

RECLAMATION

Managing Water in the West

Draft Environmental Assessment

Long-Term Warren Act Contract with Cawelo Water District

EA-06-66



U.S. Department of the Interior
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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, Abbreviations, and Definition of Terms

AF	acre-feet
AF/y	acre-feet per year
APE	area of potential effects
Aqueduct	California Aqueduct
cfs	cubic feet per second
CNDDDB	California Department of Fish and Game Natural Diversity Database
CO	carbon monoxide
CO ₂	carbon dioxide
CVC	Cross Valley Canal
CVP	Central Valley Project
CWA	Clean Water Act
CWD	Cawelo Water District
DOI	U.S. Department of the Interior
DWR	California Department of Water Resources
EPA	Environmental Protection Agency
FKC	Friant-Kern Canal
FWCA	Fish and Wildlife Coordination Act
GHG	greenhouse gases
ITA	Indian Trust Assets
KCWA	Kern County Water Agency
M&I	Municipal and industrial
MH ₃	methane
NAAQS	National Ambient Air Quality Standards
NHPA	National Historic Preservation Act
NKWSD	North Kern Water Storage District
PM ₁₀	particulate matter 10 (particles that are 10 micrometers in diameter)
Parties	Districts involved in undertaking: Cawelo Water District, North Kern Water Storage District, Improvement District No. 4 of the Kern County Water Agency, and Southern San Joaquin Municipal Utility District
Reclamation	Bureau of Reclamation
SCH	State Clearinghouse
SIP	State Implementation Plan
SJV	San Joaquin Valley
SWP	State Water Project
TDS	total dissolved solids
USFWS	U.S. Fish and Wildlife Service
WA	Warren Act
Zone 7	Alameda County Flood Control and Water Conservation District Zone 7

Section 1 Purpose and Need for Action

1.1 Background

The Warren Act (WA) of 1911 (43 U.S.C. §523) authorized the Secretary of the Interior to enter into WA contracts with water purveyors to carry non-Central Valley Project water (i.e., water not part of the Central Valley Project (CVP)) through federal facilities. Under section 305 of the States Emergency Drought Relief Act of 1991 (43 U.S.C. §2211 et seq.), “Excess Storage and Carrying Capacity,” the Secretary is authorized to execute contracts with municipalities, public water districts and agencies, other federal agencies, state agencies, and private entities pursuant to the WA. These contracts provide for the impoundment, storage, and conveyance of non-CVP water for domestic, municipal, fish and wildlife, industrial, and other beneficial uses using any CVP facilities identified in the law.

Cawelo Water District (CWD) operates a long-term in-lieu Water Banking Program with Alameda County Flood Control and Water Conservation District Zone 7 (Zone 7) [See Figure 1-1 below for a map of the facilities that would be involved in the Proposed Action.]. CWD is considered a non-CVP contractor since they have never had a CVP long-term water service contract (CWD has had temporary contracts; however, this does not provide CWD with the designation of a CVP contractor.). CWD is located in the north-central portion of Kern County, encompassing 45,000 acres between State Route 65 on the east and State Route 99 on the west and extending from Seventh Standard Road in Bakersfield on the south to McFarland on the north, just easterly of the Friant-Kern Canal (FKC) alignment. CWD obtains its water (38,200 acre-feet (AF)) from the State Water Project (SWP) through its contract with Kern County Water Agency (KCWA). CWD’s other sources of water comprise of stored Kern River water, oilfield produced water, Poso Creek water, and groundwater (Schafer 2002).

The KCWA serves as Kern County’s contracting entity for the SWP and participates in a wide scope of related activities to preserve and enhance Kern County's water supply, including providing water to 14 contracting agencies and the provision of a supplemental water supply for portions of the metropolitan Bakersfield area. Kern County has delegated its county water management responsibilities to KCWA. KCWA also has the authority to approve or disapprove Kern County water movement into and out of the California Aqueduct (Aqueduct).

Zone 7 was formed in 1957 to address regional flooding and water supplies and is a part of the Alameda County Public Works Agency (ACPWA). The ACPWA is responsible for maintaining the infrastructure of Alameda County (Alameda County 2007).

Normally, CWD would deliver SWP water to Zone 7 by exchange. CWD has the following methods available for transporting and exchanging this water to Zone 7:

Water recovered from CWD's Banked supply and physically transported to Zone 7:

- Water recovered from CWD's groundwater wells would be transported through pipelines by gravity to North Kern Water Storage District's (NKWSD) 8-23 Canal then pumped into NKWSD's Lerdo Canal.
- The water would then be exchanged on an instantaneous basis with the water in the Beardsley Canal (same canal but upstream approximately 5 miles).
- The water in the Beardsley Canal would be allowed to flow by gravity through CWD's Conduit A and into the forebay of CWD's Pump Station A.
- From the forebay of the Pump Station A the water will reverse flow through the Cross Valley Canal (CVC) to the Aqueduct.
- Once in the Aqueduct, the water would be exchanged for water in the Aqueduct at the point of diversion for Zone 7 near the Bethany forebay.

Water recovered from CWD's Banked supply and exchanged to Zone 7:

- Water recovered from CWD's groundwater wells would be transported through pipelines by gravity to North Kern's 8-23 Canal then pumped into NKWSD's Lerdo Canal.
- The water would then be exchanged with water that NKWSD and others have available in the CVC that was originally intended to be delivered into their district.
- The water would then be transported through the remaining portions of the CVC by reverse flow to the Aqueduct.
- Once in the Aqueduct, the water would be exchanged for water in the Aqueduct at the point of diversion for Zone 7 near the Bethany forebay.

Water recovered from CWD's Banked supply outside its boundaries and exchanged to Zone 7:

- Water recovered from CWD's groundwater accounts that are situated outside the district's boundaries would be pumped from groundwater wells into the CVC.
- Once in the CVC, the water would reverse flow by gravity to the Aqueduct and would be exchanged for water in the Aqueduct at the point of diversion for Zone 7 near the Bethany forebay.

CWD is requesting a WA Contract to deliver up to 20,000 AF of previously banked SWP water to Zone 7 through federal facilities during a drought year (typically, between September 1 and April 30).

1.2 Purpose and Need

The purpose of executing the proposed WA contract is to allow for the conveyance and return of Zone 7's banked non-CVP water from CWD. Normally, CWD would deliver SWP water to Zone 7 by exchange. CWD needs the WA contract for extreme drought conditions when surface water allocations are unavailable from CWD's exchangers.

1.3 Relevant Environmental Documents

Relevant Environmental Documents

Zone 7 developed a Water Supply Planning Program to address its long-term water supply and facility needs through the year 2020, and has also prepared and adopted its *Zone 7 Water Agency Water Supply Planning Program Environmental Impact Report* (State Clearinghouse (SCH) #98041040) on July 21, 1999.

