

# RECLAMATION

*Managing Water in the West*

## **Environmental Assessment**

# **2007 Conditional One Year Pre-approval of Transfers and Exchanges between Friant and Cross Valley Long-Term CVP Contractors and Non-CVP Contractors EA-07-14**



**U.S. Department of the Interior  
Bureau of Reclamation**

## List of Acronyms and Definitions

ACOE	U.S. Army Corps of Engineers
Af(y)	Acre-feet (per year). One acre-foot equals 325,851 gallons
Banking	Banking is discharging surface water into the ground for later extraction and use outside of the groundwater banking boundary
CO	Contracting Officer
Conjunctive Use	Conjunctive use is discharging surface water into the ground for later extraction and use within the district or groundwater banking boundary
Contractor	Water or Irrigation District contracted with Federal or State Agencies to obtain water.
CVC	Cross Valley Canal
CVP	Central Valley Project
CVPIA	Central Valley Project Improvement Act
CVP Contractor	Friant Division or Cross Valley Division Long-Term Contractor
DWR	(California) Department of Water Resources
EA	Environmental Assessment
ESA	Endangered Species Act
Exchange	Exchange of water among contractors
FKC	Friant-Kern Canal
In-Lieu Groundwater Banking	In-lieu groundwater banking is the immediate use of surface water instead of discharging to the ground. In a dry season, the groundwater would remain in the ground
M&I	Municipal and Industrial
NEPA	National Environmental Policy Act
NCVPC	Non-Central Valley Project Contractor
POU	POU (defined in Reclamation's water rights permits)
Reclamation	U.S. Bureau of Reclamation
RRA	Reclamation Reform Act of 1982
Service	U.S. Fish & Wildlife Service
Surplus 215 Water	Surplus water under Section 215 of the Reclamation Reform Act (and related contracts for marketing this surplus water)
SWP	(California) State Water Project
T&E	Threatened and Endangered species, as defined by the Federal Endangered Species Act
Transfer	The sale of water between willing sellers and willing buyers

## Background

A group of 17 water users with access to the Friant-Kern Canal (FKC) that do not have long-term water service contracts with Reclamation have been identified as potential recipients of CVP water from the Friant Division and Cross-Valley CVP Contractors via (1) CVPIA transfer from a CVP Contractor, or (2) in exchange of non-CVP (non project) water for CVP water from a CVP Contractor. These contractors are herein referred to as Non-Central Valley Project Contractors or NCVPC's. These NCVPC's are entities that do not have an allocation of a long-term supply of CVP water pursuant to CVPIA. These NCVPC's may have at some point in time, entered into a contract with Reclamation for a temporary water service contract, more commonly called "215 contracts" or into a contract for surplus water that is above the allocated amounts of the CVP. Article 9 of the interim and long-term water service contracts provide for CVP Contractors to transfer and exchange water between willing sellers and willing buyers with the approval of the Contracting Officer. The CVP Contractors have proposed to engage in water transfers and exchanges with the NCVPC's. A list of the potential 17 NCVPC's is provided below:

### Non-Central Valley Project Contractors

- Buena Vista Water Storage District
- Cawelo Water District
- Consolidated Irrigation District
- Corcoran Irrigation District
- Deer Creek & Tule River Authority
- Rosedale-Rio Bravo Water Storage District
- Semitropic Water Storage District
- Tulare Lake Basin Water Storage District
- North Kern Water Storage District
- Kings County Water District
- Kings River Conservation District
- Lakeside Irrigation District
- Liberty Water District
- Kaweah Delta Water Conservation District
- Kern County Water Agency
- Kern Delta Water District
- Kern Water Bank Authority

It should be noted this environmental review does not result in a blanket approval. Each proposal would be reviewed individually prior to final approval by the Contracting Officer and would occur within the contract year. A contract year typically begins on March 1<sup>st</sup> and ends February 28<sup>th</sup> of the following year. The transfers and exchanges are needed to allow for greater management options of CVP water by allowing NCVPC's to participate in water service actions with CVP Contractors to provide greater flexibility in matching excess supplies to deficient areas to balance existing water supplies in the lower San Joaquin Valley.

The CVP Contractors are not the focus of the analysis in this EA. The scope of this EA includes the following:

- Environmental Analysis of the NCVPC's service areas
- Transfers of CVP water to NCVPC's under the CVPIA and Article 9 of the interim or long-term water service contracts.
- Water originating from behind Friant Dam (CVP water) and Cross Valley Contractor CVP pumped "in Delta" water delivered via the California Aqueduct or the San Luis Canal.

Exchanges of CVP water with NCVPC's under Article 9 of the interim and long-term water service contracts. The exchanges could involve:

- Local groundwater resources
- SWP water conveyed from the Delta
- Other surface water supplies including rivers, creeks and streams.

Excluded from this EA are:

- Any transfers or exchanges that require the movement of water through facilities or structures that have not yet been built as of January 2007
- CVP Contractors south of the delta in the West San Joaquin Division and the Delta Division
- Banking of CVP water in groundwater banks
- Interim and/or long-term water service contracts Article 5 exchanges

Separate environmental documentation will be required for such actions.

The NCVPC's participating in this proposed action and potential CVP water service actions are located in Fresno, Kings, Tulare, and Kern Counties in the southern San Joaquin Valley.

This EA discusses each of the NCVPC's with emphasis on areas within Reclamation's permitted Place of Use (POU). For this action, the applicable places of use, Friant Ag POU, Friant Ag and Municipal & Industrial (M&I) POU, and Consolidated POU (CPOU), each specific to the origin and use of the water. Each of these proposed water service actions will be examined individually for compliance with the applicable POU. Some of the NCVPC's are not located wholly within the permitted POU as defined in Reclamation's water rights permits. NCVPCs with lands located partially outside the permitted POU boundary remain subject to the terms of Reclamation's water rights permits. CVP water may not be delivered outside of the applicable POU. Therefore, the main focus of this EA is the NCVPC's service areas that are capable of receiving CVP water originating at Friant or the Cross Valley's Delta supplies that are within the applicable POU boundaries as defined in Reclamation's water rights permits.

Each proposed water transfer or exchange must comply with applicable permits, Federal, State and local laws prior to approval by Reclamation. Each transfer will be reviewed for compliance with this environmental assessment and in accordance with the transfer provisions of §3405 of CVPIA, interim guidelines and other provisions as applicable. Thirteen of the NCVPC's are individual entities and four are umbrella agencies, which comprise of numerous contractors. Each of the thirteen districts that are individual entities may also be included in one of the four umbrella agencies. This overlapping of contractor's boundaries results in duplication of analysis and variances when computing contractor acres to total acres.

## Proposed Action

The conditional pre-approval is to encourage efficient water management and allow maximum water management flexibility of both Irrigation and Municipal and Industrial (M&I) CVP water by and between multiple Friant Division and Cross-Valley CVP Contractors and a group of seventeen (17) NCVPC without adversely impacting third parties or resulting in significant impacts to the environment.

## Purpose And Need

Reclamation is both obligated and committed to delivering CVP contract water supplies, within legislative and hydrological constraints, in an efficient and effective manner. The CVP is a part of that purpose. CVP contractors within the Friant and Cross Valley Divisions, as well as non-CVP contractors have a need to be able to move water among CVP and non-CVP contractors to provide water for agricultural and municipal & industrial uses.

## Alternatives

Reclamation, after internal scoping meetings and discussion with the CVP and NCVPC contractors, has identified five alternatives that would meet the Purpose and Need identified, as listed below. Each alternative is described more fully later in the document.

**Alternative 1.** Conditional pre-approval of up to 250,000 afy of Friant CVP Water Transfers from Friant and Cross-Valley CVP Contractors to the NCVPCs.

**Alternative 2.** Conditional pre-approval of up to 250,000 afy of Friant CVP Water Exchanges between Friant and Cross-Valley CVP Contractors and the NCVPCs.

**Alternative 3.** A combination of Alternatives 1 and 2 (Preferred Alternative).

**Alternative 4.** No Action Alternative. No pre-conditional or blanket approval of the water transfers and exchanges between Friant and Cross Valley CVP Contractors and the NCVPCs..

It should be noted the environmental analysis and initial internal review of any of the above alternatives does not result in automatic approval. This EA and internal review will serve to streamline anticipated future requests for these water service actions through pre-approval subject to the conditions of meeting certain criteria, laws, guidelines and policy. Reviewing the CVP Contractors' proposed temporary water service requests requires extensive Federal staff time and adds administrative costs, which could affect both the timing and the cost of the efficient and flexible water management of the CVP. Therefore, establishing and implementing a streamlined review process for the Irrigation and/or M&I CVP Water transactions will aide in lowering administrative costs, minimizing staff review time, and maximizing the flexibility of efficient CVP Water management.

The transfers and exchanges require that the following conditions be met:

- CVP water may be applied only to lands located within the applicable Permitted POU boundaries,

- CVP water may be used for either Agricultural or M&I purposes,
- No native or untilled land (fallow for 3 years or more) may be cultivated with CVP water involved in these actions,
- No new construction or modification of existing facilities is to occur in order to complete the proposed actions,
- No new water supplies are to be created,
- There can be no change in the point of diversion,
- There can be no impacts to a third party,
- Transfers and exchanges involving CVP water cannot alter the flow regime of natural waterways or natural watercourses such as rivers, streams or creeks, ponds, pools, wetlands, etc., so as to have a detrimental effect on fish or wildlife or their habitats,
- All transfers and exchanges involving CVP water must comply with all applicable federal, state and local laws, regulations, permits, and policies
- Reclamation will review each transfer or exchange proposal for compliance with the above conditions prior to approval and execution of the action.

