future actions, would not contribute to cumulative impacts to global climate change owing to the Environmental Protection Agency's threshold (25,000 tons/year) magnitude of GHG emissions requirement for reporting (EPA 2009).

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Section 4 Consultation and Coordination

4.1 Public Review Period

Reclamation intends to provide the public with an opportunity to comment on the Draft Finding of No Significant Impact (FONSI) and Draft EA during a 30-day comment period.

4.2 Fish and Wildlife Coordination Act (16 USC § 661 et seq.)

The Fish and Wildlife Coordination Act (FWCA) requires that Reclamation consult with fish and wildlife agencies (federal and state) on projects either conducted by the federal agency under a permit or license issued by the federal agency, that would impound, divert, control or otherwise modify a body of water. As the Proposed Action does not involve any construction, permitting, or licenses from Reclamation, FWCA does not apply.

4.3 Endangered Species Act (16 USC § 1531 et seq.)

Section 7 of the ESA 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.

The Proposed Action would not change the land use patterns of the cultivated or fallowed fields that do have some value to listed species. In addition, the short duration of the water availability, the requirement that no native lands be converted without consultation with the USFWS, and the stringent requirements for transfers under applicable laws would prevent any adverse impact to any federally listed species or any critical habitat. The Proposed Action would not alter CVP operations, water storage or release patterns from CVP facilities, or the maximum volume of water delivered to the Contractors. Therefore, consultation with the USFWS or with the NMFS is not required. The USFWS will be sent a copy of the Draft EA and FONSI when they are released for public review.

4.4 National Historic Preservation Act (16 USC § 470 et seq.)

The NHPA of 1966, as amended (16 USC 470 *et seq.*), is the primary federal legislation which outlines the Federal Government's responsibility to cultural resources. Section 106 of the NHPA requires the Federal Government to take into consideration the effects of an undertaking on listed cultural resources or those eligible for inclusion in the National Register. Those resources that are on or are eligible for inclusion on the National Register are referred to as historic properties.

The activities associated with the Proposed Action would include no new ground disturbance, no change in land use, and the use of existing conveyance features to move water. Reclamation has determined that there would be no potential to affect historic properties by the Proposed Action pursuant to 36 CFR 800.3(a)(1) (see Appendix A for cultural resources determination).

Section 5 List of Preparers and Reviewers

Michael Inthavong, Natural Resources Specialist, SCCAO
Amy Barnes, Archaeologist, MP-153
Patricia Rivera, Indian Trust Assets, MP-400
Shauna McDonald, Wildlife Biologist, SCCAO – Reviewer
George Bushard, Repayment Specialist, SCCAO – Reviewer
Rena Ballew, Repayment Specialist, SCCAO - Reviewer
Rain Healer, Natural Resources Specialist, SCCAO - Reviewer

Section 6 References

- Anderson, J., F. Chung, M. Anderson, L. Brekke, D. Easton, M. Ejetal, R. Peterson, and R. Snyder. 2008. Progress on Incorporating Climate Change into Management of California's Water Resources. *Climatic Change* (2008) 87 (Suppl 1):S91–S108 DOI 10.1007/s10584-007-9353-1.
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- Reclamation (Bureau of Reclamation). 2006. Final Environmental Assessment for the Accelerated Water Transfers and Exchanges, Central Valley Project Contractors, Friant Division, 2006-2010. March 3, 2006.
- Reclamation (Bureau of Reclamation). 2006. Final Supplemental Environmental Assessment for the Accelerated Water Transfer Program, Friant and Cross Valley Contractors, 2006-2010. March 30, 2006.

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USFWS (United States Fish and Wildlife Services). 2008. Biological Opinion on the Coordinated Operations of the Central Valley Project and State Water Project. December 15, 2008.

Appendix A – ITA and Cultural Resources Determinations

Inthavong, Michael T

Subject: FW: ITA Request Form (EA-10-52)

From: Rivera, Patricia L
Sent: Tuesday, November 09, 2010 11:46 AM
To: Inthavong, Michael T
Subject: FW: ITA Request Form (EA-10-52)

Michael,

I reviewed the proposed action to approve a five-year Accelerated Water Transfer Program (AWTP), which would provide a streamlined pre-approval process for annual transfers and/or exchanges of Friant Division Central Valley Project (CVP) water between eligible Friant Division and Cross Valley contractors within the same geographical area who receive CVP service from Friant Division facilities and who possess CVP interim or long-term water service contracts, or repayment contracts. The Proposed Action would utilize existing Friant Division facilities including Millerton Lake, Friant Dam, Madera Canal, and the Friant-Kern Canal (FKC). Eligible participants would be able to transfer and/or exchange up to 255,000 acre-feet of Friant Division CVP water per Contract Year. The AWTP would be in effect for the 2011 through 2015 Contract Years (March 1, 2011 through February 28, 2016).

The proposed action does not have a potential to impact Indian Trust Assets. The nearest ITA is Table Mountain Reservation and the project location is located within the Reservation.

Patricia

Inthavong, Michael T

From: Barnes, Amy J
Sent: Monday, November 08, 2010 1:02 PM
To: Inthavong, Michael T; Siek, Charles R
Cc: Perry, Laureen (Laurie) M; Nickels, Adam M; Overly, Stephen A; Bruce, Brandee E; Goodsell, Joanne E
Subject: EA-10-052 Accelerated Water Transfer Program for Friant Division (11-SCAO-022)

Tracking #11-SCAO-022

Project: EA-10-052 Accelerated Water Transfer Program for Friant Division

The proposed activities associated with Reclamation renewing the accelerated water transfer and/or exchange program (AWTP) with Friant Division and Cross Valley Central Valley Project (CVP) contractors will have no potential to affect historic properties. As part of the Central Valley Project Improvement Act, Reclamation has regularly approved water transfers and/or exchanges between CVP contractors geographically situated within the same region, and who are provided water service through the same CVP facilities. The purpose of the AWTP is to relocate CVP water supplies from areas of low demand to areas of greater demand. Due to variations in weather and hydrological conditions, agricultural water needs are time sensitive, and usually arise on short-notice. The proposed AWTP will utilize existing Friant Division facilities, including Millerton Lake, Friant Dam, Madera Canal, and the Friant-Kern Canal. This project will not require new construction or modification to these facilities.

As the proposed action has no potential to affect historic properties pursuant to 36 CFR Part 800.3(a)(1), no additional consideration under Section 106 of the National Historic Preservation Act is required.

Thank you for the opportunity to review the proposed action. Please place a copy of this concurrence with the EA administrative record. Please also incorporate the following edits to the EA.

3.4.2 Environmental Consequences

3.4.2.1 No Action

Under the No Action Alternative, the AWTP would not be renewed and no potential impacts to cultural resources would occur. All operations would remain the same, resulting in no impacts to cultural resources.

3.4.2.2 Proposed Action

The Proposed Action involve the transfer and/or exchange of water through existing facilities, which would not result in modifications, new construction, or changes in land use. Because the Proposed Action would result in no physical alterations of existing facilities and no ground disturbance as stipulated in Section 2.2 of this EA, Reclamation concludes that the Proposed Action has no potential to cause effect to historic properties pursuant to the regulations at 36 CFR Part 800.3(a)(1), and would result in no impacts to cultural resources.