Zone 7 also prepared *Cawelo Water District Water Transfer, Zone 7 Water Agency, Livermore—Alameda – Initial Study and Negative Declaration*, dated January 26, 2006, for the Zone 7/CWD In-Lieu Water Banking Exchange Program. Zone 7 filed the Initial Study and Negative Declaration with the SCH on January 30, 2006 (SCH #2006012136). Zone 7 approved the Negative Declaration on March 15, 2006, and filed a Notice of Determination with the SCH and the County of Alameda on March 22, 2006.

In the Initial Study and Negative Declaration, Zone 7 would acquire up to 10,000 acre-feet per year (AF/y) of supplemental, dry year water supply by participating in a long-term, in-lieu water banking program managed by CWD. CWD's banking program would allow Zone 7 to store its surplus SWP allocation in CWD's groundwater basin; in turn, a portion of the banked water would be recovered from CWD when needed (during drought periods), with Zone 7 taking delivery at Bethany Reservoir and the South Bay Aqueduct. This transfer would serve municipal and industrial uses within Zone 7's service area and be integrated with Zone 7's existing water supply sources.

CWD prepared *Cawelo Water District In-Lieu Water Banking Program – Initial Study and Negative Declaration*, dated July 10, 2003, and filed it with the SCH and the County of Kern on May 27, 2003 (#2003051128). The In-Lieu Water Banking Program would involve a long-term surface water exchange and groundwater banking and extraction program in CWD with one or more partners. CWD constructed additional canals, pipelines, pumping plants, and extraction wells, recharge basins and equalizing reservoirs for the delivery and recovery of banked groundwater as part of the In-Lieu Water Banking Program. This is known as the Famoso Water Banking Project and was completed August 2007.

1.4 Applicable Regulatory Requirements and Required Coordination

Several Federal laws, permits, licenses and policy requirements have directed, limited or guided the NEPA analysis and decision making process of this environmental assessment and include the following:

- *Reclamation States Emergency Drought Relief Act* - Section 102 of the Reclamation States Emergency Drought Relief Act of 1991 provides for use of Federal facilities and contracts for temporary water supplies, storage and conveyance of non-CVP water inside and outside project service areas for municipal and industrial (M&I), fish and wildlife, and agricultural uses.

- *Reclamation States Emergency Drought Relief Act* - Section 305 of 1991, enacted March 5, 1992 (106 Stat. 59), also authorizes Reclamation to utilize excess capacity to convey non-CVP water.
- *Contracts for Additional Storage and Delivery of Water* – Central Valley Improvement Act (CVPIA) of 1992, Title 34 (of Public Law 102-575), Section 3408, Additional Authorities (c) authorizes the Secretary of the Interior to enter into contracts pursuant to Reclamation law and this title with any Federal agency California water user or water agency, State agency, or private nonprofit organization for the exchange, impoundment, storage, carriage, and delivery of Central Valley Project and non-project water for domestic, municipal, industrial, fish and wildlife, and any other beneficial purpose, except that nothing in this subsection shall be deemed to supersede the provisions of section 103 of Public Law 99-546 (100 Stat. 3051). The CVPIA is incorporated by reference.
- *Water Quality Standards* - Reclamation requires that the operation and maintenance of CVP Project facilities shall be performed in such a manner as is practical to maintain the quality of raw water at the highest level that is reasonably attainable. Water quality and monitoring requirements are established annually by Reclamation and are instituted to protect water quality in the FKC by ensuring that imported non-CVP water does not impair existing uses or negatively impact existing water quality conditions. These standards are updated periodically. The annual review for the approval of WA Contracts would be subject to the then existing water quality standards. The water quality standards are the maximum concentration of certain contaminants that may occur in each source of non-CVP water. The water quality standards for non-CVP water to be pumped into the FKC are currently those set out in Title 22 of the California Code of Regulations. The standards from Title 22 can be found in Appendix A.

1.5 Scope

This EA has been prepared to examine the impacts on environmental resources as a result of conveying non-federal water in CVP facilities.

Reclamation has no federal jurisdiction or control over the disposition of the water once it is conveyed through federal facilities to the SWP.

1.6 Potential Issues

- Surface Water Resources
- Groundwater Resources
- Air Quality
- Land use
- Biological Resources
- Cultural Resources
- Indian Trust Assets
- Socioeconomic Resources
- Environmental Justice
- Global Climate Change

Cawelo Water District Long-Term Warren Act Contract



Figure 1-1 Map of the Area Involved

Section 2 Alternatives Including Proposed Action

2.1 Alternative A – No Action

The No Action alternative would consist of not allowing the non-CVP Water to be conveyed to Zone 7 through CVP facilities during a drought year. During a drought, CWD would not have a means of returning Zone 7's non-CVP water due to possible allocation cuts to SWP water. SWP exchangers would also experience allocation cuts. Zone 7 would not be able to retrieve its banked water. If available, Zone 7 may have to purchase water from another seller which could be more expensive.

The No Action alternative would also consist of not issuing a new license to CWD to use Lateral 8-17 to convey non-CVP water through federal facilities.

2.2 Alternative B - Proposed Action

The Proposed Action has two components. The issuance of a WA Contract and the issuance of a license for the erection, maintenance, and operation of structures, consisting of a series of discharge systems for the purpose of pumping groundwater across Reclamation's right-of-way and into the FKC at various locations (Mile Post 131.34 [approximate Station No. 7062+40] and Mile Post 133.43 [approximate Station No. 7125+25]).

CWD proposes to enter into a long-term WA Contract with a term consistent with Reclamation policy and dependent on public negotiations. A WA Contract would provide the capability of using existing conduits without impact or the cost of new construction.

Reclamation proposes to execute a long-term WA Contract to convey up to 20,000 AF of non-CVP water from CWD to the Aqueduct via the Lerdo Canal and laterals to the FKC (when capacity is available) and then through the CVC by exchange or reverse flow for recovery by Zone 7. A WA Contract would not interfere with normal CVP operations, nor alter the schedule and amount of CVP water diverted by the CVP from the San Joaquin River or Sacramento Delta. Additionally, Reclamation proposes to approve a right-of-use application for CWD for access across/through Reclamation facilities.

As part of CWD's long-term In-Lieu Water Banking Program with Zone 7, banked surplus water would be stored, when available, in CWD and recovered from Zone 7 when needed.

Normally, CWD will deliver SWP water to Zone 7 by the methods discussed previously. Only under extreme drought conditions would CWD resort to pumping banked water into NKWSD's Lerdo Canal and laterals for discharge into the FKC. The first time Zone 7 banked with CWD was in 2006; however, CWD has not returned banked water to Zone 7.