The analysis in this document and the approvals are based on temporary, one-year transfers. Water transfers occurring consecutively between a specific CVP Contractor and NCVPC for the same amount of water would require additional environmental review and separate approval.

Exchanges must be initiated in the same contract year as the approval. The final “leg” of the exchange must be completed within 365 days of the date the initial water moved.

The Cumulative Impacts Section was updated.

Additional environmental review would be required for each proposed action.

### ***Alternatives 1-3***

Under these alternatives, Reclamation would provide conditional approval for one or more of the actions following actions: 1) transfers of up to 250,000 acre-feet of Friant CVP water from Friant and Cross Valley contractors to the NCVPC’s; 2) exchanges of up to 250,000 acre-feet of water between the Friant and Cross Valley contractors and the NCVPC’s; and 3) combination of transfers and exchanges from Friant and Cross Valley contractors and the NCVPCs. Each individual request would be subject to supplemental environmental review and approval by the contracting officer on a case-by-case basis.

### ***Alternative 4. No Action Alternative***

NEPA requires the consideration of a No Action alternative in environmental documents. Under this alternative Reclamation would not prepare a one-year environmental assessment to examine CVP water deliveries to the NCVPCs in one combined document. Reclamation would not approve an expedited internal administrative review of water transfers and exchanges for the NCVPC’s. The NCVPC’s could still request water service actions on an individual basis and separate environmental documents could be generated annually thereby increasing administrative costs and duplicating efforts.

## **Authorities for the Proposed Action**

Water transfers are authorized pursuant to §3405 of the CVPIA between Friant Division and, Cross-Valley CVP Contractors and the NCVPC. These transfers are subject to the current and/or future administrative review and approval processes including Reclamation's Interim Guidelines for Implementation of Water Transfers under CVPIA dated February 25, 1993, and the Department of the Interior's Final CVPIA Administrative Proposal on Water Transfers dated April 16, 1998. Each transfer proposed under this project is subject to separate review before approval.

Water exchanges are authorized pursuant to The Reclamation Project Act of 1939, Section 14, between Friant Division and Cross-Valley CVP Contractors and the NCVPC. Consistent with Reclamation policy, the exchanges in this proposed action must be "bucket for bucket", that is exchanged on a one-for-one basis of equal amounts.

All of the water actions analyzed in this assessment are subject to the provisions and terms for the protection of threatened and endangered species (T&E) in addition to the applicable Biological Opinions under the Endangered Species Act (ESA). As a condition of these transfers and exchanges, neither the CVP Contractors nor the NCVPC water application will affect the presence of threatened or endangered species. Grasslands and shrub land that have never been tilled or irrigated will not be tilled and put into production using this acquired via transfer or exchange. Land that has been fallowed, idled, and not cultivated on a temporary basis (less than three consecutive years) and rotated back into production is not considered conversion of a native habitat.

## **Affected Environment**

The CVP Contractors have already undergone extensive environmental review and are not the focus of this EA. The amount of water leaving the CVP Contractors would be limited to a maximum of 250,000 acre-feet (af). The water will be staying within the appropriate POU and is a small portion of the more than 5 million af of water used in the valley on an annual basis.

This section describes the general geographic area of the southern portion of the San Joaquin Valley. The NCVPC's are located in the southern portion of the San Joaquin Valley. Deer Creek & Tule River Authority, Kern County Water Agency, Kern Water Bank Authority and Kings River Conservation District all serve as umbrella agencies with multiple sub-entities and are described. Water for the Friant Division comes from the San Joaquin River at Millerton Lake with a storage capacity of 520,000 acre feet. From there, water is released from the reservoir to the south via the 152-mile-long Friant Kern Canal (FKC). Water released into the Madera Canal is outside the scope of this EA. Water for the Cross Valley Canal Unit comes from northern California through the Delta Mendota Canal, California Aqueduct and the Cross Valley Canal.

## **Water Resources**

The amount of surplus water available each year is unpredictable and varies depending upon storm events. Contracts for Section 215 surplus water to NCVPC's are dependent upon

when water becomes available as defined in Section 215 of the RRA. Temporary contracts for surplus water are not subject to the acreage limitations under the provisions of Section 215 of the RRA. CVP water delivered to CVP Contractors under existing water service contracts and deemed available for transfer or exchange varies from year to year and is dependent upon multiple hydrological conditions.

Table 1 reflects the primary surface water supply for each NCVPC. These surface water supplies are potential supplies for exchanges.

***Table 1***  
**Surface Water Supply**

Non-Long-Term CVP Contractors	Surface Water Supply	Uses
Buena Vista Water Storage District	SWP and Kern River	Ag
Cawelo Water District	SWP, Poso Creek, and Kern River	Ag
Consolidated Irrigation District	Kings River	Ag and M&I
Corcoran Irrigation District	Kings River	Ag
Deer Creek & Tule River Authority	FKC and Tule River	Ag
Kaweah Delta Water Conservation District	SWP, Kaweah and St John's River, Cottonwood Creek, Lewis Creek, Yokohl Creek, Kings or Tule River via CVP exchange	Ag
Kern County Water Agency	SWP; Kern River physically or via CVP exchange; Poso Creek; Caliente Creek; Kaweah, Tule, St Johns and Kings Rivers	Ag -except KCWA ID#4
Kern Delta Water District	SWP and Kern River	Ag
Kern Water Bank	SWP and Kern River	Ag and M&I
Kings County Water District	Kings and Kaweah Rivers	Ag
Kings River Conservation District	Kings River; Mill Creek; Sand Creek; Wahtoke Creek; Kaweah, St Johns, Tule River via CVP exchange; and SWP	Ag
Lakeside Irrigation Water District	Kaweah and Kings Rivers	Ag
Liberty Water District	Kings River	Ag
North Kern Water Storage District	Kern River	Ag
Rosedale-Rio Bravo Water Storage District	SWP and Kern River	Ag
Semitropic Water Storage District	SWP and Poso Creek	Ag
Tulare Lake Basin WSD	SWP and Kings, Tule, Kaweah Rivers	Ag

**Water Conveyance Facilities**

The Friant-Kern Canal (FKC) is a prominent feature in the southern San Joaquin Valley and provides for the transport of water through the southeastern portion of the San Joaquin Valley for delivery of water to CVP Contractors. The FKC extends 152 miles south from Friant Dam in Fresno County to the Kern River in Kern County four miles west of Bakersfield. The FKC exports water to areas in the Tulare Lake Hydrologic Basin.

The Cross Valley Canal (CVC) begins at the California Aqueduct near Taft and conveys water across the valley to the FKC near Bakersfield. The Cross Valley Canal is constructed so as to allow water to flow in either direction, conveying water to the east or to the west.



The source of Cross Valley Canal water is from the Delta via State Water Project (SWP) or CVP facilities. The CVC was financed and built by private funds.

The State of California constructed the California Aqueduct as part of the State Water Project (SWP). Water from the aqueduct flows out of the Delta near the City of Tracy to San Bernardino and Riverside, into Lake Perris reservoir.

Water districts in the San Joaquin River Region have constructed extensive water conveyance systems to provide water throughout their districts. Water is conveyed through an intricate network of canals and aqueducts to provide water where needed. Water service contracts, transfers and exchanges are negotiated and executed in accordance with appropriate federal, state and local regulations and policies.

Reclamation does not have jurisdiction over non-CVP water and has no jurisdiction over non-CVP water stored in underground facilities. Contractors having storage space in these facilities may extract non-CVP water for later use with or without this proposed action. This EA does not provide for the groundwater storage of CVP water in non-CVP contractor's areas for later retrieval beyond the contract year. Reclamation anticipates such requests however; separate environmental review would be required.

### **Groundwater Resources**

The southern portion of the San Joaquin Valley has experienced overdraft conditions. Generally, water districts in and near Kern County experience the lowest groundwater levels. These areas are subject to local groundwater ordinances that restrict the transfer of this groundwater outside the basin. During dry years, additional groundwater is pumped to offset reduced surface water supplies and is typically used locally. The availability and amount of groundwater that would be transferred outside a district's boundaries or Basin is small and unlikely to occur consistently or long-term.

Recharge of the semi-confined aquifer in the regions is primarily derived from seepage from streams and canals, infiltration of applied water, and subsurface inflow. Precipitation on the valley floor provides some recharge, but only in abnormally wet years. Seepage from streams and canals is highly variable depending on annual hydrologic conditions.

The CVP Contractors and NCVPC's lie within the San Joaquin River and Tulare Lake ground water hydrologic regions. The regions are further divided into ground water sub-basins.

#### ***Tulare Lake Basin***

The Tulare Lake Basin is bounded on the south by the Kings-Kern County line, on the west by the California Aqueduct, and the eastern boundary of Westlands Water District, on the north by the southern boundary of the Kings Basin, and on the east by the westerly boundaries of the Kaweah and Tule Basins. The southern half of the Tulare Lake Basin consists of lands in the old Tulare Lake bed in Kings County. The Kings, Kaweah and Tule Rivers flow into the land locked Tulare Lake Basin.