4.4 National Historic Preservation Act (16 USC § 470 et seq.)

The National Historic Preservation Act (NHPA) of 1966 is the primary Federal legislation which outlines the Federal Government's responsibility to cultural resources. Section 106 of the NHPA requires the Federal Government to take into consideration the effects of an undertaking listed on cultural resources on or eligible for inclusion in the National Register of Historic Places (National Register). Those resources that are on or eligible for inclusion on the National Register are referred to as historic properties.

Amy J. Barnes
Archaeologist

Appendix B – Friant Division CVP Contractors

Some Friant Division agricultural contractors have incidental M&I uses – i.e. parcels of land of five acres or less with stabled hobby horses, ornamental landscaping, and/or fruit trees and vegetable gardens for family consumption and not commercial sale.

Arvin-Edison Water Storage District (AEWSD)

AEWSD is located in Kern County in the southeasterly portion of the San Joaquin Valley. AEWSD was formed in 1942 and its original size was 129,988 acres. Currently, AEWSD comprises 132,000 acres, of which, 109,230 acres are irrigated. Urbanization has changed approximately 2,500 acres of agricultural lands to M&I. AEWSD entered into its first long-term contract with Reclamation for 40,000 af of Class 1 and 311,675 af of Class 2 water. The main crops in AEWSD are grapes, potatoes, oranges and cotton.

The CVP water supplies for AEWSD are variable and regulates this water by use of the groundwater reservoir underlying AEWSD. In addition, AEWSD engages in Article 5 exchanges of CVP water with the CV Contractors. Up to 128,300 af/y of CV Contractor's CVP water is delivered to AEWSD. This water is diverted from the Delta through the Aqueduct and to the CVC. In exchange, the Friant CVP water that would have flowed down the FKC to AEWSD is diverted by the CV Contractors in the FKC. Due to the variances in allocations of Friant CVP water, these exchanges may not even out each year. However, over the long-term the amounts of water would be equal. Two of the CV Contractors have terminated their exchange arrangements with AEWSD resulting in approximately 70,984 af/y maximum delivered to the remaining six CV Contractors and approximately 66,096 af/y of water returned to AEWSD.

AEWSD takes Friant CVP water from a turnout located at the terminus of the FKC. AEWSD has 45 miles of lined canals and 170 miles of pipeline. AEWSD maintains three spreading basins to percolate water into the aquifer for storage. Gravity and pressure fed ponds are filled from surface water supplies in “wet” years, while groundwater wells are used to extract stored water in “dry” years. The safe yield of the groundwater supply is 89,900 af.

In 1997, AEWSD entered into a 25-year agreement with the Metropolitan Water District of Southern California (MWD), in which AEWSD agreed to bank approximately 250,000 af/y of MWD State Water Project Supply for later extraction in drought years. AEWSD has completed construction of an Intertie pipeline connecting the terminus of its canal to the California Aqueduct to enhance the water banking and exchange program. The Intertie pipeline does not create new or additional contractual supplies.

AEWSD has historically delivered an average of less than 2,000 af/y of non-CVP to two urban customers, East Niles Community Service District and Sycamore Canyon Golf Course.

Chowchilla Water District

Chowchilla Water District encompasses 123.95 square miles of land primarily to the west of California State Highway 99 and straddling California State Highway 152. There are 65,000 irrigated acres in the district, all of which is irrigated with CVP water. The district grows 6 primary crops and receives an average of 125,000 acre feet of CVP water per year. The total

contract total allocated for the district is 265,000 acre feet of water annually under 2 contracts. As of 1999, there were 13,200 acres of alfalfa, 14,600 acres of almonds, 7,600 acres of cotton, 9,000 acres of corn, 8,100 acres of grapes and 5,000 acres of sorghum grown in the district. The district maintains and operates 160 miles of unlined canals and 46 miles of pipe for agricultural water delivery. The primary way that the district gets its water is through the Madera Canal and the Fresno River.

City of Fresno

The City of Fresno has prepared a General Plan projected growth in 2025 and identifies the North Growth Area and Southeast Growth Area. The areas would accommodate approximately 10,000 and 55,000 people, respectively. This change in boundaries includes approximately 20 square miles (approximately 12,800 acres).

In 1961, Fresno entered into a long-term water service contract with Reclamation for 60,000 acre feet per year (af/y) of Class 1 Friant water under contract number 14-06-200-8901. Fresno serves municipal and industrial water supplies only. Their entire annual allocation is used to recharge the groundwater in and around the city allowing them to withdraw groundwater on demand to serve municipal and industrial needs.

Fresno is a municipal corporation wholly within the boundaries of FID and shares the water distribution system with FID. FID is a CVP Long-term Contractor also. FID and the Fresno entered into a Cooperative Agreement for Water Utilization and Conveyance dated May 25, 1976 (Agreement). This Agreement provides the terms and conditions for FID to convey and deliver water to Fresno.

FID has combined resources with the City of Fresno, the City of Clovis, the County of Fresno, and the Fresno Metropolitan Flood Control District in a cooperative effort to develop and implement a comprehensive surface and groundwater management program. The main goal of the program involves using flood control basins for recharge during the summer when the basins are not needed to control urban storm runoff. This program also contains elements designed to protect the quality of groundwater in the area.

City of Lindsay

Lindsay is located on the east side of the San Joaquin Valley in Tulare County near the base of the Sierra foothills and has falling grade from east to west. Lindsay is traversed by State Highway 65 running north and south along the west side of the City. Lindsay is located approximately 12 miles east of Tulare and State Highway 99, approximately 11 miles north of Porterville and 15 miles southeast of Visalia. The first census of Lindsay in 1910 indicated 1,814 residents. The latest population estimates in January 1999 showed 9,015 residents. During the 1990's, yearly population growth was at or less than 1% per year. This rate of growth is slower than the rate of Tulare County. The 2000 census indicates the population in Lindsay at 10,297. Lindsay is an agricultural service center. The agricultural industry is built around citrus (oranges), and twelve orange packing houses, providing the major component of the economic base.

In 1958, the City of Lindsay entered into a long-term water service contract with Reclamation for 2,500 acre feet per year (af/y) of Class 1 Friant water under contract number 5-07-20-W0428. City of Lindsay receives up to 50 af/y of CVP water under its contract with County of Tulare.

Lindsay obtains their CVP water from the Friant-Kern Canal at the Honolulu Street turnout. The water treatment plant is at the same location and provides filtration, chemical additions and chlorination.

City of Orange Cove

The City of Orange Cove has a CVP water service contract for 1,400 ac-ft that is used for M&I purposes.

County of Madera

The County of Madera maintains 30 water service districts and 15 sewer service districts throughout the County. Only one of these water service districts receives CVP water, that district is the Hidden Lake Estates. Hidden Lake Estates is located on the north side of Millerton Lake off of Hidden Lake Boulevard, a spur of Madera County Road 210. Hidden Lake Estates is approximately 153 acres and is served through pipes.