The proposed process is as follows:

Water recovered from CWD's banked supply and exchanged via the FKC to Zone 7:

The water would be discharged from the Lerdo Canal distribution system into the FKC and then into the CVC. This would be accomplished in the following manner (See Figure 2-1):

- Water would flow by gravity through NKWSD's Lateral 8-17 (milepost 133.43) and, at Lateral 8-25 (milepost 131.34), the water would be pumped into the FKC, and then transported to the terminus of the FKC and then delivered into the CVC.
- The water in the CVC would be transported to the Aqueduct by exchange or reverse flow. Once in the Aqueduct, the water would be exchanged for water in the Aqueduct at the point of diversion for Zone 7 near the Bethany forebay.

An existing pipeline discharge from Lateral 8-17 at FKC milepost 133.43 would be used for delivery of the Zone 7 non-CVP water from the Lerdo Canal distribution system into the FKC. CWD would also install a meter and operate an existing valve on the 18-inch discharge pipe attached to the underside of a 66-inch overchute pipe, an original feature of the FKC, at FKC milepost 133.43 and irrigation canal lateral 8-17, for gravity flow discharge of up to 20 cubic feet per second (cfs) of non-CVP water into the FKC. According to CWD, originally, NKWSD was licensed to use Lateral 8-17 but they did not use it. A new license would be issued to CWD to use Lateral 8-17 to convey the non-CVP water.

The non-CVP water would not exceed 20,000 annually. There would be no structural modifications of the FKC at either milepost 131.34 or milepost 133.43.

The discharge from NKWSD Lateral 8-25 would be accomplished by a temporary diesel-powered pumping plant with a capacity of up to 30 cfs on the canal embankment. A stairway would be placed over the existing embankment to provide safe access to and from the temporary pump. A shovel would be used to excavate holes (eight holes 3 feet deep and 1 foot in diameter) for the stairway support columns and steel traffic bollard, which would be encased with concrete. The concrete footings would be covered with native soil. There would be no changes to the existing canal lining (the specifications and drawings can be found in Appendix C).

A portable pumping plant would be installed during a drought year at Zone 7's request for their banked non-CVP water if a flow greater than 20 cfs is needed. A 12-inch suction pipe of the pump would be set in the forebay of the existing siphon, the pump would be set on the FKC embankment without interference with the roadway to State Route 46, and the pump discharge would be located over the FKC lining. Reclamation would be required to issue a right-of-use application as requested by CWD.

Together, the facilities would provide the mechanism for the recovery of Zone 7's water. There would be no structural modification to the FKC at milepost 131.34 or milepost 133.43. The two sites would provide up to 50 cfs of non-CVP water for return to Zone 7.

Fifty percent of Zone 7's stored water would be available for recovery from CWD during drought periods, that is, for every two AF of water stored within CWD, Zone 7 would be

returned one AF. It is estimated that up to 20,000 AF of Zone 7's approved SWP water supplies could be delivered to CWD for in-lieu recharge per year. In times of drought, Zone 7 would be allowed to recover an estimated 20,000 AF annually.

The return of Zone 7 groundwater water would occur by delivery through the FKC, the CVC, and the Aqueduct. Since other users along the conveyance systems would also have demands in a dry year, it is unlikely that physical return of the banked groundwater would be required. Rather, return of water to Zone 7 would occur through a series of exchanges typically involving NKWSD and others. The Proposed Action does not include the delivery of Kern River water to the Aqueduct.

CWD would not make groundwater withdrawals from any particular area of CWD if such withdrawals have caused or would cause the average groundwater levels in an area of interest in neighboring areas to drop 15 feet or greater than what the average groundwater levels would have been without the Proposed Action over a 3-year period and such impacts could not be mitigated.

FKC milepost 131.34 (NKWSD 8-25 Lateral) is situated on the south line, near the southwest corner of Section 1, Township 27 South, Range 25 East, Mount Diablo Base and Meridian; FKC Milepost 133.43 (NKWSD 8.17 Lateral) on the south line near the southeast corner of Section 14, Township 27 South, Range 25 East, Mount Diablo Base and Meridian, both in the Kern County, California (see Figure 2-1).

FKC milepost 131.34 photographs (See Appendix B) show the 8-25 Lateral siphon at the FKC. The temporary diesel powered portable pumping plant would be situated within the chain-link fenced area on the canal embankment for suction of water from the 8-25 Lateral siphon and discharge into the FKC, without interference of traffic on the FKC embankment access to State Route 46. Photographs of NKWSD 8.17 Lateral (milepost 133.43) show the 66" overchute, an original constructed feature of the FKC, and an additional photograph showing the 18" discharge pipe attached to the underside of the 66" overchute pipeline.