The following NCVPC are located in the Tulare Lake Basin: Tulare Lake Basin Water Storage District, Dudley Ridge WD, Salyer WD, Kings County WD, Stratford ID, Empire West Side ID, and Corcoran ID.

### ***Kings Basin***

The Kings Basin is bounded on the north by the San Joaquin River to the boundary of Farmers Water District, and on the west by the eastern boundaries of the Delta-Mendota Basin and the Westlands Water District. The southern boundary runs easterly along the northern boundary of the Empire Westside Irrigation District, the southern fork of the Kings River, the southern boundary of Laguna Irrigation District, the northern boundary of the Kings County Water District. The Basin also includes the area around Fresno, extending to the foothills. The water supply for this basin is the Kings and San Joaquin Rivers. The basin declined following the drought in the early 1990's and has not yet recovered. The portion of the basin near Orange Cove declined during the drought but has recovered to pre-drought conditions.

The following NCVPC's are located in the Kings Basin: Alta ID, Consolidated ID, Kings River Conservation District, Kings River WD, Laguna ID, Liberty WD, Mid-Valley WD, Raisin City WD, and Riverdale ID.

### ***Kaweah Basin***

The Kaweah Basin lies between the Kings Basin on the north, the Tule Basin on the south, the Sierra Nevada foothills on the east and the Kings River Conservation District on the west. The basin generally comprises lands in the Kaweah Delta Water Conservation District and encompasses the area around the City of Visalia. The Basin is supplied from the Kaweah and St. Johns Rivers. Ground water levels decline of over 20 feet during the drought but have recovered somewhat. North of Visalia, ground water levels have not completely recovered.

The following NCVPC's are located within the Kaweah Basin: Kaweah Delta Water Conservation District, Kings River Conservation District, Lakeside Irrigation Water District, and Corcoran Irrigation Company.

The following contractors have promulgated Groundwater Management Plans:  
Kings County Water District, Kaweah Delta Water Conservation District

### ***Kern County Basin***

The Kern County Basin is bounded on the north by the Kern County line, on the east by the Sierra Nevada foothills, on the south by the Tehachapi Mountains, and on the west by the Coast Ranges. Principal rivers and streams include the Kern River and Poso Creek. The basin includes the area south of Bakersfield and is supplied from the Kern River. The Basin declined steadily until the mid 1970's when it began to recover. The basin declined in the early 1990's in response to drought conditions but has begun to recover.

The following NCVPC's are located in the Kern County Basin and all have or are drafting groundwater management plans: Buena Vista WSD, Cawelo WD, City of Bakersfield, Kern

County Water Agency, Kern Delta WD, Kern Water Bank Authority, Rosedale-Rio Bravo WSD, Shafter-Waso ID, and West Kern WD.

### **Groundwater Storage and Production**

The usable storage capacity is estimated to be approximately 24 million af for San Joaquin river region and 28 million af for the Tulare Lake Region. Department of Water Resources (DWR) estimated a level of ground water extraction that would not lower groundwater levels over the long-term (perennial yield) to be approximately 3.3 million afy for the San Joaquin River Region. The perennial yield is 4.6 million afy for the Tulare Lake Region. The perennial yield is directly dependent upon the amount of recharge received by the groundwater basin, which may be different in the future than it has been in the past.

Groundwater storage in San Joaquin Valley reached a low point in 1978, as a result of the 1976-1977 drought period. By the early 1980s, ground water storage returned to predrought conditions. Groundwater storage again declined during the 1987-1992 drought. At the end of the 1990 water year, ground water storage was similar to 1978 conditions. These area wide groundwater storage fluctuations in the San Joaquin valley basin are not uncommon.

Groundwater pumping ranged from 1.6 million af in 1922 to 4.7 million af in 1977. Groundwater pumping has been rising steadily through the 1970s, and has varied greatly from year to year depending on hydrologic conditions. The largest year-to-year fluctuation occurred during the 1976-1977 drought period. Immediately following the drought, hydrologic wet and above normal conditions for the years 1978 to 1980 resulted in reduced pumping. However, urban growth during the 1980s has contributed to an increase in groundwater usage. In addition, increased groundwater pumping in the late 1980s and early 1990s occurred as a result of reduced surface water deliveries to CVP water users due to the imposition of environmental requirements on the operation of surface water facilities, and critically dry hydrologic conditions during the 1987 to 1992 drought period. DWR estimated that recent groundwater pumping (1990) in the San Joaquin River Region at 3.5 million af and Tulare Lake Region at 5.2 million af. This exceeds the estimated perennial yield in the San Joaquin River Region and by 200,000 af in the Tulare Lake Region by approximately 630,000 af. All of the basins within the San Joaquin River and Tulare Lake Regions experienced some overdraft.

### ***Groundwater Levels***

Expansion of agricultural practices between 1920 and 1950 caused declines in groundwater levels in many areas of the San Joaquin River Region. Along the east side of the San Joaquin River Region declines have ranged between 40 and 80 feet since pre-1860 development conditions.

Groundwater levels in the semi-confined aquifer between spring 1970 and spring 1980 declined in response to 1976-1977 drought conditions and recovered to near pre-drought levels by 1980. The 1987-1992 drought resulted in substantial deficiencies in surface water deliveries and corresponding increases in ground water pumping. Water levels declines of 20 to 30 feet are common throughout most of the central and eastern parts of the San Joaquin Valley.

During the 10-year period from Spring 1970 to Spring 1980, semi-confined groundwater levels generally dropped in the Tulare Lake Region. In portions of Fresno, Kings, Kern, and Tulare counties, semi-confined groundwater levels dropped as much as 50 feet since spring 1970. The semi-confined aquifer in the Tulare Lake Region showed little change between spring 1980 and spring 1988.

DWR collects and summarizes groundwater data for thousands of wells across the San Joaquin Valley. These data show the historical trends in groundwater elevation for the basins in the Friant Division and Cross Valley Canal Unit. The San Joaquin River Region is generally divided by two major basins, the San Joaquin and Tulare Lake Regions. These two regions are subdivided into several basins that are defined by geologic and hydrologic conditions. The sub-basins and the associated water districts are discussed below.

### ***Groundwater Quality***

Groundwater quality conditions in the San Joaquin River Region and the Tulare Lake Region vary throughout the area. A description of specific water quality parameters is provided below.

*Total Dissolved Solids (TDS)* TDS concentrations vary considerably in the San Joaquin Region depending upon the ground water zone. Characteristics of TDS in the Tulare Lake Region are similar to those occurring in the San Joaquin River Region higher than the east of the San Joaquin Valley. This distribution reflects the low concentrations of dissolved solids in recharge water that originates in the Sierra Nevada, and the predominant regional groundwater flow pattern. Typically, on the east side, TDS concentrations do not exceed 500 mg/L.

*Boron* High boron concentrations occur in the northwestern part of the San Joaquin River Region from the northernmost edge of the region to the southernmost edge of the region. In the southern portion of the Tulare Lake Region, high concentrations of boron are generally found in areas southwest to Bakersfield (greater than 3 mg/L) and southeast of Bakersfield (1 to 4 mg/L). However, boron in groundwater in the Friant Division area is not identified as a concern.

*Nitrates-Nitrates* Several small areas of the Tulare Lake Region contain nitrate-nitrate concentrations in excess of 10 mg/L. These include areas south and north of Bakersfield, around the Fresno metropolitan area and scattered areas of the Sierra Nevada foothills in the Hanford-Visalia area. Municipal use of groundwater as a drinking water supply is also impaired due to elevated nitrate concentrations in the Tulare Lake Region.

*Arsenic* In the Tulare Lake Region agricultural use of groundwater is impaired due to elevated arsenic concentration in the Tulare Lake Region, particularly in areas of the Kern Basin near Bakersfield. Groundwater in the Friant Division area is not identified as a concern for elevated concentrations of arsenic.

*Dibromochloropropane (DBCP)* DBCP has been detected in many groundwater wells in the San Joaquin River Region and the Tulare Lake Region. Municipal use of

groundwater as drinking water supply is impaired due to elevated DBCP concentrations near the cities of Visalia and Bakersfield.

## **Land Use**

The study area includes the southern portion of the San Joaquin Valley and includes portions of Fresno, Kings, and Kern Counties. The major cities include Fresno, Visalia and Bakersfield. The development of urban and agricultural lands has caused the loss of natural habitat. The land use between Fresno and Bakersfield along the Hwy 99 corridor, along the eastern boundary of the study area, is mainly agricultural lands supporting orchards, vineyards, croplands, pastures and dairies. Land use inside the western boundaries of the area support mainly orchards, vineyards, croplands, pastures, intermittent with swathes of grasslands, shrub, brush or mixed rangeland. Land use on the south and southeast boundaries of the area near Bakersfield is intensely cultivated, primarily by orchards, vineyards, field crops, pastures and intermittent swathes of grasslands or mixed rangelands.

## **Wildlife**

Beginning in 1991 the FWS Biological Opinions specified how water should be delivered to most of the Friant Division Project water service Contractors to avoid jeopardy to endangered and threatened species and committed Reclamation to developing and implementing a long-term program to address the needs of listed endangered species in the San Joaquin Valley. The *Biological Opinion on U.S. Bureau of Reclamation Long Term Contract Renewal of Friant Division and Cross Valley Unit Contractors*, dated January 19, 2001, is the most recent biological opinion issued by the FWS for the Friant Division Project water service Contractors. The Contractors in this proposed action will sign a binding letter of agreement restricting the use of this water to avoid environmental impacts.