Delano-Earlimart Irrigation District

(DEID) is located in Tulare and Kern Counties on the eastern side of the San Joaquin Valley, approximately 10 miles from the Sierra foothills. DEID is comprised of 56,474 acres, of which 46,581 are irrigated. DEID serves agricultural water supplies only. In DEID entered into a long-term contact with Reclamation for 108,800 af/y of Class 1 and 74,500 af/y of Class 2 water. The main crops in DEID are grapes, almonds, deciduous and subtropical orchards. DEID obtains its CVP water from its turnout on the FKC and delivers the water to its customers through 172 miles of pipeline.

DEID recharges the groundwater during surplus “wet” years through operations with the White River channel, as well as, a small 5 acre recharge basin. In 1993, the DEID purchased and developed an 80 acre parcel specifically for development into a groundwater recharge basin. This basin has five separate cells and dual methods for introducing water to each cell from either DEID’s distribution system or from direct diversions out of White River. The FKC flows north-south through DEID and Lake Woollomes is located adjacent to DEID. Lake Woollomes is a feature of the FKC and CVP facilities. DEID does not obtain supplies or recreational opportunities from Lake Woollomes.

Exeter Irrigation District

(EID) is located in Tulare County on the east side of the San Joaquin Valley, nine miles east of the City of Visalia. EID was formed in 1937 and in 1950 entered into a long-term contract with Reclamation for 10,000 af/y of Class 1 and 19,000 af/y of Class 2 water. In 1953, the Class 1 water supply was increased to 11,500 by an amendment to the contract. EID is comprised of approximately 15,184 acres and 12,700 are irrigated. The City of Exeter is located within EID. However, EID serves only agricultural water. EID obtains its CVP water from seven turnouts on the FKC located between MP 74.6 and MP 81.4. EID’s distribution system is comprised of approximately 60 miles of pipeline. EID maintains two small balancing or regulating reservoirs

with a capacity of less than one af each. Yokohl Creek is an intermittent stream which traverses through the northern portion of EID in a northwesterly direction for approximately 2 miles. The main crops grown in EID are citrus, grapes, plums and olives.

Fresno County Waterworks No. 18

Fresno County Water Works #18 (FCWW 18) has a long-term water service contract with Reclamation for up to 150 acre-feet of Class 1 water. A pipeline from the discharge works of the Friant Dam is FCWW 18's diversion point and connects the water stored behind Friant Dam to the water treatment plant nearby. FCWW 18 provides this water for M&I uses to the community of Friant, Millerton State Park and Reclamation needs at Friant Dam.

Fresno Irrigation District

(FID) was formed in 1920 under the California Irrigation Districts Act, as the successor to the privately owned Fresno Canal and Land Company. FID purchased all of the rights and property of the company for the sum of \$1,750,000. The assets of the company consisted of over 600 miles of canals and distribution works which were constructed between the years 1850 and 1880, as well as the extensive water rights on Kings River.

FID, which now comprises some 245,000 acres, lies entirely within Fresno County and includes the rapidly growing Fresno-Clovis metropolitan area. FID now operates approximately 800 miles of canals and pipelines. Total irrigated area exceeds 150,000 acres, although this number has been decreasing in recent years as a result of urban expansion. The main crops in FID are grapes, citrus, and cotton.

A significant improvement in the control and management of the waters of Kings River occurred with the completion of the Pine Flat Dam project by the USACOE in 1954. Although built primarily as a flood control project, Pine Flat Dam provides significant water conservation stemming from the storage and regulation of irrigation water to the 28 water right entities on Kings River including FID. FID is contracted for 11.9% of the 1,000,000 af capacity of Pine Flat Reservoir. While FID is entitled to approximately 26% of the average runoff of Kings River, much of its entitlement occurs at times when it can be used directly for irrigation of crops without the need for regulation at Pine Flat.

In a normal year, FID diverts approximately 500,000 af of water and delivers most of that to agricultural users, although an increasing share of FID's water supply is used for groundwater recharge in the urban area. Depending upon hydrological conditions and Kings River flows, FID diverts water and allocates a proportional share of the water to its customers including the City of Fresno and Clovis. In addition to its entitlement from Kings River, FID and the City of Fresno have signed contracts to purchase up to 135,000 af annually from the Friant Division of the CVP. Historically, excess water applied by the farmers has percolated beyond the root zone and recharged the extensive aquifer underlying FID. Between 85% and 90% of the groundwater supply can be attributed to water imported and distributed by FID.

However, the conversion of agricultural lands to high-density urban uses in the expanding Fresno-Clovis metropolitan area has reduced the capacity to utilize surface water because all municipal and industrial water is obtained by pumping groundwater. A local overdraft has

developed in and around the urban area, and this situation has been exacerbated by the drought of the late 1980s and early 1990s.

FID has combined resources with the City of Fresno, the City of Clovis, the County of Fresno, and the Fresno Metropolitan Flood Control District in a cooperative effort to develop and implement a comprehensive surface and groundwater management program. The main goal of the program involves using flood control basins for recharge during the summer when the basins are not needed to control urban storm runoff. This program also contains elements designed to protect the quality of groundwater in the area.

Garfield Water District

(GWD) is located in Fresno County on the east side of the San Joaquin Valley near the foothills of the Sierra Mountains. GWD is comprised of 1,750 acres, of which, 1,300 are irrigated acres. The main crops are grapes, almonds, olives, stone fruit, citrus and pasture. The distribution system is approximately 8 miles of pipeline. GWD is a CVP contractor with 3,500 af/y of Class 1 Friant water. GWD has no other sources of surface water. GWD is near the foothills and groundwater supply is limited.

Gravelly Ford Water District

Gravelly Ford Water District is located southwest of the City of Madera, California. The district is approximately 13 square miles in size. There are 7,603 irrigated acres in the district the district receives an average of just over 6,000 acre feet of federal water per year. This water is used in conjunction with approximately 10,000 acre feet of water to 4 primary crops. Vines cover just over 4,000 acres of land in the district and are the primary crop. Almonds, cotton and alfalfa are also grown in the district, covering roughly 1,100 acres, 1,400 acres and 500 acres respectively. The district operates 15 miles of unlined canals and 5 miles of pipe in order to deliver water to its customers.

International Water District

International Water District has a CVP water service contract supply of 1,200 ac-ft. This water is delivered for agricultural purposes to permanent crops, mainly citrus.

Ivanhoe Irrigation District

(IID) is located in Tulare County on the east side of the San Joaquin Valley approximately 50 miles southeast of Fresno and 8 miles northeast of Visalia. IID is generally located between the St. Johns River on the south and Cottonwood Creek on the north. As early as 1915 the lands began to be developed for agricultural uses. Irrigation was from groundwater pumping, precipitation and surface diversions from runoff on the Kaweah River. IID was formed in 1948 and has acquired private surface water rights through the Wutchumna Water Company. IID's owns 7.9 shares of Wutchumna Water stock equaling approximately 3,950 af of water. In 1949, IID entered into a long-term contract with Reclamation for 7,700 af/y of Class 1 and 7,900 af/y of Class 2 water. The non-CVP water supplies are diverted from the Kaweah River through the Wutchumna Ditch to IID's diversion facility and is co-mingled with the CVP supply. IID obtains its CVP water supplies through two turnouts on the FKC. IID's distribution system comprises approximately 48 miles of pipeline and three groundwater recharge areas. The three groundwater recharge areas cover approximately 15 acres and are used when surplus water is available.