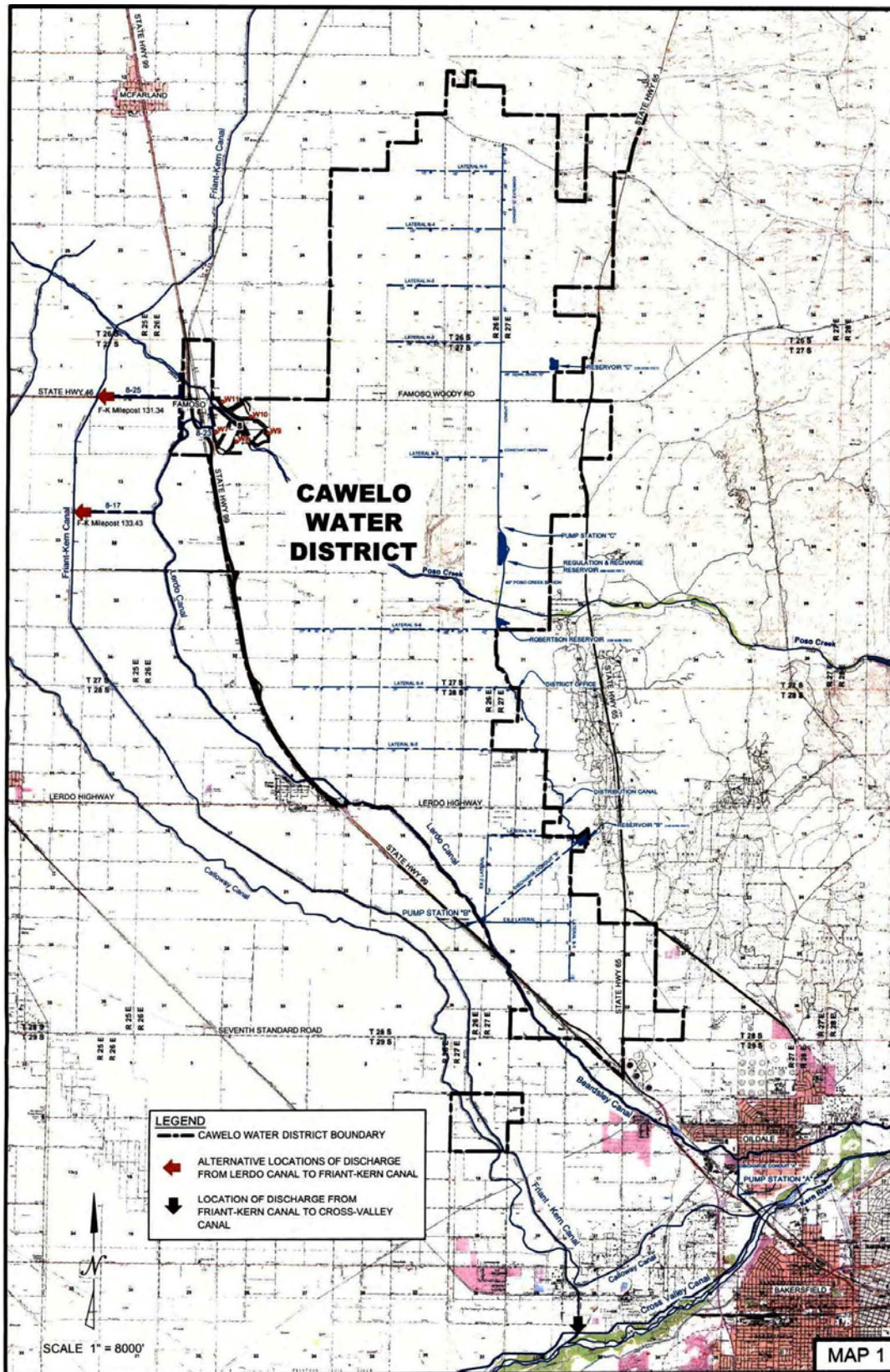


Figure 2-1 Zone 7 Water Recovery Pathway to Friant-Kern Canal

Section 3 Affected Environment & Environmental Consequences

3.1 Surface Water Resources

3.1.1 Affected Environment

Beardsley and Lerdo Canals

The Beardsley Canal is lined and originates on the Kern River at the Beardsley Weir. It becomes the Lerdo Canal at Seventh Standard Road near Oildale, approximately six miles downstream of Discharge 001. The Lerdo Canal is unlined. The Beardsley Canal becomes the Lerdo Canal and discharges to Poso Creek. The Beardsley and Lerdo Canals serve as a significant source of agricultural water supply to the NKWSD and CWD. Total agricultural land served by the Beardsley and Lerdo canals within these two districts is an estimated 110,000 acres, of which about 40,000 acres are permanent crops that are boron-sensitive. The Beardsley Canal also serves approximately 10,000 acres of land south of these Districts and within the sphere of influence of the City of Bakersfield (SWRCB 2007).

CVP Facilities

The FKC carries water over 151.8 miles in a southerly direction from Millerton Lake to the Kern River, four miles west of Bakersfield. The water is used for supplemental and irrigation supplies in Fresno, Tulare, and Kern Counties. Construction of the canal began in 1945 and was completed in 1951. The canal has an initial capacity of 5,000 cfs that gradually decreases to 2,000 cfs at its terminus in the Kern River (Reclamation 2007a).

Water quality in the FKC canal is pristine as it emanates from snow melt from the granitic Sierra Nevadas. Salinity measured as total dissolved solids (TDS) typically averages about 50 mg/L. No constituents in this water supply limit its use.

Cross Valley Canal

The CVC was constructed in 1975 to convey both SWP water and CVP water from the Aqueduct on the west side of the southern San Joaquin Valley (SJV) to the east side of the southern SJV near Bakersfield, California, near the terminus of the FKC (Figure 2-1). The CVC is operated by KCWA.

California Aqueduct

The Aqueduct is the primary conveyance facility for the SWP. It delivers water to the southern San Francisco Bay area, San Joaquin Valley, and Central and Southern California. The Aqueduct extends from the Harvey O. Banks Pumping Plant in the southern Sacramento-San Joaquin Delta, along the western side of the San Joaquin Valley, through the Tehachapi and San Bernardino Mountains, and ends in Riverside County. The Aqueduct delivers water to agricultural and municipal contractors through over 270 diversion structures. The majority of diversions are made between O'Neill Forebay and Edmonston Pumping Plant (State Water Contractors 2005).

The main stem of the Aqueduct consists of 385 miles of concrete-lined open canal and 59 miles of tunnels, siphons, and pipelines. The Aqueduct transports up to 3 million AF/y of water to SWP urban and agricultural users (DWR 2009).

Kern County Water Agency

KCWA is a non-CVP Contractor located in the southern portion of the San Joaquin Valley in Kern County. 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 AF of SWP water supplies for 14 subcontracting water agencies (“Member Units”) within Kern County. KCWA has access to SWP water and Kern River water.

North Kern Water Storage District

NKWSD is a non-CVP Contractor. The approximately 60,000 acres of land within NKWSD are fully developed for irrigated agriculture with water supplies principally from the Kern River and pumped groundwater. NKWSD has appropriative rights and a contract for Kern River water with the City of Bakersfield that is administered by Kern County Water Agency. Historical surface water supplies from the Kern River delivered to NKWSD have ranged from less than 10,000 AF/y to nearly 400,000 AF/y. As a result of this highly variable water supply, NKWSD has developed an extensive groundwater recharge, banking and extraction program utilizing the groundwater basin to regulate its water supplies (NKWSD 2001).

Cawelo Water District

CWD receives water through the Aqueduct. It is located in the southern portion of SJV and supplies irrigation water to nearly 45,000 acres of crops including grapes, citrus, almonds and pistachios.

Zone 7

Zone 7 is one of 29 SWP contractors and provides 10-20 percent non-potable deliveries to Livermore’s agriculture. Zone 7 has 80,619 AF/y of sustainable water supply. Along with flood protection, Zone 7 supplies water to all of eastern Alameda County and a population of more than 183,000 in a service area comprised of approximately 430 square miles (for M&I use). Treated water is sold wholesale to local retailers, including the cities of Pleasanton, Livermore, and the Dublin San Ramon Services District as well as the surrounding unincorporated Alameda County lands. Zone 7 is responsible for some 35 linear miles of pipeline and 41 linear miles of flood control channels and drainage facilities. These channels consist primarily of enlarged natural channels or excavated new channels (Zone 7 2007).