The area considered by this project contains historical habitat for numerous species of wildlife and plants, as well as some fisheries. The San Joaquin Valley has historically supported more federally listed species than any other location within the continental United States, as well as species of concern and state listed species. Non listed species are also abundant throughout the project area. Threats to wildlife, listed and not, primarily come from loss of habitat related to agricultural and urban development throughout the San Joaquin Valley.

## **Socio-Economic Resources**

The CVP water service area of the CVP Contractors and NCVPC's is primarily rural agricultural land. There are many communities across the area where farm workers reside. The small businesses that support agriculture such as feed and fertilizer sales, machinery sales and service, pesticide applicators, transport, packaging, marketing, and so forth rely on the efficient and cost effective use of water in the surrounding agricultural lands. The cost and availability of water has a direct secondary impact on the communities of the area.

## **Indian Trust Assets**

Indian Trust Assets Indian Trust Assets (ITAs) are legal interests in property held in trust by the U.S. for federally-recognized Indian tribes or individual Indians. An Indian trust has three components: (1) the trustee, (2) the beneficiary, and (3) the trust asset. ITAs can

include land, minerals, federally-reserved hunting and fishing rights, federally-reserved water rights, and in-stream flows associated with trust land. Beneficiaries of the Indian trust relationship are federally-recognized Indian tribes with trust land; the U.S. is the trustee. By definition, ITAs cannot be sold, leased, or otherwise encumbered without approval of the U.S. The characterization and application of the U.S. trust relationship have been defined by case law that interprets Congressional acts, executive orders, and historic treaty provisions. Consistent with President William J. Clinton's 1994 memorandum, "Government-to-Government Relations with Native American Tribal Governments," Bureau of Reclamation (Reclamation) assesses the effect of its programs on tribal trust resources and federally-recognized tribal governments. Reclamation is tasked to actively engage federally-recognized tribal governments and consult with such tribes on government-to-government level (59 Federal Register 1994) when its actions affect ITAs. The U.S. Department of the Interior (DOI) Departmental Manual Part 512.2 ascribes the responsibility for ensuring protection of ITAs to the heads of bureaus and offices (DOI 1995). Part 512, Chapter 2 of the Departmental Manual states that it is the policy of the Department of the Interior to recognize and fulfill its legal obligations to identify, protect, and conserve the trust resources of federally recognized Indian tribes and tribal members. All bureaus are responsible for, among other things, identifying any impact of their plans, projects, programs or activities on Indian trust assets; ensuring that potential impacts are explicitly addressed in planning, decision, and operational documents; and consulting with recognized tribes who may be affected by proposed activities. Consistent with this, Reclamation's Indian trust policy states that Reclamation will carry out its activities in a manner which protects Indian trust assets and avoids adverse impacts when possible, or provides appropriate mitigation or compensation when it is not. To carry out this policy, Reclamation incorporated procedures into its NEPA compliance procedures to require evaluation of the potential effects of its proposed actions on trust assets. (Reclamation-July 2, 1993). Reclamation is responsible for assessing whether the Proposed Action would have the potential to affect ITAs. Reclamation will comply with procedures contained in Departmental Manual Part 512.2, guidelines, which protect ITAs. There are no Indian Trust Assets in the project area.

## **Environmental Justice**

Executive Order 12898 requires all NEPA documents to consider the effects of the proposed action(s) on disadvantaged and minority populations. Many of the cities and towns within the San Joaquin Valley are farming communities, and include high percentages of minority populations. Some areas are centers for migrant laborers whose livelihood depends exclusively on the seasonal agricultural practices providing them with sufficient income to support themselves and their families.

## **Non Long-Term CVP Contractors**

The following is a list of Non-Long-Term CVP Contractors and descriptions:

- Buena Vista Water Storage District
- Cawelo Water District
- Consolidated Irrigation District
- Corcoran Irrigation District
- Deer Creek & Tule River Authority
- Kings County Water District
- Kings River Conservation District
- Lakeside Irrigation District
- Liberty Water District
- North Kern Water Storage District

- Kaweah Delta Water Conservation District
- Kern County Water Agency
- Kern Delta Water District
- Kern Water Bank Authority
- Rosedale-Rio Bravo Water Storage District
- Semitropic Water Storage District
- Tulare Lake Basin Water Storage District

### **Buena Vista Water Storage District**

Buena Vista Water Storage District (BVWSD) lies in the trough of the southern San Joaquin Valley in Kern County. The area lies on the west side of the valley floor, about 16 miles west of the city of Bakersfield. The unincorporated town site of Buttonwillow (population 1,500) is situated in the geographical center of the District, however the District does not supply any M&I water. The District's water service area contains 48,443 acres of agricultural land. Approximately 45,500 acres of the District have been built-out, and about 40,000 acres almost entirely field and row crops.

In addition to Kern River water supplies BVWSD contracted with DWR via the Kern County Water Agency for an additional surface water supply in 1973. This contract provided for an annual firm entitlement of 21,300 af and surplus entitlement of 3,750 af. BVWSD has also been a historic user of surplus FKC flows to serve irrigation demands and for groundwater recharge programs. BVWSD receives CVP water from the FKC out of the Kern River east of Coffee Road.

BVWSD can also receive Friant-Kern water directly into Kern River, and can receive FKC water in the Rosedale-Rio Bravo Water Storage District. BVWSD can also receive CVP water from the California Aqueduct. Additionally, BVWSD engages in water banking and groundwater recharge programs, as well as reclamation, drainage control and irrigation conservation programs.

The giant kangaroo rat (*Dipodomys ingens*) was known to exist in the southernmost portion of the district, but has not been sighted recently. The giant garter snake (*Thamnophis gigas*) was located in the district in a 1999 survey. The western yellow billed cuckoo (*Coccyzus americanus occidentalis*) was last reported in the district in 1973. Two accounts of the Buena Vista Lake shrew (*Sorex ornatus relictus*) were made in the district in 1991. The blunt-nosed leopard lizard (*Gambelia sila*) was last observed in the district in 1987. The western snowy plover (*Charadrius alexandrinus nivosus*) was last seen in the district in 1978.

### **Cawelo Water District**

Cawelo Water District (CWD) is located in the North-Central portion of Kern County and encompasses an area of nearly 45,000 acres. The CWD lies between State Highway 99 on the west and State Highway 65 on the east, the community of McFarland on the north and Oildale on the south. The city of Bakersfield is approximately six miles southeast of the District.

As of 2000, the total area of CWD was 45,079 acres including a service area of 33,320 acres. Land use in 2000 in the service area consisted of 29,657 acres of irrigated agriculture, 3313 acres of fallow and 350 acres devoted to other uses including waterways, residential, commercial and agriculture-related businesses.

CWD surface water supply is obtained primarily under two long-term contracts: a contract with the Kern County Water Agency for SWP water and a contract with the city of Bakersfield for Kern River water. Water from these two sources has accounted for 90% of the district's surface water supplies. CWD also purchases water from many other sources under short-term agreements as available. The imported surface water serves as a supplemental supply for irrigation within the district. Approximately 65% of the irrigation demands within CWD have been satisfied with imported surface water deliveries. CWD does not serve M&I water.

CWD obtains surface water from other sources including diversions from Poso Creek when available, oil-field produced water, and CVP water through one-year temporary water service contracts when available. CWD obtains its SWP water from the California Aqueduct via the Cross Valley Canal. CWD receives CVP surplus water from the FKC by way of the Cross Valley Canal (CVC) and its extension.

Within the bounds of CWD, the only threatened or endangered species that has been sighted in recent times is the San Joaquin kit fox (*Vulpes macrotis mutica*). This species was last observed in the district in 1986.

### **Consolidated Irrigation District**

Consolidated Irrigation District (CID) has a service area of 155,000 acres serving a large portion of southeastern Fresno County and smaller areas in northeastern Kings County. CID extends from northeast of Sanger to south of Kingsburg and west of Caruthers. Communities served by CID include Sanger, Del Rey, Parlier, Fowler, Selma, Kingsburg and Caruthers. CID is a partner unit under Kings River Conservation District (KRCD) and may participate in the temporary water service actions in this EA under KRCD's auspices, if approved.

CID receives CVP water via the Kings River. Water from the FKC would be released into the Kings River and Consolidated Irrigation District diverts the water approximately 100 yards downstream into the District's system.

Within the boundaries of CID, the only known occurrence of a federally threatened or endangered species is the 1991 observed occurrence of the valley longhorn elderberry beetle (*Desmocerus californicus dimorphus*) in the easternmost portion of the district.

### **Deer Creek & Tule River Authority**

The Deer Creek and Tule River Authority is comprised of six water Contractors. They are: Lower Tule River Irrigation District, Pixley Irrigation District, Porterville Irrigation District, Saucelito Irrigation District, Stone Corral Irrigation District, and Terra Bella Irrigation District. All six are Long-Term CVP Contractors and have already undergone environmental analysis.