Approximately three miles of a portion of Cottonwood Creek is also used for recharge purposes. IID does not own or operate groundwater extraction facilities. Therefore, landowners must provide their own wells to sustain irrigation during periods when IID does not have surface water supplies available. IID comprises of 11,202 acres, of which 10,648 are irrigated. The main crops in IID are grapes, citrus, deciduous fruits, and olives.

Kaweah Delta Water Conservation District

On March 1, 2010, Kaweah Delta Water Conservation District (KDWCD) received a partial assignment of 7,400 AF/y of Class 2 and 1,200 AF/y of Class 1 CVP water from Ivanhoe Irrigation District, and is now considered a Friant Division CVP contractor. KDWCD is located in the south-central portion of the San Joaquin Valley and lies in both Tulare and Kings Counties with a total area of about 337,000 acres. KDWCD is comprised of four districts that are entirely or partially within KDWCD boundary: Lakeside Irrigation Water District, Kings County Water District, Corcoran Irrigation District, and Tulare Irrigation District (Table 6). Nearly all of the lands within KDWCD served with Kaweah River water also use groundwater wells to supply irrigation water, primarily due to the erratic, relatively undependable, nature of flow on the Kaweah River. All M&I water uses within the KDWCD are supplied from groundwater. KDWCD can take delivery of CVP water from the FKC, which passes through the eastern portion of the district.

KDWCD lands are primarily agricultural, although the cities of Visalia and Tulare constitute significant areas of urbanization. Farmersville is the other incorporated area. Smaller unincorporated rural communities include Goshen, Ivanhoe, Waukena, and Guernsey. A high degree of agricultural development exists in the KDWCD, with approximately 266,000 acres presently devoted to the production of a variety of irrigated crops, 3,200 acres idle or fallow (including roads and canals), 13,000 acres in farmsteads, 23,300 acres undeveloped and approximately 31,500 acres of urbanized land. The principal crops are cotton, miscellaneous field crops, deciduous fruit and nut trees and alfalfa.

KDWCD encompasses the alluvial fan of the Kaweah River, extending about 40 miles in a southwesterly direction from the foothills of the Sierra Nevada Mountains on the east to the center of the San Joaquin Valley in the vicinity of the Tulare Lake bed on the west. KDWCD is generally bounded on the north and west by the service area of the Kings River and on the south by the service area of the Tule River.

Numerous public and private entities within KDWCD's boundaries divert water from the Kaweah River and its distributaries. Nearly all of the lands served with Kaweah River water also use groundwater wells to supply irrigation water, primarily due to the erratic, relatively undependable, nature of flow on the Kaweah River. All municipal and industrial water uses within KDWCD are supplied from groundwater.

Terminus Dam and Lake Kaweah, located on the Kaweah River about 3.5 miles to the east of KDWCD, was completed in 1961 by the USACOE. This project was constructed for flood control purposes on the Kaweah River and to provide river control and water conservation for irrigation purposes. KDWCD has a contract with the United States for repayment for the project

costs allocated to water conservation. The reservoir currently holds about 143,000 acre-feet, with construction underway to expand capacity to 183,300 acre-feet.

KDWCD and its sub-entities have historically received substantial quantities of water surplus to the needs of CVP Contractors. Over the past 50 years, an excess of 5 million acre-feet of CVP water has been imported into KDWCD. KDWCD and the Kaweah River groundwater basin have experienced long-term groundwater overdraft estimated in 1972 to be 89,000 acre-feet per year. KDWCD is currently undergoing new studies of groundwater data to determine the extent and volume of groundwater overdraft within its boundaries. There are currently 40 recharge basins within KDWCD covering approximately 5,000 acres. While KDWCD owns and operates many of the groundwater recharge basins, it does not provide water-banking services for others. Conversion of land from agricultural uses to urban/commercial uses has occurred, is occurring and is expected to continue to occur in these communities consistent with the general plans and zoning for these communities as may be amended. While KDWCD owns and operates numerous groundwater recharge basins within its boundaries, it does not provide water banking for others.

Lewis Creek Water District

(LCWD) is located on the east side of the San Joaquin Valley in Tulare County near the base of the Sierra foothills and has falling grade from east to west. LCWD is traversed by State Highway 65 running north and south along the west side of the City. LCWD is located approximately 12 miles east of Tulare and State Highway 99, approximately 11 miles north of Porterville and 15 miles southeast of Visalia. The first census of LCWD in 1910 indicated 1,814 residents. The latest population estimates in January 1999 showed 9,015 residents. During the 1990's, yearly population growth was at or less than 1% per year. This rate of growth is slower than the rate of Tulare County. The 2000 census indicates the population in LCWD at 10,297. LCWD is an agricultural service center. The agricultural industry is built around citrus (oranges), and twelve orange packing houses, providing the major component of the economic base. LCWD has a water service contract with Reclamation for 1,450 acre feet per year (af/y) of Class 1 Friant water.

LCWD obtains their CVP water from the Friant-Kern Canal at the Honolulu Street turnout. The water treatment plant is at the same location and provides filtration, chemical additions and chlorination.

Lindmore Irrigation District

(LID) is located in Tulare County at the base of the Sierra foothills. LID's northern boundary extends approximately 2 miles from Lindsay and extends approximately 1 ½ miles south of Strathmore. LID is approximately 9 miles long and 10 miles wide and comprises 27,255 acres, of which 25,700 are irrigated. LID was formed in 1937 and in 1948 entered into a long-term contract with Reclamation for 33,000 af/y of Class 1 and 22,000 af/y of Class 2 water. LID lies over the Kaweah Basin. The safe groundwater yield for LID was calculated in 1987 to be 21,000 af/y. LID operates a conjunctive use program to manage surface and groundwater supplies. LID uses groundwater at the beginning of the growing season to warm the CVP water while filling LID's pipeline system. This reduces maintenance costs and leaks in the concrete irrigation pipes due to contraction of cold water. The main crops grown in LID are oranges, olives, cotton, and alfalfa. LID obtains their CVP supplies from four turnouts on the FKC between MP 88.4 and

93.2. LID's conveyance system comprises of 123 miles of pipeline and five reservoirs. The Noel reservoir is 3 af, earthen-clay lined reservoir used for balancing (overflow). The Montgomery reservoir is 4.5 af, earthen-clay lined and is used for balancing (overflow). The Brewer reservoir is 6.5 af, earthen-clay lined and is used for balancing (overflow). The 93.2E N. reservoir is 5.5 af, concrete lined and is used for balancing (equalizing). The 93.2-0.1S S. reservoir is 2.5 af, concrete lined and is used for balancing (equalizing).