3.1.2 Environmental Consequences

No Action

Under the No Action alternative, the non-CVP water would not be conveyed in the FKC. CWD would continue its banking operations with Zone 7. During a drought, CWD would not have a means of returning Zone 7’s non-CVP water due to possible allocation cuts to SWP water. SWP exchangers would also experience allocation cuts. Zone 7 would not be able to retrieve its banked water. If available, Zone 7 may have to purchase water from another seller which could be more expensive.

Proposed Action

Under the Proposed Action, Reclamation would convey the non-CVP water for CWD in the FKC during periods of drought, and when capacity is available. This would not alter water rights held by the United States to divert CVP water from the San Joaquin River. The Proposed Action would not result in changes in water rights or amounts of water diverted from other rivers or reservoirs.

The Proposed Action would not interfere with normal CVP operations, nor alter the schedule and amount of CVP water diverted by the CVP from the San Joaquin River or Sacramento Delta. The introduction of this non-CVP Water into the CVP facilities would not degrade the quality of CVP water.

No facilities would be constructed or modified. The Proposed Action does not increase or decrease water supplies that would result in additional homes to be constructed and served.

Based on these findings, there would be no adverse impacts as a result of the Proposed Action.

Cumulative Effects

Cumulative impacts result from incremental impacts of the Proposed Action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment.

To determine whether cumulatively significant impacts are anticipated from the Proposed Action, the incremental effect of the Proposed Action was examined together with impacts from past, present, and reasonably foreseeable future actions in the same geographic area.

The execution of a WA contract and delivery of water pursuant thereto is not reliant upon a larger action for its implementation. Therefore, there would be no effects of interrelated actions with implementation of the Proposed Action.

The Proposed Action does not trigger other water service actions and does not contribute to cumulative effects to surface water resources. The Proposed Action would not interfere with deliveries, operations, or cause substantial adverse changes to the rivers, creeks or conveyance facilities.

It is unlikely that WA contracts utilizing the FKC would use the capacity at the same time as the Proposed Action as other WA contracts would most likely be used to move non-CVP water during the peak growing season.

Additionally, use of the FKC for conveyance of non-CVP water is based on excess capacity (above the needs of the CVP) being available. If overlap occurs and requests for canal capacity exceed the unutilized capacity, Friant Water Authority would establish the usage priority and prorate the remaining capacity. The concurrent use would not effect CVP operations or CVP contractor's ability to obtain project deliveries.

Water quality in the FKC canal would not be cumulatively impacted by the proposed WA Contracts since canal water quality would be heavily monitored and all projects would be required to meet the established FKC water quality criteria. If water quality degradation due to one or more pump-ins occurs, the responsible pump-ins would be terminated.

The conveyance facilities and river systems in the lower SJV are interconnected and allow for a myriad of transfers, exchanges, contract assignments, and conveyances of water. These water service actions are common and are not precedent setting. The conveyance of non-CVP water in CVP facilities is subject to capacity after all CVP requirements are met.

The Proposed Action would not contribute to cumulative effects to resources or the human environment.

3.2 Groundwater Resources

3.2.1 Affected Environment

The Central Valley of California is divided into two groundwater basins, the Sacramento Valley Groundwater Basin and the San Joaquin Valley Groundwater Basin. The San Joaquin Valley Groundwater Basin is further divided into subbasins, one of which is the Kern County Subbasin.

The San Joaquin Valley was formed by deposition of sediment in north-northwestern trending trough. The aquifer system in the valley consists of continental and marine deposits several miles deep. The upper 2,000 feet generally contain fresh groundwater, with saline water at greater depths. The sediments that contain the aquifer system are primarily Tertiary- and Quaternary-aged continental sediments derived from the Coast Range to the west and the Sierra Nevada to the east. Overlying these formations are flood plain deposits. A significant hydrogeologic feature is the Corcoran Clay. This clay layer divides the aquifer system into two distinct aquifers, an unconfined to semi-confined upper aquifer above the clay layer and a confined aquifer below it. However, the clay layer is not continuous, and is absent in portions of the Kern County Subbasin.

Historically, the upper aquifer system in the Kern County Subbasin was recharged by precipitation, infiltration from rivers and lakes and lateral inflow along the basin boundaries. Table 3-1 lists the Kern Groundwater Basin characteristics. The main surface water feature in the Kern County Subbasin is the Kern River. Before European settlement, the Kern River flowed to Kern and Buena Vista Lakes and extensive wetlands. During wet periods, the lakes overflowed to Tulare Lake to the north, which itself overflowed into the San Joaquin River watershed. Groundwater levels in the basin varied but reached artesian conditions in the lowest parts of the subbasin (DWR 2007).

In 1978, DWR was directed by the legislature to develop a definition of critical overdraft and to identify those basins in a critical condition of overdraft (Water Code §12924). Bulletin 118-80, 16. The Kern Groundwater Basin was listed in this bulletin as a critically overdrafted basin. Overdraft is the condition of a groundwater basin in which the amount of water withdrawn by pumping over the long term exceeds the amount of water that recharges the basin. Overdraft is

characterized by groundwater levels that decline over a period of years and never fully recover, even in wet years. Overdraft can lead to increased extraction costs, land subsidence, water quality degradation, and environmental impacts (DWR 1995).

Table 3.1 Kern Groundwater Basin Characteristics.

Yield Data	Production Data	Water Quality
Storage Capacity, AF	Well Yield, gpm per well	Total Dissolved Solids, mg/l
11,200,000	1,200 - 1,500	400 - 450
Perennial Yield, AF/y	Production Depths, feet	
1,220,000	300 - 600	
Annual Extraction, AF/y	Pump Lifts, feet	
1,400,000	200 - 250	
Overdraft, AF/y		
180,000		

Source: DWR Bulletin 118, October 1995 (via DWR website).

Pumped groundwater as noted above has a TDS of approximately 400 mg/L and Delta supplies also typically have a TDS in this range. By allowing CVC water to be added to the FKC there will be an increase in salinity in the FKC. Both the CVC and the FKC have water quality standard requirements. Both require any party delivering water into either canal to meet Title 22 water quality standards. Typically farmers in the Friant Division need to apply gypsum or some other chemical to raise the Salt Absorption Ratio to allow the water to percolate through the charged soil particles (Reclamation 2007b).

Zone 7 manages both surface and groundwater supplies to maximize conjunctive use and reliability of water supplies. Groundwater typically makes up 15-25 percent of the water supplied by Zone 7 to its retail water supply agencies (Zone 7 2006). Zone 7 has groundwater-banking rights in Kern County, which allows them to store surplus state water supplies during wet years to draw upon when needed during a drought. Zone 7 has secured 120,000 AF of capacity from CWD.