Within the bounds of the Authority four species of concern have been sighted since 1985. Three specimens of vernal pool fairy shrimp (*Branchinecta lynchi*) were reported from the Stone Corral Ecological Reserve in 1993. One specimen of California jewel flower (*Caulanthus californicus*) was reported from BLM lands in 1991. Three specimens of the Tipton's kangaroo rat (*Dipodomys nitratooides nitratooides*) were reported in 1985 on private lands. In 1987 there were 8 specimens of blunt-nosed leopard lizard (*Gambelia sila*) reported.

### **Kaweah Delta Water Conservation District**

The Kaweah Delta Water Conservation District (KDWCD) was formed for the purpose of conserving and storing waters of the Kaweah River and for conserving and protecting the underground waters of the Kaweah Delta. Later the Water Conservation District Act, as well as the purpose of the District, was expanded to include power generation and distribution.

KDWCD is located in the south central portion of the San Joaquin Valley and lies in both Tulare and Kings Counties. It fully encompasses the growing cities of Visalia, Farmersville and Tulare. The



population of the KDWCD is currently estimated to be in excess of 150,000 people. The total area of the District is about 337,000 acres with approximately 255,000 acres located in western portion of Tulare County and the balance, or about 82,000 acres, in the northeastern portion of Kings County. The District 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. Tulare Irrigation District is a CVP contractor, and has undergone extensive environmental review elsewhere.

### **Corcoran Irrigation District**

Corcoran Irrigation District (CoID) encompasses the area around the town of Corcoran, at the eastern edge of Kings County. CoID receives CVP water via the Kings River. There are no recorded occurrences of threatened or endangered species in the district.

### **Kings County Water District**

The Kings County Water District (KCWD) was formed in 1954 under the County Water District Act to provide a legal entity for water management in the northeast portion of Kings County. The basic missions of KCWD are:

- 1) Protection, conservation, and stabilization of groundwater.
- 2) Negotiating and contracting for supplemental water.
- 3) Maintaining facilities for surface water distribution for irrigation and groundwater recharge.
- 4) Preserving the existing surface water rights held by mutual water companies through a program of water stock acquisition and retention.

KCWD encompasses the northeastern portion of Kings County, from the Kings River on the north to approximately six miles south of Hanford. To the east, KCWD extends to the County's east boundary, and to the west it extends approximately 5 miles west of Hanford to the eastern edge of the City of Lemoore.

KCWD is located in the east central part of the Kings River service area, and is entirely within Kings County. The City of Hanford, with a population of 38,000, lies near the center of the District. The total area of KCWD is 143,000 acres, of which 51,150 acres are also within the boundaries of Division 5 of the Kings River Conservation District; 82,610 acres are also within the boundaries of Kaweah Delta Water Conservation District; and 9,240 acres are within the area where the two districts overlap. The District population excluding City of Hanford is 25,000. Although, KCWD boundaries encompass the Cities of Hanford and a portion of Lemoore, the District does not supply any M&I water. There is 775.8 acres of native lands.

KCWD includes portions of the service areas of three major mutual ditch companies. Peoples Ditch Company and Last Chance Water Ditch Company both possess water rights on the Kings River, and Lakeside Ditch Company holds water rights on the Kaweah River. KCWD boundary completely encompasses the area of the Lakeside Irrigation Water District, a California water district formed to administer the water rights and distribution system of the Lakeside Ditch Company stockholders, and acquire additional surface water supplies. KCWD also operates and maintains the Riverside Ditch, a conveyance system used to distribute KCWD and People's Ditch Company water.

KCWD has recharge basins that are located near the conveyance systems of the ditch companies in which they own stock. KCWD also uses Old Slough and river channels, and has a continuing program of purchasing and leasing property for groundwater recharge. KCWD currently has over 1,100 acres of artificial recharge area and also uses some 230 miles of unlined canals owned by the ditch companies that contributes to incidental recharge. Maintenance of these recharge basins is performed by KCWD and consists mainly of weed control and efforts to maintain permeability.

The quantity of water used in the recharge program has only recently been totally measured. Critically dry years such as 1976-77 resulted in zero recharge while wet years such as 1982-83 can yield 125,000 af/y recharged in KCWD. The results of the program are monitored by semiannual measurements of the groundwater level in 230 wells through a cooperative effort. The average of the measurements are taken in these wells each autumn. These measurements depict an erratic decline in groundwater levels. Since KCWD formation in 1954, the average depth to groundwater has gone from 37 feet to 74 feet measured in the autumn of 1997.

The average yearly decline in groundwater levels is .86 feet per year since 1954. This equates to an annual average overdraft of 12,300 af/y. To counteract this overdraft, KCWD has practiced a conjunctive use of both surface and groundwater, plus the planned artificial recharge of the groundwater by importing available surplus water and flood release water from reservoirs on the San Joaquin, Kings, and Kaweah Rivers and placing it in recharge basins. KCWD practices appear to be producing positive results because the rate of decline in groundwater levels is less after 1954 than in years preceding formation of the District. KCWD efforts are enhanced by the cooperation of Last Chance, Peoples, Settlers, and Lakeside Ditch Companies that provide the conveyance system to these basins and help regulate the rate of recharge. Furthermore, they help distribute surface water purchased by KCWD to local farmers who would otherwise pump groundwater.

Approximately 135,000 acres (nearly 95 percent) in KCWD is irrigated agriculture. Surface water supplies for irrigation come from diversions of the Kings and Kaweah Rivers, and from exchanges and purchases of CVP and SWP water. The supply of surface water is inconsistent, and ranges from a low of 30,000 af in 1997 to a high of 327,000 af in 1983. The estimated average surface supply is 150,000 af.

Due to inadequate surface water supplies, even in wet years, to meet the total demands for water within KCWD, groundwater is pumped through private wells owned by landowners to meet their individual needs. In addition, all the water requirements to meet M&I users is pumped. Approximately 282,500 af of groundwater is pumped annually resulting in overdraft. This condition is expected to worsen as the urban population grows.

KCWD 1996 Crop Map, showing land use information from DWR 1996 Land Use Survey, indicated that approximately one-half of the District's area is field crops, with high proportions of the remaining land used to grow grain and hay, deciduous fruits and nuts. There is a smaller amount of land planted in vineyards as well as citrus, plus truck, nursery and berry crops. The City of Hanford (population approximately 40,000), the County seat of Kings County, is situated in the geographical center of the District. The 1996 map indicated that approximately 25 percent of the District area is semi-agricultural or non-agricultural. According to the District, there is a slow but steady development trend change in land uses from agriculture to urban as the City expands and small county acreages are converted to home sites.

The lands that are served by KCWD have been in cultivation for several decades or longer, with some of the People's Ditch Company ditches dating back to the 1870-1890 period. The District has

purchased varying amounts of CVP water since 1956. Water purchases have ranged from a low of 1,639 af in 1997-98 to a high of 28,969 af in 1998-99.

KCWD receives FKC water when it is diverted from FKC into the Kings River by an existing diversion structure. Water is diverted from the Kings River at People's Weir, just west of Highway 99. Water is diverted into the People's Ditch Company's main canal, of which KCWD is a stockholder. From the main canal KCWD can divert water into several ditches within their boundaries to be delivered to the landowners.

### **Lakeside Irrigation Water District**

Lakeside Irrigation Water District (LIWD) is located east of the city of Hanford and the northern portion of the District crosses Hwy 198. LIWD is situated within Kings County Water District, Kaweah Delta Water Conservation District and a portion within Kings River Conservation District. LIWD is not represented by the above listed umbrella agencies. LIWD is a member of the Mid-Valley Water Authority; however, Mid Valley Water Authority is not included as a participant in this proposed action and environmental analysis

LIWD has a total of 31,917 acres. In the District's 1998 Annual Report, approximately 27,155 acres were irrigated agricultural land, 1,817 acres were non-agricultural land and 2,945 acres were idle/fallow land that could be irrigated.

LIWD receives CVP water from the FKC via the Kings River and Lakelands Canal or through the St. Johns River and Cross Creek to the headgate of the LIWD distribution system.

There have been no sightings of Federally listed threatened or endangered species within the bounds of LIWD.

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.

Within the boundaries of the district five species classified as threatened or endangered by the U.S. Fish & Wildlife Service have been recorded. There has been one recorded sighting of the blunt-nosed leopard lizard (*Gambelia sila*) in 1987. In 1990 the San Joaquin adobe sunburst (*Pseudobahia peirsonii*) was found on private property within the district. One specimen of the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) was seen in 1991 on private lands. Six specimens of the vernal pool fairy shrimp (*Branchinecta lynchi*) were observed in the Stone Corral Ecological Reserve in 1993, and three individuals of the vernal pool tadpole shrimp (*Lepidurus packardii*) were observed in the Dales Lake Ecological Reserve in 2000.

### **Kern County Water Agency**

Kern County Water Agency (KCWA) comprises all of Kern County in the Southern San Joaquin Valley. KCWA currently has approximately 861,000 irrigated acres. There are about 110,000 to 120,000 acres per year that are idled for various reasons.