Lindsay-Strathmore Irrigation District

(LSID) was formed in 1915 and is located in Tulare County on the east side of the San Joaquin Valley. LSID comprises 15,700 acres, of which 12,700 acres are irrigated to permanent crops. LSID's original imported water supply was from the Kaweah River through LSID's ownership of Wutchumna Water Company stock and 39 deep wells. The supplies from the Wutchumna Water Company range from 5,000 to 14,000 af/y. LSID enters into Warren Act Contracts with Reclamation to transport this water within LSID using CVP facilities. The groundwater supply is limited to 18,000 af/y. In 1948, LSID entered into a long-term contract with Reclamation for 3,900 af/y of Class 1 water. In 1985, the contract amount was amended to 27,500 af/y. The main crops in LSID are oranges and olives. LSID serves only agricultural water.

LSID obtains their CVP water supplies from its turnout at MP 85.56 of the FKC. LSID's distribution system is approximately 115 miles of pipeline and three balancing reservoirs. The Main reservoir is 80 af and concrete lined. The High-Level reservoir is 5 af and concrete lined and the El Mirado reservoir is a 200,000 gallon steel tank. LSID operates 5 groundwater wells with a normal production of 1,750 GPM. These wells are not utilized if surface water is available due to the high cost of pumping. No usable groundwater basin underlies LSID. LSID lies too far east against the foothills to be influenced by either the Kaweah or Tule Rivers. LSID does not operate recharge areas or a conjunctive use program. LSID contractually uses the conjunctive use capacity of the Tulare Irrigation District, a common stockholder in the Wutchumna Water Company, by delivering LSID's Kaweah River water through the Wutchumna Ditch to the Tulare Irrigation District turnout. Tulare Irrigation District either uses this water for irrigation (in lieu recharge) or direct sinking in their groundwater recharge basins. During "dry" years, Tulare Irrigation District's farmers utilize the groundwater delivered by LSID. Tulare Irrigation District returns surface water to LSID through either the FKC or through the Kaweah River system.

Lower Tule River Irrigation District

See description under Cross Valley Contractors.

Madera Irrigation District

MID receives 85,000 af/y of Class 1 and 186,000 af/y of Class 2 water from the Friant Division of the CVP. In 1975 Hidden Dam was completed on the Fresno River providing a more regulated flow. MID entered into a long-term contract with Reclamation for water from Hensley Lake behind Hidden Dam. MID annexed lands for 24,000 af/y projected average yield for new water generated by the Hidden Dam project. This 24,000 af/y is both federal water and MID's water rights water from the Fresno River, including Big Creek Diversion from the Merced River watershed and the Soquel Diversion from the San Joaquin River watershed. MID has pre-1914 water rights of 20,000 af/y from the Soquel-Big Creek. Water supplied under the Hidden Dam contract with Reclamation is for the conservation (define) yield. The Big Creek and Soquel

diversions provide an annual average supply of 10,000 and 9,700ac-ftrespectfully. The Fresno River adjudicated and appropriate average annual supply is approximately 20,000ac-ftand is inclusive of the Big Creek and Soquel diversions.

MID's right to this non-project water is separate from those held by the Project. Neither alternative would interfere with the normal operation of the Friant Division, nor alter the schedule and amount of CVP Project water diverted by the Project from the San Joaquin River.

MID and surrounding area is within a groundwater deficient area as designated by the State Department of Water Resources. MID considers their recharge to be from percolation ponds located throughout the district. MID monitors the depth to static water level within the district although MID does not provide groundwater. Private landowners have wells and extract groundwater when surface water supplies are not available. Reclamation calculated the safe yield of the portion of the Madera Basin that underlies MID to be 117,000 af/y. The groundwater quality is considered to be of excellent quality as it does not exceed any of the maximum contaminant levels for secondary drinking water standards. However, in recent years the groundwater in areas near Hwy 99 and Avenue 12 has a plume of DBCP that flows southwesterly through the basin. Studies conducted in 1993 indicated the DBCP in the groundwater had decreased significantly. The groundwater in areas surrounding the Tri-Valley Growers olive plant (Oberti Olives) near Avenue 13 and Road 26 contains salt brine. Tri-Valley Growers are implementing remediation measures to correct this problem under the regulatory direction of the Regional Water Quality Control Board.

A portion of the city of Madera lies within the boundaries of MID. These lands are assessed on a per square-foot basis and receive groundwater recharge benefit from canals that pass through the city. MID does not provide surface water supplies to the city of Madera.

The main crops in MID are grapes, almonds, cotton, cereals, and grasses.

Orange Cove Irrigation District

(OCID) is located in Fresno and Tulare Counties and was formed in 1937. OCID is about 30 miles southeast of Fresno and 20 miles north of Visalia. OCID is 14 miles long and 3 miles wide and has 28,000 acres, of which approximately 26,788 are irrigated. In 1949, OCID entered into a long-term contract with Reclamation for 31,800 af and in 1989, the contract amount was amended to 39,200 af/y of Class 1 water. OCID obtains their CVP water supplies from fifteen diversion points on the FKC between MP 35.87 to 53.32. OCID's distribution system is 105 miles of pipeline and one regulating reservoir with a capacity of 8 af. A groundwater basin is almost non-existing under OCID. The area immediately east of Smith Mountain and the area in the vicinity of Navelencia contain basin water. The majority of wells are located in this area. The safe yield does not exceed 28,000 af/y. OCID does not operate any groundwater wells or recharge facilities due to the existing groundwater conditions. OCID provides approximately 1.4 af per acre. Therefore, the balance of crop needs are made up from precipitation and groundwater pumping. The landowners in OCID manage the groundwater supplies through conjunctive use practices. OCID transfers unused water supplies out to other districts for storage and banking. OCID is pursuing partners for a long-term transfer program or groundwater banking program to balance water in wet and dry years. The main crops in OCID are citrus, grapes, deciduous and subtropical orchards, olives, and nuts.

Porterville Irrigation District

(PID) is located in Tulare County and is comprised of 17,400 acres, of which 13,061 are irrigated. PID was formed in 1949. PID entered into a long-term contract with Reclamation for 16,000 af/y of Class 1 and 30,000 af/y of Class 2 water. PID has an average annual entitlement of 12,900 af/y of water supply from the Tule River.

The FKC enters PID at the northeast corner and exists in the south central portion. The Tule River passes through PID in a northwesterly direction. PID owns the facilities of two improvement districts. Improvement District No. 1 consists of approximately four miles of pipeline and serves 854 acres. Improvement District No. 2 consists of 3.3 miles of open ditch and serves 1,266 acres. PID obtains their CVP supplies from six diversion points on the FKC. In addition to its owned facilities, PID has entered into agreements with Lower Tule River Irrigation District and other entities to utilize non-District owned facilities to convey PID's Water. Through an agreement between PID and Lower Tule River Irrigation District, CVP water deliveries are conveyed through facilities owned or operated by Lower Tule River Irrigation District within PID. These facilities consist of 13 miles of unlined canals.