The groundwater quality in the Proposed Action area of CWD is excellent.

3.2.2 Environmental Consequences

No Action

Under the No Action alternative CWD would not have a means of returning Zone 7's non-CVP water during a drought year due to possible allocation cuts to SWP water. If available, Zone 7 may have to purchase water from another seller which could be more expensive. Groundwater would not be pumped and groundwater levels would not change.

Proposed Action

The Proposed Action would provide an efficient, cost effective means of conveyance during drought periods of Zone 7's banked CWD water.

The quantity of non-CVP water that would be conveyed would be limited to 20,000 AF. The potential volume is very small compared to the volumes of water in the basin. Therefore, the Proposed Action would have no effect on groundwater resources. The Proposed Action does not generate a need for water, and does not include as a component the pumping of additional water

or acquisition of water. Therefore, there would be no adverse impacts to groundwater resources as a result of the Proposed Action.

Cumulative Effects

The Proposed Action does not trigger other water service actions and does not contribute to cumulative effects to groundwater resources. The Proposed Action would not result in cumulative effects relative to increased pumping of groundwater or other diversions. As the Proposed Action has no effect on groundwater resources, there would be no cumulative effects.

3.3 Air Quality

3.3.1 Affected Environment

Despite years of improvements, the SJV air basin does not meet state and federal health based air-quality standards. To protect health, the San Joaquin Valley Air District is required by federal law to adopt stringent control measures to reduce emissions. Section 176 (c) of the Clean Air Act (42 U.S.C. 7506 (c)) requires any entity of the Federal government that engages in, supports, or in any way provided financial support for, licenses or permits, or approves any activity to demonstrate that the action conforms to the applicable State Implementation Plan (SIP) required under Section 110 (a) of the Federal Clean Air Act (42 U.S.C. 7401 (a)) before the action is otherwise approved. In this context, conformity means that such federal actions must be consistent with a SIP's purpose of eliminating or reducing the severity and number of violations of the National Ambient Air Quality Standards (NAAQS) and achieving expeditious attainment of those standards. Each federal agency must determine that any action that is proposed by the agency and that is subject to the regulations implementing the conformity requirements will, in fact conform to the applicable SIP before the action is taken.

On November 30, 1993, the Environmental Protection Agency (EPA) promulgated final general conformity regulations at 40 CFR 93 Subpart B for all federal activities except those covered under transportation conformity. The general conformity regulations apply to a proposed federal action in a non-attainment or maintenance area if the total of direct and indirect emissions of the relevant criteria pollutants and precursor pollutant caused by the Proposed Action equal or exceed certain de minimis amounts thus requiring the federal agency to make a determination of general conformity.

The following de minimis amounts for the region covering the CWD Proposed Action are presented in Table 3-1. Calculations were based on three 188 horsepower tier 2 diesel engine pumps run for a 24/7 5.5 month period.

Table 3.2 General Conformity de minimis Thresholds

San Joaquin Valley General Conformity de minimis Thresholds			
Pollutant	Federal Status	de minimis (Tons/year)	Calculated project emissions (Tons/year)
VOC/ROG (as an ozone precursor)	Nonattainment serious 8-hour ozone	50	1.0
NO _x	Nonattainment serious 8-	50	17.4

(as an ozone precursor)	hour standard		
PM ₁₀	Attainment	100	Not calculated
CO	Attainment	100	Not calculated

Source: SJVAPCD 2009; 40 CFR 93.153

No Action

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

Proposed Action

The discharge from NKWSD Lateral 8-25 would be accomplished by a temporary diesel-powered pumping plant with a capacity of up to 30 cfs on the canal embankment. The pumping plant would be installed each year during a drought year at Zone 7's request for their banked non-CVP water. Pump operations under the Proposed Action would not result in adverse impacts to air quality beyond Federal thresholds.

Cumulative Effects

The effects of the Proposed Action would be short-term and operations would not result in cumulative adverse air quality impacts.

3.4 Land Use

3.4.1 Affected Environment

CWD is a small part of the SWP. CWD is located in the southern portion of California's fertile San Joaquin Valley. CWD supplies irrigation water for over 45,000 acres of crops including grapes, citrus, almonds and pistachios.

Zone 7 is located in the eastern section of Alameda County which includes Pleasanton, Livermore and Dublin as well as the surrounding unincorporated Alameda County lands. Existing land uses include residential, commercial, industrial, recreational park, agriculture, and public/institutional uses. (Zone 7 2005).

3.4.2 Environmental Consequences

No Action

Under the No-Action alternative there would be no changes to land use. Under the No Action alternative CWD would not have a means of returning Zone 7's non-CVP water during a drought year due to possible allocation cuts to SWP water. If available, Zone 7 may have to find other sources of water to purchase which could be more expensive.

Proposed Action

The Proposed Action would not result in a change to the surrounding land uses. The water conveyed through the facility would continue to be used for Zone 7 M&I and non-potable deliveries to Livermore's agriculture. The Proposed Action does not propose to construct facilities connecting existing facilities to lands currently not receiving water.

No land conversion is anticipated since water quantities would not change. The Proposed Action would have no effect on land use.

Cumulative Effects

As the Proposed Action has no effect on land use or land use trends, the Proposed Action would have no cumulative effects on land.

3.5 Biological Resources

3.5.1 Affected Environment

By the mid-1940's, most of the valley's native habitat had been altered by man and, as a result, severely degraded or destroyed. Approximately 86 percent of the estimated 4 million acres of native wetlands in the Central Valley was converted to urban and agricultural uses between 1850 and 1985 (USFWS 1989). When the CVP began operations, more than 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 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 2001).

Potentially Affected Listed Species

Reclamation requested an official species list from the USFWS on November 10, 2010 via the Sacramento Field Office's website: http://www.fws.gov/sacramento/es/spp_list.htm (Document Number 101110035642; USFWS 2010). The list is for the following 7 ½ minute U.S. Geological Survey Quadrangles, which are overlapped by CWD: McFarland, North of Oildale, Deepwell Ranch, Famoso, Rosedale, and Oildale quadrangles. Reclamation further queried the California Natural Diversity Database for records of protected species within the vicinity of the project (CNDDDB 2010). The two lists, in addition to other information within Reclamation's files were combined to create the following list (Table 3.3).

Table 3.3 Potentially Affected Listed and Proposed Species in the Cawelo Water District Area.