KCWA was created by a special act of the State Legislature in 1961. It holds the master contract with the State of California for delivery of a maximum yearly entitlement of 1,000,949 acre-feet of SWP water supplies to 21 subcontracting water agencies ("Member Units") within Kern County listed below:

Belridge Water Storage District  
Buena Vista Water Storage District  
Henry Miller Water District  
Lost Hills Water District  
Semitropic Water Storage District  
Tejon Castac Water District  
Wheeler Ridge-Maricopa Water District

Berrenda Mesa Water District  
Cawelo Water District  
KCWA ID#4  
Rosedale-Rio Bravo Water Storage District  
Tehachapi-Cummings CWD  
West Kern Water District

In addition, Arvin Edison Water Storage District, Southern San Joaquin Municipal Utility District, Shafter-Wasco Irrigation District, Delano-Earlimart Irrigation District, Kern-Tulare Water District, and Rag Gulch Water District are members of the KCWA. However, these districts are long-term CVP contractors and have been extensively analyzed in previous environmental documents, and are therefore not analyzed here.

KCWA Improvement District #4 supplies are M&I water and the remaining districts are agricultural.

The KCWA is seeking to be able to deliver CVP water to all areas within Kern County that are within the Places of Use as defined in Reclamation's water rights permits. The primary method of delivery of CVP water supplies to KCWA is via the Kern River at the FKC terminus. The water travels downstream in the Kern River channel, where it is diverted for use by water districts within the POU as defined in Reclamation's water rights permits or for groundwater recharge projects located along the Kern River fan.

Because of the timing of surplus water availability, the primary use of the CVP surplus water has been for recharge within the Kern Fan groundwater storage projects, including the Berenda Mesa Project, the Pioneer Project and the Kern Water Bank.

#### Henry Miller Water District

Henry Miller Water District is located approximately 17 miles northwest of the southern intersection of Interstate 5 and California Highway 99. The total district acreage is roughly 26,000 acres. Annually the district provides about 35,500 af of irrigation water to approximately 19,500 acres of irrigated land.

Buena Vista Lake shrew (*Sorex ornatus relictus*) has been historically present within the boundaries of the water district. The last sighting, however, was in 1991 near Lake Evans. The giant garter snake (*Thamnophis gigas*) has also been historically present within the boundaries of the district. The most recent sighting of this species was in 1999, in the central northwest portion of the district.

#### **KCWA Improvement District No. 4**

In the late 1960's KCWA formed Improvement District No. 4 to import state project water to the urban Bakersfield area for municipal purposes. Today, more than 80,000 afy of SWP water is reserved for importation into the area. Fifty-thousand afy is set aside to replenish the local ground water basin, while 34,000 af is treated at the Henry C. Garnett Water

Purification Plant. The treated water is delivered to four domestic water systems that serve parts of northern and eastern Metropolitan Bakersfield through the following entities:

#### *Wheeler Ridge-Maricopa Water Storage District*

Wheeler Ridge-Maricopa Water Storage District (WR-MWSD) is a public agency whose jurisdiction encompasses about 147,000 acres of land in Kern County, California, at the extreme southern end of the San Joaquin Valley, twenty miles south of Bakersfield.

WR-MWSD provides irrigation water supplies to about 90,000 acres of farmland within its boundaries. A small percentage of the water is supplied on a temporary basis for industrial, groundwater recharge, and in-lieu of groundwater pumping purposes. As stated earlier, the banking of CVP water is not included in the proposed action and separate environmental documentation would be required for such proposals. WR-MWSD provides no water treatment or M&I service. Except for a few locations along Interstate 5, WR-MWSD is exclusively rural. There are no cities or towns within MR-MWSD boundaries. No significant new water distribution facilities have been constructed since 1986, and none are planned.

#### **Kern Delta Water District**

Kern Delta Water District (KDWD) is located in the southern portion of the CVP Service Area, directly south of City of Bakersfield, and west of Arvin-Edison. The district comprises 129,000 acres which are primarily agricultural, and also encompasses about 5,000 acres of residential and commercial land uses. Most urban areas are found in the north portion of Kern Delta, where the City of Bakersfield is slowly growing to the south.

KDWD has historically received CVP surplus water either by direct contract with Reclamation, through participation with the KCWA, or by exchange with Arvin-Edison WSD. Regardless of the contract method, KDWD receives CVP water through a direct connection with Arvin-Edison WSD.

#### **Kern Water Bank Authority**

The Kern Water Bank Authority (KWBA) located in the southwestern San Joaquin Valley, occupies approximately 30 square miles (20,000 acres) of land in Kern County. The primary purpose of the KWBA is to recharge, store and recover water (water banking) in order to improve the water supply for its participants during periods of water shortages. It also conducts other activities that include farming and habitat management.

The KWBA operates by recharging surplus water for direct groundwater recharge within recharge basins when it is plentiful. KWBA does not retain ownership of any of the water recharged onto the property. All water is owned by the participants purchasing and recharging the water to maintain balance of water supplies. As such, KWBA does not use its banked water for growing crops, although its member districts do use the water for farming within their districts.

The majority of KWBA land, 17,000 of the 20,000 acres that comprise the agency, were farmed intensively prior to 1991. Currently, the water conservation activities of the water bank are allowing re-establishment of intermittent wetland and upland habitat. The CVP water, if approved, would be delivered for recharge of the aquifer.

### **Liberty Water District**

Liberty Water District (LWD) is located in Fresno County south of the city of Caruthers and northerly of the cities of Riverdale and Laton and is bisected by Hwy 41. LWD comprises 21,189 acres and all are irrigated agriculture. LWD would utilize CVP water exclusively for agricultural use or recharge of groundwater and would not transfer the CVP water. LWD has no M&I use within the District.

There have been no sightings of federally listed threatened or endangered species within the bounds of LWD.

### **North Kern Water Storage District**

The North Kern Water Storage District is situated in the San Joaquin Valley portion of Kern County and encompasses about 70,000 acres divided into two project areas. The 1950 North Kern Water Storage District project of about 60,000 acres (North Kern hereinafter) and the 1979 Rosedale Ranch Improvement District project of about 10,000 acres. Both are fully developed to irrigated agriculture, with almonds and grapes accounting for about 50% of the cropped area and stone fruit comprising the remaining amount.

### **Rosedale-Rio Bravo Water Storage District**

Rosedale-Rio Bravo Water Storage District (R-RBWSD) is located west of Bakersfield in Kern County. The District has a gross area of approximately 43,000 acres with a net estimate of 33,400 irrigated agricultural acres. Approximately 3,900 acres are fallow lands, 2,500 acres undeveloped lands and 1,100 acres of canals and recharge basins. All water coming into the District has been for groundwater recharge and overdraft correction. R-RBWSD does not serve M&I water.

The District has completed construction of additional recharge basins and now has a wetted area of approximately 840 acres available for groundwater recharge. The District is also a recharge participant in the Pioneer Project, and as such, has first priority to 25% of the total recharge capacity. This provides the District an additional 50 cfs of recharge capacity.

The District acquires water for recharge purposes from the Kern River through a water service agreement with the city of Bakersfield, from the FKC of the CVP, as available, and from the SWP through a water supply contract with the KCWA. Water supplies from these three sources have averaged about 62,000 afy for the years 1962 through 1999 or about 79% of the cumulative consumptive use during those years.

### **Semitropic Water Storage District**

Semitropic Water Storage District (SWSD) is located in north-central Kern County in the San Joaquin Valley, about 20 miles northwest of the City of Bakersfield. Semitropic was organized in 1958 to supply supplemental water within its boundaries. The total land area within Semitropic is approximately 221,000 acres (345 square miles). Nearly 42,700 acres rely exclusively on groundwater. Landowners within the District apply approximately 480,000 acre-feet of water of which, in a very good year, 350,000 acre-feet can be imported surface water with the remaining 130,000 acre-feet applied in the groundwater service area.

SWSD provides water banking and owns a portion of the Kern Water Bank. It should be noted that water banking for later use is not included in this analysis and review process. SWSD also provides banking for conjunctive use for in-lieu storage to alleviate groundwater pumping. The proposed action and alternatives could result in providing CVP water to SWSD for the purpose of groundwater recharge or conjunctive use.

### **Tulare Lake Basin Water Storage District**

Tulare Lake Basin Water Storage District (TLBWSD) has a service area of 185,800 acres and its boundaries include nearly the entire Tulare Lake Bed. TLBWSD is located southwest of the city of Corcoran in Kings County. All deliveries from TLBWSD are for agricultural purposes.

CVP water is conveyed to the District via the California Aqueduct or released into the Kings River, Kaweah River or Tule River from the FKC. Subsequent exchanges would likely be conveyed from the Kings River and Tule River systems by gravity. No other exchanges are contemplated. While the District has no formal water banking facilities, it does practice conjunctive use.

### **Kings River Conservation District**

The Kings River Conservation District (KCRD) is a water resources and energy management agency located in the central San Joaquin Valley. KCRD is a joint powers authority agency and represents a means for unifying the common interests of the Kings River's diverse users and areas by the establishing the public agency with an elected board to represent the service area's more than 1.2 million acres in Fresno, Kings and Tulare Counties.

## **Environmental Consequences**

### **Water Resources**

#### ***Alternative 1***

Under Alternative 1, the transfer of CVP water to an NCVPC would be subject to multiple laws and policies, including the transfer provisions of Section 3405 of the CVPIA. The amount of water being considered for transfer (up to 250,000 acre-feet) is approximately 11% of the total amount of Class 1 and Class 2 water generally available, and is just over 8% of the 3 million acre-feet of water that the NCVPC's have access to. Under this alternative, each proposed transfer would be required to comport with the transfer provisions of the CVPIA, and would fall under the analysis contained in the CVPIA Programmatic Environmental Impact Statement, which recognized that transfers are a necessary part of the operations of the CVP system. No changes would occur to overall water supplies. The amount of water to be transferred is small when considering overall water supplies. Water transfers are less likely to occur in wet years when most demands have been met. In dry years, overall water supplies would be smaller and the full 250,000 af would not likely be available to transfer. Water would be conveyed in existing facilities. No new impacts would therefore occur.