PID also conveys both CVP supplies and Tule River water through facilities owned by the Porter Slough Ditch Company, the Hubbs-Miner Ditch Company, the Rhodes-Fine Ditch Company and the Gilliam-McGee Ditch Company. These facilities consist of approximately 13 miles of unlined ditch within PID. The facilities belonging to these companies are operated by PID under long-term agreements with the entities. PID operates two percolation basins. PID owns no storage facilities. It does, however, own a portion of the water conservation storage space within Success Reservoir. This storage space is used to store water rights water owned by ditch companies with which PID has operating agreements. PID serves agricultural water only. The main crops in PID are walnuts, cotton, grapes, alfalfa, prunes, corn and citrus.

Saucelito Irrigation District

SID was formed in 1941 and is located in Tulare County, approximately ten miles southwest of Porterville, two miles south of Poplar, eight miles east of Tipton and five miles west of Terra Bella. Deer Creek crosses SID, for about 5 miles, near its southerly boundary and runs during wet years. SID takes no diversions off Deer Creek. The FKC is located on the eastern boundary of SID.

SID entered into a long-term contract with Reclamation in 1959 for the construction of facilities. Water deliveries began in 1961 for 21,200 af/y Class 1 and 32,800 af/y of Class 2 water. Currently, SID comprises of 19,453 acres, of which 19,057 are irrigated. SID has five individual water users that are Riparian Water rights holders totaling 9.5 shares at 55 acre feet per share from Mole Ditch. SID engages in exchanges with the Cross Valley Contractors. SID obtains its CVP water supplies from 4 diversion points on the FKC between MP 11.64 and 107.35 and Deer Creek diversion at MP 102.69. SID's distribution system is 55 miles of pipeline with one recharge pond that covers approximately ½ acre. Deer Creek also provides groundwater recharge in wet years. The main crops in SID are milo, wheat, cotton, grapes and almonds.

Shafter-Wasco Irrigation District

(SWID) was formed in 1937 and is located in Kern County about 20 miles northwest of Bakersfield. Currently, SWID is comprised of 38,766 acres, of which 32,000 are irrigated. Included within its boundaries are the cities of Shafter and Wasco covering approximately 2,400 acres. SWID entered into a long-term contract with Reclamation in 1955 for 50,000 af/y of Class 1 and 39,600 af/y of Class 2 water. SWID does not have any other long-term surface water supplies.

SWID obtains its CVP water supplies from two turnouts on the FKC at MP 134.4 and 137.2. The distribution system is .3 miles of lined canals and 117 miles of pipeline. SWID does not own or operate any water storage facilities or groundwater extraction facilities. Landowners must provide wells to meet irrigation demands when SWID does not have adequate surface water supplies available. The main crops in SWID are almonds, cotton, alfalfa, nursery stock, grains, grapes, blackeye peas and carrots. SWID has a history of transferring small amounts of water to neighboring districts.

Southern San Joaquin Municipal Utility District

(SSJMUD) was formed in 1935 and is located in Kern County, approximately 75 miles southeast of Fresno and 30 miles northwest of Bakersfield. Currently, SSJMUD is comprised of approximately 61,000 acres, of which 47,000 are irrigated. SSJMUD entered into a long-term contract with Reclamation in 1945 for 97,000 af/y of Class 1 and 50,000 af/y of Class 2 water and does not have other long-term surface water supplies.

SSJMUD obtains its CVP water supplies from nine diversion points on the FKC between MP 119.6 and 130.4. The distribution system is 158 miles of pipeline. SSJMUD operates eleven regulating reservoirs that provide groundwater recharge. Poso Creek and other smaller foothill drainages provide recharge to the groundwater. SSJMUD does not own and operate groundwater production facilities. Landowners must provide well to irrigate during times when SSJMUD does not have surface water supplies available to meet irrigation demands. The main crops in SSJMUD are alfalfa, citrus, grapes, cotton, nuts and barley. SSJMUD does not typically transfer water in or out.

Stone Corral Irrigation District

(SCID) was formed in 1948. SCID is located in Tulare County, approximately 30 miles southeast of Fresno and 10 miles north-northeast of Visalia. SCID's longest portion, north to south, is 3 ¼ miles and its greatest width, east to west, is 3 miles. SCID is comprised of 6,488 acres, of which 5,470 acres are irrigated. SCID entered into a long-term contract with Reclamation for 7,700 af/y of Class 1 water in 1950. In 1959, the contract was amended to 10,000 af/y of Class 1 water. SCID receives a small amount of water through exchange arrangements with CVC Contractors. This amount is 950 af/y of CVP water. The safe yield for the groundwater supply in SCID is approximately 3,200 af.

The FKC runs approximately along the north and east boundaries. SCID obtains the CVP water from the FKC at MP 57.90, 59.33, 60.90 and 62.68. The conveyance system is 27 miles of pipeline. SCID serves only agricultural water. The main crops are citrus, and deciduous and subtropical fruit.

Tea Pot Dome Water District

(TPDWD) was formed in 1954 and is located in southeastern Tulare County, approximately three miles south of Porterville. TPWD is comprised of 3,282 acres, and all are irrigated. TPDWD relies mostly on their CVP contract water supplies.

In 1958, TPDWD entered into a long-term contract with Reclamation for 7,500 af/y of Class 1 water. TPDWD does not have any other long-term surface water supplies. TPDWD does not own or operate groundwater recharge or extraction facilities. Landowners pump small amounts of groundwater. TPDWD receives its CVP water supplies from its turnout on the FKC. The distribution system is 20 miles of pipeline. The main crops are citrus and olives.

Terra Bella Irrigation District

(TBID) was formed in 1915 and is located in Tulare County about 75 miles southeast of Fresno and about eight miles south of Porterville. Deer Creek flows westerly and passes through the northern portion. Fountain Spring Gulch flows in a northwest direction, traversing a portion of TBID. TBID is comprised of 13,962 acres, of which, 11,165 are irrigated. The town of Terra Bella is located within TBID's boundaries with an estimated population of 3,870. TBID provides CVP and groundwater CVP for domestic purposes and to the town of Terra Bella.

TBID entered into a long-term contract with Reclamation in 1950 for 29,000 af/y of Class 1 water. TBID receives its CVP water supplies from the FKC at MP 103.64, MP 102.69 and Deer Creek to a percolation pond. The distribution system is 152 miles of pipeline. TBID does not have any other long-term surface water supplies.

TBID's deep well system is barely adequate to support small winter demands. Historically, there were a total of 83 wells drilled over the years in TBID. Currently, TBID owns and operates 10 wells. Recently, TBID has lost the use of three wells due to chemical contamination. TBID is losing its groundwater supply. There are no significant grower or landowner wells. TBID uses three regulating reservoirs during the irrigation season and are also used for storage in the winter. Station 1 has a capacity of 0.185 million gallons, Station 2 has 0.212 million gallons and Station 3 has a 1.880 million gallon capacity.