<u>Species</u>	<u>Common Name</u>	<u>Status</u> ¹	<u>Effects</u> ²	<u>Occurrence in the Study Area</u> ³
Invertebrates				
<i>Branchinecta lynchi</i>	vernal pool fairy shrimp	T	NE	Absent. No individuals or habitat in area of impact.
<i>Desmocerus californicus dimorphus</i>	valley elderberry longhorn beetle	T	NE	Absent. No individuals or habitat in area of effect.
Fish				
<i>Hypomesus transpacificus</i>	delta smelt	T	NE	Absent. No natural waterways within the species' range will be affected by the proposed action.

Amphibians				
<i>Rana draytonii</i>	California red-legged frog	T	NE	Absent. No individuals or habitat in area of impact.
Reptiles				
<i>Gambelia sila</i>	blunt-nosed leopard lizard	E	NE	Possible. CNDDDB records for this species taken over 10 years old and occur along the eastern portion of the district. No construction of new facilities in potential habitat; no conversion of lands from existing uses.
<i>Thamnophis gigas</i>	giant garter snake	T	NE	Absent. No individuals or habitat in area of impact.
Birds				
<i>Empidonax traillii extimus</i>	southwestern willow flycatcher	E	NE	Absent. No individuals or habitat in area of impact.
Mammals				
<i>Dipodomys ingens</i>	giant kangaroo rat	E	NE	Absent. No individuals or habitat in area of impact.
<i>Dipodomys nitratoideus nitratoideus</i>	Tipton kangaroo rat	E	NE	Possible. CNDDDB-recorded occurrences reported from both sides of FKC at MPs 128.77 AND 131.15 taken during 1993 survey. This occurs north of Lateral 8-25, which runs parallel with HW 46. No individuals or habitat in area of impact.
<i>Vulpes macrotis mutica</i>	San Joaquin kit fox	E	NE	Present. CNDDDB records indicate this species occurs within the Proposed Action Area. No construction of new facilities in potential habitat; no conversion of lands from existing uses.
Plants				
<i>Caulanthus californicus</i>	California jewelflower	E	NE	Absent. No individuals or habitat in area of impact.
<i>Monolopia cogdonii</i>	San Joaquin woolly-threads	E	NE	Absent. Believed extirpated from area (Tayler 1989). There has been extensive urban growth and agriculture. No construction of new facilities; in potential habitat and no conversion of lands from existing uses.
<i>Opuntia treleasei</i>	Bakersfield cactus	E	NE	Present. CNDDDB records indicate this species is located at the southeastern most region of CWD. However, does not inhabit croplands or lands fallowed and untilled for less than three years. No construction of new facilities; no conversion of lands from existing uses.
<p>1 Status= Listing of Federally special status species, unless otherwise indicated. E: Listed as Endangered. T: Listed as Threatened.</p> <p>2 Effects = NE = No Effect determination.</p> <p>3 Definition Of Occurrence Indicators. Present: Species observed in area. Possible: Species not observed in the area within in the last 10 years and habitat suboptimal. Absent: Species not observed in study area and habitat requirements not met.</p> <p>4 CNDDDB = California Natural Diversity Database 2009.</p>				

Blunt-nosed leopard lizard is federally listed as endangered species and occurs in the San Joaquin Valley region in expansive, arid areas with scattered vegetation. They inhabit non-native grassland and alkali sink scrub communities of the Valley floor marked by poorly drained,

alkaline, and saline soils (Montanucci 1965). These lizards will use small mammal burrows for permanent shelter and dormancy or can construct shallow tunnels under exposed rocks or earth berms for temporary shelter (Warrick et al. 1998).

Tipton kangaroo rat is federally listed as endangered and is included in the Recovery Plan for Upland Species of the San Joaquin Valley, California (USFWS 1998). Tipton kangaroo rats are restricted to scattered, isolated areas of south-central California and inhabit arid-land vegetative communities. Terrain not subject to flooding is essential to sustain a population of Tipton kangaroo rats. These rats are primarily nocturnal and active year round. Diet consists mostly of seeds but will also eat green vegetation and insects (USFWS 1988). Agricultural and residential development and the widespread use of rodenticides are principally responsible for the decline of the species (Williams and Kilburn 1992).

San Joaquin kit foxes inhabit grasslands and scrublands, many of which have been extensively modified. Types of modified habitats include those with oil exploration and extraction equipment, wind turbines, and agricultural mosaics of row crops, irrigated pastures, orchards, vineyards, and grazed annual grasslands (USFWS 1998, Warrick et al. 2007), which are a common habitat in Kern County.

Bakersfield cactus is a low growing perennial found in sandy to sandy-loam soils of Kern County in highly fragmented populations (USFWS 1990). They occur on flood plains, along bluffs and rolling hills in alkali saltbrush scrub plant communities.

3.5.2 Environmental Consequences

No Action

Under the No Action Alternative there would be no impacts to wildlife and special status species, as no new facilities would be constructed and existing deliveries would continue as has historically occurred. The conditions of special status wildlife species and habitats under the No Action Alternative would be the same as they would be under existing conditions described in the Affected Environment; therefore, no additional effects to special status species or critical habitats are associated with this alternative.

Proposed Action

The Proposed Action of entering into WA contract with CWD would be consistent with the current operations, and as such, would have no direct effects on listed species or designated critical habitat. Water demands and conditions would not change and no new facilities would be constructed, as existing facilities would be used at Lateral 8-17 and a temporary diesel-powered pumping plant would be used at Lateral 8-25. Yet, orchards do provide some habitat for the San Joaquin kit fox, but the habitat value is relatively poor, and would not be affected by the Proposed Action. Additionally, no change in diversions of water from the San Joaquin River would occur as a result of the Proposed Action, therefore, there would be no effect on the delta smelt.

Indirect effects of water delivery on listed species and/or designated critical habitats within the boundaries of the service areas could occur only if the species or habitats are present and exceed current conditions. Therefore, there would be no adverse effects to biological resources as a result of the Proposed Action.

Cumulative Effects

As the Proposed Action itself has no impacts on special-status plant, fish or wildlife resources, it would not contribute to cumulative impacts on those resources.

3.6 Cultural Resources

3.6.1 Affected Environment

Cultural resources is a term used to describe both ‘archaeological sites’ depicting evidence of past human use of the landscape and the ‘built environment’ which is represented in structures such as dams, roadways, and buildings. The National Historic Preservation Act (NHPA) of 1966 is the primary Federal legislation which outlines the Federal Government’s responsibility to cultural resources. Other applicable cultural resources laws and regulations that could apply include, but are not limited to, the Native American Graves Protection and Repatriation Act, and the Archaeological Resources Protection Act. 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 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 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 will 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, 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.

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 SJV supported extensive populations of Native Americans, principally the Northern Valley Yokuts, in the prehistoric period. Cultural studies in the SJV have been limited. The conversion of land and intensive farming practices over the last century has probably destroyed many Native American cultural sites. Historic resources include farmsteads, mining, water conveyance features such as canals and laterals, and bridges are also widely dispersed throughout the valley.