### **Alternative 2**

Under Alternative 2 the exchange of water, on a “bucket for bucket” basis, would not increase or decrease the water supply for either CVP contractors or NCVPC’s, and would likely be undertaken as a means to save on costs, such as those incurred when pumping water through the Cross Valley Canal. No significant impacts to water supply would occur under this alternative.

### **Alternative 3**

Under Alternative 3 (the preferred alternative), Reclamation would approve throughout the water year some combination of the two alternatives above, as specific circumstances and requests warrant. Any effects to groundwater would be a combination of the transfers and exchanges alternatives; as none of the two alternatives have significant impacts, there would be no significant impact as a result of this alternative.

### **No Action Alternative**

Under the No Action Alternative, water supplies would not change and savings associated with the ability to exchange and/or transfer water would be lost.

### **Cumulative Impacts**

The transfers and exchanges described in Alternatives 1, 2 and 3 would not result in any major long-term impacts or cumulative effects. In any given year, water will be transferred from areas with excess water to areas in demand within a single water year to support existing croplands or M&I facilities. In the case of exchanges, a like amount of water is returned to the same contractor and service area. Any impacts would be short-term and no increases or decreases of water would occur within the service area. No increases or decreases in diversions from reservoirs or waterways would occur, although the timing could change. Overall water supplies would not change.

It is possible, the transfers could free up SWP or other water supplies to be transferred other areas including south of the San Joaquin Valley. These transfers are outside of Reclamation’s authority for approval. Alternatives 1, 2 and 3 are short-term actions and would occur when water is in excess to the needs of the landowners within the water districts. The cumulative impact of water leaving the project area is small due to the short-term action and uncertainty of available water supplies to transfer. In some cases Alternatives 1, 2, or 3 could trigger other approvals including, but not limited to, changes in places of use and conveyance agreements. Other approvals involving CVP water are outside the scope of this Environmental Assessment. Each transfer and exchange proposal would require separate environmental review prior to approval. Reclamation does not have approval authority over non-CVP water supplies.

### **Groundwater Resources**

As stated earlier, the water districts manage all available water supplies including groundwater. The water districts do not have jurisdiction over groundwater. However, most districts have adopted groundwater management plans. Water districts discourage groundwater use in overdraft areas. Surface water supplies are purchased when available at a cost that is cheaper to pump groundwater. In overdraft areas, pumping groundwater is quite expensive due to the distance it must be pumped out of the ground.



### **Alternative 1**

Under Alternative 1, the transfer of water to areas with insufficient surface water supplies would result in less pumping of groundwater. As groundwater overdraft is considered a threat to the water quality and quantity in the San Joaquin Valley, this would constitute a beneficial effect. Most demands are met in wet years including groundwater recharge and transfers are less likely to occur. The full 250,000 af of CVP water is unlikely to be available to transfer to areas with overdraft conditions in dry years. The construction of private wells and use of groundwater by landowners are beyond the control of Reclamation or the water districts. Therefore, groundwater use would likely increase in dry years as in the past. To the extent that up to 250,000 af of water is available and transferred to areas with overdraft conditions, groundwater recharge opportunities could improve. This benefit would be small and would not lead to major changes in groundwater quality and quantity.

### **Alternative 2**

Under Alternative 2 the exchange of water would not affect the level of groundwater being pumped or naturally recharging into the groundwater basins. Although the timing may differ, similar amounts of water are being delivered to maintain existing conditions in the same areas as in the past. The timing of surface water deliveries to support crops grown at different times of the year could reduce the need to rely on groundwater recharge and later extraction when the water is needed to grow certain crops. This benefit would be small. Overall water supplies are not changing.

### **Alternative 3**

Alternative 3 would therefore have some degree of beneficial effects on the quantity and quality of groundwater, and would have no significant adverse impacts.

### **No Action Alternative**

The No Action Alternative would likely result in continued groundwater pumping and subsequent worsening of the overdraft of the groundwater table.

### **Cumulative Impacts**

Groundwater banking is outside the scope of this EA. Groundwater sources are included in the overall management supplies (conjunctive use) for the water districts. Management strategies include protecting all available supplies to support the landowners and economy. Groundwater supplies are used sparingly and typically are pumped when surface water supplies are not sufficient to meet the demands. Increases in pumping groundwater occur in dry seasons when surface water supplies are not available. Alternatives 1, 2 or 3 may reduce groundwater pumping slightly on a localized basis throughout the action area; however, cumulatively this action will have only a minor effect on the current management and use of groundwater resources in the Project area due to their short duration and small quantity.

## **Land Use**

### **Alternative 1**

Under Alternative 1, the land uses, which again would require long term reliability to effectively forecast and sustain, would not be supported by any transfers under a one-year

approval. There would, therefore, be no major impacts to land use as a result of this alternative.

### ***Alternative 2***

Under Alternative 2 no new water supplies would be created, and thus there would be no ability to support any changes in land use. No impacts to land use would be created.

### ***Alternative 3***

Alternative 3 would combine the first two alternatives, and any impacts would be considered to be additive. As there are no impacts to land use resulting from the first two alternatives, there would be none associated with Alternative 3.

### ***No Action Alternative***

The No Action Alternative would also not support any specific land uses changes or impacts, as no new water supplies to support any changes would be available. Land owners might seek outside sources of water to change land use patterns, but such sources are not within the scope of this document to analyze. No impacts to land use are foreseen.

### ***Cumulative Impacts***

Development and urbanization is occurring throughout the project area. The transfers and exchanges would not provide a long-term or reliable supply to support long-term land use changes. Hydrological or economical conditions would likely drive landowners to fallow lands. These conditions are temporary and are not the result of the Alternatives 1, 2 and 3. Therefore, the Proposed Alternative Actions do not contribute to major cumulative impacts to land uses.

## **Wildlife**

### ***Alternative 1***

Impacts to wildlife under Alternative 1 would be major. The short duration of the water availability, the requirement that no native lands be converted without consultation with Service, and the stringent requirements for transfers under applicable laws would preclude any impacts to wildlife, whether federally listed threatened and endangered species or not. This water would be conveyed in existing facilities and no new construction or land disturbing activities would occur. Farming practices would not change including fallowing lands. Decisions to fallow lands are based on fluctuating agricultural economical and hydrological conditions. The decision to fallow lands could free up water to be redistributed within the water district or transferred. Reclamation determines annual allocations to CVP contractors based on hydrological conditions and after meeting water quality, fish and wildlife requirements. The amount of water diverted from reservoirs or waterways would not change although the timing may differ. Habitat types would not change from past conditions. Lands that have been fallowed for three consecutive years would require biological surveys prior to disking. Approval of the transfers of water would not interfere with the requirements or ability of Reclamation to make water available for fish and wildlife uses mandated by CVPIA or the various Biological Opinions within the area.

### ***Alternative 2***

There would also be no impacts associated with approval of Alternative 2, as the water supplies would not change, the water deliveries would not result in more water or less water being delivered to any given area, and there would be no new facilities being constructed to deliver the water.

### ***Alternative 3***

Alternative 3, as above, would be expected to combine the effects of the first two alternatives. As there are no impacts to wildlife under those alternatives, there would be none associated with Alternative 3.

### ***No Action Alternative***

Under the No Action Alternative impacts to wildlife would also be non-existent. No changes to the existing conditions would occur.

### ***Cumulative Impacts***

Alternatives 1, 2 and 3 are short-term actions. No new construction or ground disturbing activities would occur. Land fallowing could occur as a result of hydrological or agricultural market fluctuations. Lands that have been fallowed for three consecutive years must be surveyed for biological resources prior to disking. These actions would not lead to long-term changes in foraging or shelter opportunities for wildlife. No additional water supplies would be diverted. Reclamation allocates water each year based on hydrological conditions. Allocations are made after considerations to protect water quality and aquatic species. Alternatives 1, 2 and 3 do not interfere with the EWA or water service decisions to support wetlands, refuges, fish and wildlife. It is anticipated the transfers and exchanges would expand the ability to improve water management in the project area. The transfers and exchanges could stabilize prices for water allowing improved conditions for the EWA and refuges to compete for water. Alternatives 1, 2 and 3 do not result in major cumulative impacts to biological resources.

## **Global Warming**

### ***Alternative 1***

Alternative 1 does not change the amount of overall water supplies or diversions from reservoirs, waterways or the Delta. Alternative 1 would maintain conditions in the project area. The water would be used to support the highest beneficial use. For instance, it is expected that during dry seasons or drought water transfers and exchanges would be used to support permanent crops and long-term investments including existing M&I demands. Due to the short-term duration and the fluctuating hydrological conditions, Alternative 1 would not change farming or M&I practices. Therefore, Alternative 1 would not contribute to activities that increase global warming.

### ***Alternative 2***

Alternative 2 results in similar amounts of water delivered to the same areas as in the past. Alternative 2 does not change conditions that would cause additional global warming.