TBID has developed groundwater banking arrangements with other districts. Groundwater banking arrangements have enabled TBID, a groundwater deficient district, to produce crops during drought years. In years when surplus amounts of water are available, TBID transfers water to other districts for direct use, resale, or percolation through recharge basins. TBID and Lower Tule River Irrigation District have a long history of water exchanges. TBID transfers water to Lower Tule River Irrigation District and, in turn, transfers water to TBID in dry years. TBID provides agricultural water, in addition to, municipal and industrial water for domestic use. The main crops are nuts, deciduous fruit orchards, and citrus.

Tulare Irrigation District

(TID) was formed in 1889 and is located in western Tulare County on the eastside of the San Joaquin Valley. TID currently comprises of 70,000 acres, of which, approximately 62,000 are irrigated. The city of Tulare lies on the eastern portion at the intersection of the Southern Pacific and Santa Fe Railroads and on U.S. Highway 99. TID provides only agricultural water supplies

and does not service the city of Tulare. Water for Tulare is extracted from the ground and furnished through City owned facilities.

TID entered into a long-term contract with Reclamation in 1950 for 30,000 af/y of Class 1 and 141,000 af/y of Class 2 water. TID has pre-1914 water rights on the Kaweah River for approximately 50,000 af/y of water. TID's owned Kaweah River water rights are 1) Crocker Cut on the Lower Kaweah Branch, 2) St. Johns Canal (TID) on the St. Johns Branch and 3) Crossmore cut Packwood Creek) on the St. Johns Branch. Water is also made available through share holdings in the following Kaweah River agencies: Tulare Irrigation Company, Wutchumna Water Company, Persian Ditch Company, Evans Ditch Company, and Consolidated Peoples Ditch Company. Groundwater recharge occurs from percolation in the canals and natural channels, recharge basins, and treated municipal and industrial effluent. TID has 12 groundwater recharge areas covering a total of 1,110 acres. TID does not operate extraction wells.

TID obtains their CVP water supplies from its three turnouts which is are located approximately 14 miles northeast of the District Service Area. The water is conveyed in TID's Main Intake Canal as well as the St. Johns and Lower Kaweah river branches and distributaries therefrom. Diversions into this Main Intake Canal include water from the Kaweah and St. Johns River branches. The Packwood Creek diversion system begins at the terminus of the Lower Kaweah River approximately 10 miles northeast of TID. The distribution system within the District's service area includes 300 miles of unlined canals, ¼ mile of lined canal and 30 miles of pipeline. The main crops in TID are alfalfa, field corn, wheat, cotton and nut tree crops.

Appendix C – Cross Valley CVP Contractors

There are seven CV Contractors, and of those seven contractors, the County of Tulare provides water for irrigation and M&I use to ten customers. The CV Contractors and customers are all located in the same geographical area as the Friant Division Contractors. The following descriptions characterize each contractor and customer:

County of Fresno

Pursuant to the County of Fresno's water service contract, CVP water is delivered to Fresno County Service Area #34 via the Cross Valley Canal exchange with AEWS. Typically, Service Area #34 takes approximately 500 af annually.

County of Tulare

In certain years, only a portion or none of the CV water is pumped and conveyed, therefore, the County of Tulare purchase water on the open market to make up the deficits. The County of Tulare is comprised of ten customers – both agricultural and M&I. All are located in the same geographical area as the Friant Division Contractors. Of those ten customers, only five have routinely taken water deliveries via the Cross Valley Canal Exchange or through direct water purchases from Friant Division Contractors via the County of Tulare's interim contract in recent years. The County of Tulare's CVP contract supply is for 5,308 af and is divided among the ten customers as shown below:

- Alpaugh Irrigation District – 100 af (ag)
- Atwell Island Water District – 50 af (ag)
- Hills Valley Irrigation District – 2,913 af (ag)
- City of Lindsay – 50 af (M&I)
- Saucelito Irrigation District – 100 af (ag)
- Fransinetta Farms LLC – 400 af (ag)
- Stone Corral Irrigation District – 950 af (ag)
- Strathmore Public Utility District – 400 af (M&I)
- Stro-Tek, Inc. – 45 af (M&I)
- City of Visalia 300 af (M&I)

Hills Valley Irrigation District

Hills Valley Irrigation District (HVID) is located in Fresno County about 20 miles east of Fresno and 5 miles north of Orange Cove. A small portion of the HVID is located in Tulare County. HVID does not maintain a central office or full time staff. The operations and maintenance of the facilities are conducted through a contractual agreement with a private contractor.

In 1976 HVID entered into a long-term renewable contract with Reclamation for 2,146 af/y. In 1995, the contract amount was amended to 3,346 af/y. HVID entered into a contract for Cross Valley CVP water through County of Tulare for 954 af/y and an additional 1,100 af/y. Subsequently HVID acquired 904 af/y from AIWD's subcontract with County of Tulare. The total amount of CVP water is 6,304 af/y.

Four intermittent streams flow into HVID. Wahtoke and Wooten Creeks flow through HVID. Hills Valley and Navelencia Creeks are both natural channels which have been destroyed by land leveling operations. An artificial channel has been constructed through the area that is adequate to prevent flooding from Hills Valley Creek, while no channel appears to be necessary to control any flooding from Navelencia Creek waters.

HVID is comprised of approximately 4,319 acres, of which, 3,602 are irrigated acres. HVID is divided into three areas. Improvement Districts Nos. 1 and 2 and the non-improved district. Improvement District No. 1 covers 1,276 acres, Improvement District No. 2 is 1,990 acres and the remaining 795 acres are outside any improvement district but are within HVID's boundaries. HVID's distribution system is comprised of approximately 11 miles of pipeline. HVID does not have any groundwater extraction facilities, therefore, landowners must provide their own wells to sustain irrigation during periods when surface water supplies are inadequate. HVID constructed a 15 af regulating reservoir within Improvement District No. 1 and two regulating reservoirs in Improvement District No. 2.

The low yielding wells within HVID are useful as a supplemental irrigation supply and in controlling the buildup of a perched water table in some areas. Therefore, HVID has limited conjunctive use capability. HVID is located near the foothills of the Sierra Nevada Mountains and has relatively low aquifer storage capacity, shallow depth of sediments prevail and in some locations restricted lateral drainage out of HVID occurs. Landowners located in isolated areas do not have wells. For those landowners who do have wells maintain a balance between recharge and withdrawal to prevent insufficient water supplies from occurring while avoiding waterlogging other areas. Typically, the landowners with wells extract groundwater in the spring when the groundwater levels are at their highest. The main crops are oranges, prunes/plums and grapes.

Kern-Tulare Water District

KTWD provides irrigation water to over 19,000 acres of high-value permanent crops in Kern and Tulare counties. The annual irrigation demand is approximately 54,000 acre-feet, of which approximately 40,000 acre-feet is provided through imported water. The remaining 14,000 acre-feet per year are from groundwater pumped by water users.

The summer climate is hot and dry while winters are cooler with somewhat more rainfall than adjacent valley areas. KTWD are located within a thermal zone with favorable air movement where citrus, deciduous trees, and other frost sensitive crops are successfully grown. The average length of the growing season in the area is from 250 to 300 days per year. Soils in both water districts are of excellent quality for irrigation.

KTWD currently comprise a gross area of approximately 24,000 acres, of which almost 19,000 acres are developed in irrigated agriculture. There are very few residences located within KTWD. At the present time, 99 percent of irrigated lands are permanent plantings.

It is estimated that 1 percent of the cropped land in the KTWD is irrigated by the sprinkler method, 8 percent is irrigated by the furrow method, and 91 percent is irrigated using the drip or micro-sprinkler irrigation method. This high percentage of low volume irrigation practices results in a very high irrigation efficiency.

KTWD has a contract with the Bureau of Reclamation for 53,000 acre-feet total of entitlement from the Central Valley Project Delta Supplies (Kern-Tulare Water District and Rag Gulch Water District consolidated in 2009). KTWD regularly transfers its CVP supplies to Westside contractors; however, the water could also be conveyed through the Cross Valley Canal and introduced into the Friant-Kern Canal via KTWD's siphons and/or the Cross Valley/Friant-Kern Canal Intertie for direct delivery to the district.

KTWD has a contract with the City of Bakersfield for an average of 23,000 acre-feet per year of Kern River water. Water under these contracts is delivered to Kern County Water Agency Improvement District No. 4 in exchange for State Water Project Water. The State Water Project water is conveyed through the Cross Valley Canal to the Friant-Kern Canal, where it is either delivered directly to the KTWD or exchanged with Arvin-Edison for water available in the Friant-Kern Canal.

KTWD share common distribution systems and staff. The distribution system of KTWD delivers water from the Friant-Kern Canal to lands within KTWD. The distribution system consists of 4 pumping plants located along the Friant-Kern Canal, 4 regulating reservoirs, 7 re-lift pumping plants, and approximately 70 miles of buried pipelines. In addition, KTWD operate 2 pumping plants located in Delano Earlimart Irrigation District (DEID) reservoirs and 1 pumping plant located in a Southern San Joaquin Municipal Water District (SSJMUD) reservoir.

The depth to groundwater varies from about 200 feet to over 600 feet throughout KTWD and averages approximately 450 feet. There are static groundwater levels taken in the spring and do not include the temporary drawdown of 50 to 100 feet caused by pumping. Wells drilled on the west side of KTWD tap into an unconfined aquifer that is classified as suitable for irrigation. Groundwater in this area contains between 250 and 400 parts per million (ppm) total dissolved solids and is of a calcium bicarbonate or sodium bicarbonate chemical type. Wells drilled on the east side of KTWD tap into confined aquifers that also contain useable groundwater. This groundwater is characterized as sodium chloride with total dissolved solids concentrations between 300 and 500 ppm and is classed as having medium to high salinity hazard and high to very high sodium hazard.

Lower Tule River Irrigation District

LTRID was formed in 1950. LTRID is currently comprised of 93,502 of agricultural lands, 7,671 of native or natural lands and approximately 1,917 acres of urban land uses. LTRID is located in Tulare County on the east side of the San Joaquin Valley. State Highway 99 bisects LTRID in a north-south direction, and the Tule River flows westerly through the entire length of the LTRID. The FKC is located five miles to the east of LTRID's northeast boundary and adjoins the southeast portion of LTRID between Avenues 136 and 128. The towns of Woodville, Popular and Tipton lie within LTRID's boundaries but are not serviced by LTRID. LTRID's entire distribution system is unlined earth canals. Collectively, LTRID owns or controls approximately 163 miles of canals and approximately 47 miles of river channel. LTRID maintains and operates 12 recharge and regulating basins, covering approximately 3,000 acres. In wetter years, LTRID uses these facilities to recharge the groundwater reservoir. LTRID does not own or control groundwater extraction facilities. Therefore, each landowner must provide privately owned wells

to sustain irrigation during periods when LTRID does not have surface water available. The main crops in LTRID are alfalfa, grain/hay and cotton.

Currently, the water supplies in LTRID are groundwater, water rights on the Tule River, and CVP water under two separate contracts. The Tule River water supply is approximately 70,000 af/y. Tule River flows approximately 22 miles through the central part of the LTRID. Porter Slough follows a parallel course north of the Tule River. In 1951, LTRID entered into a long-term contract with Reclamation for 61,200 af/y of Class 1 and 238,000 af/y of Class 2 Friant water. In 1975, LTRID entered into a three-way contract with Reclamation and the California Department of Water Resources (DWR) to provide an additional 31,102 af/y of CVP water supply. Currently, LTRID sells their CVP contract supplies from the Delta to Westside contractors.

Pixley Irrigation District

PXID is located in Tulare County and bisected by State Highway 99. The City of Pixley is located within the PXID's boundaries. However, PXID does not serve the City of Pixley. PXID was formed in 1958 and currently comprises 69,550 acres, of which 48,302 are irrigated. Deer Creek flows westerly through the entire length of PXID. The FKC is located between one to five miles east of PXID's boundary.

PXID's water supply is derived from the use of groundwater, diversions from Deer Creek and CVP water. PXID entered into a long-term contract with Reclamation in 1975 for 31,102 af/y. PXID operates a conjunctive use program by supplying a portion of the irrigated lands and a portion for direct groundwater recharge through Deer Creek, the existing canal system and sinking basins owned or leased by PXID. PXID obtains their CVP supplies through four turnouts on the FKC into Deer Creek to PXID diversions or Deer Creek. PXID has 45 miles of unlined canals that convey water and provide groundwater recharge. An estimated 30% of the CVP supplies are "lost" through the unlined canals. However, the recharge to the groundwater is considered a beneficial use of this water. PXID maintains and operated nine recharge and regulating basins covering approximately 330 acres.

PXID owns or has access to approximately 330 acres of sinking/re-regulating basins. These basins, along with the Deer Creek channel and the PXID's canals, are used for direct groundwater recharge when surface water supplies are available. It is estimated that a third of the water imported by PXID has been directly recharged into the underground reservoir by PXID operations since PXID's inception.

PXID does not own or operate and groundwater extraction facilities. However, groundwater is the primary water supply available to lands within PXID. Privately owned wells currently provide water to all irrigated lands within the PXID. Approximately 31,957 acres of lands rely totally on groundwater pumping for irrigation. In addition, PXID may enter into an agreement with the Pixley Wildlife Refuge to recharge the groundwater. The refuge is approximately 960 acres.

Tri-Valley Water District

TVWD is comprised of 4,481 acres, of which, 1,812 are irrigable acres. The nearest town is Orange Cove. TVWD only serves agricultural water to seven growers and approximately 880 acres. TVWD does not provide groundwater. However all landowners have wells. Due to the proximity of TVWD to the Sierra foothills, groundwater supplies are typically inadequate. Wells tend to produce groundwater early in the growing season but produce very little in mid and late summer. The water distribution system is comprised of approximately seven miles of pipeline which is shared with Orange Cove Irrigation District landowners and operated by Orange Cove Irrigation District personnel. TVWD does not own or operate any canals, recharge basins, or regulating reservoirs. The main crops are oranges, lemons and tangerines.