### **Alternative 3**

Alternative 3 is a combination of Alternatives 1 and 2. The cumulative amount of water involved does not exceed the 250,000 af/y. Alternative 3 would not contribute to conditions that cause or increase global warming.

### **Alternative 4**

The No Action Alternative is similar to the Proposed Alternative Actions. No changes would occur to overall water supplies. No major long-term changes would occur to current agricultural or M&I practices.

### **Cumulative Effects**

Transfers and exchanges of existing water supplies would support current conditions and would not exasperate conditions contributing to global warming. The transfers and exchanges are short-term and would not change land uses or support new development. On the other hand, global warming could change historical precipitation patterns. Annual allocations and overall water supplies could be altered. It is unknown whether water supplies would increase or decrease in California. In response to global warming, new dams or expansion of existing reservoirs are being considered. These considerations are in the conceptual phases and no specific plans have been manifested at the time of writing this EA. The construction of new dams or expanding existing reservoirs would help to offset the impacts of global warming while providing long-term and more reliable supplies to meet a growing population. Increases in water supplies could increase the amount of water available for transfers and exchanges. However, such actions are speculative at this time.

## **Indian Trust Assets**

### **Alternative 1**

Alternative 1 does not result in additional diversions of water supplies and is similar to the No Action Alternative. There are no tribes possessing legal property interests held in trust by the United States in the water involved with this action, therefore Indian trust assets are not affected by this action. Alternative 1 would not interfere with water deliveries to Indian Reservations. Annual allocations of CVP water are made after factoring in American Indian fishing rights.

### **Alternative 2**

Same as No Action Alternative.

### **Alternative 3**

Same as No Action Alternative.

### **No Action Alternative**

Reclamation does not allow transfers and exchanges of existing water supplies under the No Action Alternative. The same amount of water would be diverted and used within the same geographical area. There are no tribes possessing legal property interests held in trust by the United States associated with this water. Annual allocations of CVP water are made after factoring in American Indian fishing rights and do not interfere with deliveries to Indian Reservations.

### ***Cumulative Effects***

Overall water supplies and operations would not change as a result the proposed alternatives. No major changes would occur to Indian Trust Assets when considered with past, present, and future actions.

### **Environmental Justice**

#### ***Alternative 1***

Under Alternative 1 there would be no major impacts to low income or disadvantaged populations. Water is moved from areas with excess supplies to areas with insufficient supplies. This flexibility in water management and deliveries allows farmers to maintain existing croplands and employment opportunities for farm workers.

#### ***Alternative 2***

Under Alternative 2 there would be no impacts to environmental justice, as the amount of water available for agriculture would not change, thereby not supporting any changes in practices that would result in impacts to disadvantaged or minority populations.

#### ***Alternative 3***

Alternative 3 is a combination of Alternatives 1 and 2. Employment opportunities for low income or disadvantaged populations would be maintained so far as hydrological conditions allow for available water supplies to transfer and exchange.

#### ***No Action Alternative***

The No Action Alternative would result in less flexibility to deliver water to meet crops demands. The amount of water is small when compared to the overall water supplies. Some fallowing of lands could occur resulting in fewer jobs for low income or disadvantaged populations on a short term basis until adequate source of water are available for delivery.

### ***Cumulative Effects***

Water management is a complex, convoluted, and highly charged business in California. None of the alternatives result in increases or decreases of overall water supplies. None of the alternatives contribute to changes from past conditions. Hydrological conditions could result in less water available to irrigate farms and support M&I uses. Under dry conditions, fewer lands may be irrigated and job opportunities for low income farm workers could be reduced. The transfers and exchanges allow available water supplies to be redistributed within the same geographical area. Depending on the severity of dry conditions and lack of surface water, groundwater would be pumped, transfers and exchanges would be proposed to allow deliveries of water to the highest and beneficial use. This would include existing permanent crops and existing permanent investments such as processing plants and M&I purposes. Alternatives 1, 2 and 3 are water management tools that could maintain some crops and jobs for farm laborers. Alternatives 1, 2 and 3 do not change overall water supplies and do result in major cumulative impacts for job opportunities for low income wage earners.

### **Socio-economics**

#### ***Alternative 1***

Under Alternative 1 there would be no major impacts to socio-economics. The short-term availability of the transfer water would not affect the seasonal agricultural patterns that

support the local communities or the residents around them. The businesses that support agricultural activities would not be affected by the temporary increase in water supply.

### **Alternative 2**

Alternative 2 allows for equal amounts of water to be swapped to improve timing of deliveries for the type of crops grown. The socio-economic conditions would be maintained as in the past providing a slight benefit for farmers to continue to compete in the agricultural market.

### **Alternative 3**

Alternative 3 would, therefore, also have slight benefits to agricultural operators, and no impacts to agriculture supported businesses or employees.

### **No Action Alternative**

The No Action Alternative would result in no changes from the existing conditions, but would also avoid the potential savings associated with Alternatives 1, 2 or 3.

### **Cumulative Impacts**

The exchanges are not expected to cause major cumulative impacts on socio-economical conditions. There may be a slight economic benefit to the farmers who are the end users of the water, in that the value of water is such that it provides an incentive to fallow some lands to make water available to sell. The transfers in this EA are examples of the expansion of transfers as envisioned in the CVPIA. As water transfers are expanded, the demands for water would be lower and the cost of water would stabilize. Incentives to fallow lands in order to sell the water for profit would be curtailed. In the unlikely case that lands are fallowed to make more money from selling water; this incentive could be expected to translate into growing higher value crops on smaller parcels of land. Growing higher value crops would offset the loss associated with the lands that are not producing crops and money.

Alternatives 1 and 3 could trigger other transfers to other areas including southern California. These transfers are beyond Reclamation's authority. The transfers would be short-term and would not lead to long-term impacts on water supplies in northern or central California.

Alternatives 1, 2 and 3 do not change the amount of water diverted for agricultural or M&I uses each year. Diversions and allocations are made annually based on the hydrological forecasts and after considerations for water quality, American Indian fishing rights, fish and wildlife purposes have been met. None of the alternatives would result in cumulative impacts to socio-economical conditions.

Depending on each proposed transfer or exchange, Alternatives 1, 2 and 3 could result in increases or decreases in pumping and costs associated with conveying the water to the end user. These changes would likely offset the need to pump groundwater. Pumping and conveying the water would not result in major cumulative costs for water or power.

Alternatives 1, 2 and 3 do not trigger or result in long-term decisions such as contract assignments or retirement of lands. Contract assignments and land retirements are the result of undesirable economic or environmental conditions. Landowners are unable to compete

with surrounding farmers due to the unsatisfactory conditions of soils and lands in their areas. These actions are not the result of unavailable water supplies. Water transfers often do occur outside of these areas under interim conditions until a permanent decision is made such as contract assignments and/or land retirements. In some cases, the water district redistributes the water within its own boundaries. In other cases, the entire water district no longer needs the water and transfers most of the water out. The Proposed Alternatives are not a contributing factor in these permanent changes although they may occur as part of the strategy to manage the overall water supplies. Alternatives 1, 2 and 3 do not contribute to cumulative impacts or changes to socio-economical conditions.

## **Commitments**

As previously stated, all requests for water service actions will require separate review by the contracting officer and environmental analysis, to ensure that all laws, policies, and regulations are complied with.

## **Conclusion**

The short duration of the Alternatives considered in this document preclude any major impacts to the quality of the human environment. In the context of the vast range of activities associated with the business of water in California and in the Central Valley, the proposed action, including the Preferred Alternative, will have no long-term impacts to the quality of the human environment.

Alternative 3 has been identified as the Preferred Alternative because it will allow the greatest flexibility in meeting the agency goals and mission, will have some beneficial impacts, and will have no major adverse impacts to the human environment.

## ***Consultation and Coordination***

### **Fish and Wildlife Coordination Act (16 USC sec. 651 et seq.)**

The Fish and Wildlife Coordination Act requires that Reclamation consult with fish and wildlife agencies (federal and state) on all water development projects that could affect biological resources. None of the Proposed Alternatives would require construction for water development projects. No significant, unmitigable impacts to wildlife would occur under the Proposed Alternatives and no further coordination/consultation would be needed with the Service or the California Department of Fish and Game.

### **Endangered Species Act (16 USC Sec.1521 et seq.)**

Section 7 of the Endangered Species Act requires federal agencies, in consultation with the Secretary of the Interior, 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. Reclamation has concluded that the proposed action would not affect any listed or proposed for listing threatened or endangered species. This conclusion is based on the short-term nature of the transfers and exchanges would not result in major changes to habitat types, shelter, or foraging opportunities for biological resources.. No construction or new facilities would be required to convey this water. Decisions to follow

lands are based on fluctuating hydrological and agricultural market conditions. Transfers and exchanges are typical methods for delivering water to areas with the highest beneficial use, i.e. permanent crops when water supplies are insufficient to meet demands. Lands that have been fallowed for three consecutive years would require biological surveys prior to disking. If sensitive biological resources are discovered, additional environmental analysis and consultations may be required in compliance with applicable laws prior to applying CVP water to these lands.

**National Historic Preservation Act (15 USC Sec. 470 et seq.)**

Section 106 of the National Historic Preservation Act requires federal agencies to evaluate the effects of federal undertakings on historical, archeological and cultural resources. The proposed actions would not affect features or resources that have been certified in the NCVPC's service areas.

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