3.6.2 Environmental Consequences

No Action

The No Action alternative would result in no change in water delivery and has no potential to affect historic properties.

Proposed Action

The Proposed Action would result in the issuance of a WA Contract and the issuance of a license for the erection, maintenance, and operation of structures. The permitting and erection of structures is the kind of action that has the potential to affect historic properties as defined in the regulations at 36 CFR Part 800.3(a)(1). Reclamation will be consulting with the state historic preservation officer (SHPO) on that part of the Proposed Action.

Cumulative Effects

The Proposed Action would result in the issuance of a WA Contract and the issuance of a license for the erection, maintenance, and operation of structures. The permitting and erection of structures is the kind of action that has the potential to affect historic properties as defined in the regulations at 36 CFR Part 800.3(a)(1). Reclamation will not finalize its decision until after consultation has concluded.

3.7 Indian Trust Assets

3.7.1 Affected Environment

Indian Trust Assets (ITA) 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. ITA 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, ITA 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 ITA.

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.

There are no ITA in CWD.

3.7.2 Environmental Consequences

No Action

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

Proposed Action

As there are no ITA, the Proposed Action would have no effect on ITA (See Appendix D for determination).

Cumulative Effects

As the Proposed Action has no effect on ITA, the Proposed Action when added to past, present, or future and proposed actions would not contribute to cumulative impacts to ITA.

3.8 Socioeconomic Resources

3.8.1 Affected Environment

Kern County

Kern County is the third largest county in California. It is found at the southern end of California's Central Valley and is the gateway to Southern California, San Joaquin Valley, Sierra Nevada and the Mojave Desert.

More than 744,000 residents live and work in 11 incorporated cities and unincorporated communities. Kern County is a world class producer of food and fiber, with farm products distributed worldwide and a crop value the fourth highest among the nation's counties. Kern is the largest producer of petroleum of any county in the lower 48 states (Kern County 2010).

Alameda County

Alameda County is the seventh largest County in California. It is found in the San Francisco-Oakland, California metropolitan area. Over 1.4 million people live in Alameda County.

3.8.2 Environmental Consequences

No Action

Under the No Action alternative, there would be no impacts to socioeconomic resources as conditions would remain the same as existing conditions.

Proposed Action

Under the Proposed Action, this stored surplus water could be delivered by exchange to Zone 7 during drought conditions. The non-CVP would be stored and conveyed in existing facilities and no new construction with associated costs would be required. Therefore, the Proposed Action would not adversely affect socioeconomic resources.

Cumulative Effects

As the Proposed Action would have no effect on socioeconomic resources, the Proposed Action, when added to other past, present, and future actions, would not contribute to cumulative impacts to socioeconomic resources.

3.9 Environmental Justice

3.9.1 Affected Environment

Executive Order 12898, dated February 11, 1994, requires Federal agencies to ensure that their actions do not disproportionately impact minority and disadvantaged populations. The population of some small communities typically increases during late summer harvest. The market for seasonal workers on local farms draws thousands of migrant workers, commonly of Hispanic origin from Mexico and Central America.

3.9.2 Environmental Consequences

No Action

Under the No Action alternative CWD would not have a means of returning Zone 7's non-CVP water during a drought year due to possible allocation cuts to SWP water. If available, Zone 7 may have to purchase water from another seller which could be more expensive. The costs could be passed on to their customers; however, it is not known at this time how much of an increase would be assessed and how that would be distributed amongst Zone 7's customers.

Proposed Action

A WA contract would allow CWD to convey Zone 7's banked non-CVP water back to the district. The Proposed Action would not cause dislocation, changes in employment, or increase flood, drought, or disease. The Proposed Action would not disproportionately impact economically disadvantaged or minority populations. There would be no changes to existing conditions. Employment opportunities for low-income wage earners and minority population groups would be within historical conditions. Disadvantaged populations would not be subject to disproportionate impacts. Therefore, there would be no adverse impacts as a result of the Proposed Action.

Cumulative Effects

As the Proposed Action would not disproportionately impact economically disadvantaged or minority populations, the Proposed Action, when added to other past, present, and future actions, would not contribute to cumulative impacts to environmental justice.

3.10 Global Climate

3.10.1 Affected Environment

Climate change refers to significant change in measures of climate (e.g., temperature, precipitation, or wind) lasting for decades or longer. Many environmental changes can contribute to climate change (changes in sun's intensity, changes in ocean circulation, deforestation, urbanization, burning fossil fuels, etc.) [EPA 2008a].

Gases that trap heat in the atmosphere are often called greenhouse gases (GHG). Some GHG such as carbon dioxide (CO₂) occur naturally and are emitted to the atmosphere through natural processes and human activities. Other GHG (e.g., fluorinated gases) are created and emitted solely through human activities. The principal GHG that enter the atmosphere because of human activities are: CO₂, methane (CH₄), nitrous oxide, and fluorinated gases (EPA 2008a).

During the past century humans have substantially added to the amount of greenhouse gases in the atmosphere by burning fossil fuels such as coal, natural gas, oil and gasoline to power our cars, factories, utilities and appliances. The added gases, primarily CO₂ and CH₄, are enhancing the natural greenhouse effect, and likely contributing to an increase in global average temperature and related climate changes. There are uncertainties associated with the science of climate change (EPA 2008b).

More than 20 million Californians rely on the SWP and CVP. 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).

3.10.2 Environmental Consequences

No Action

Implementation of the No Action Alternative would have no change on the composition of the atmosphere and therefore would have no direct or indirect effects to climate change.

Proposed Action

Water allocations are made dependent on hydrologic conditions and environmental requirements. Since Reclamation operations and allocations are flexible, any changes in hydrologic conditions due to global climate change would be addressed within Reclamation's operation flexibility and therefore water resource changes due to climate change would be the same with or without the Proposed Action.

The Proposed Action is the execution of a long-term WA contract for conveyance of non-CVP water through federal facilities and issue a right-of-use application to cross/access Reclamation lands for a temporary diesel pump. The use of the pump would be temporary and would result in below *de minimis* impacts to global climate change. Therefore, the Proposed Action would not adversely affect the global climate.

Cumulative Effects

Due to the use of fossil fuel diesel equipment, the Proposed Action would generate GHG emissions, mainly in the form of carbon dioxide. However, due to temporary equipment usage, the cumulative contribution of the GHG to climate change would be negligible and immeasurable.

Section 4 Consultation and Coordination

4.1 Fish and Wildlife Coordination Act (16 USC § 651 et seq.)

The Fish and Wildlife Coordination Act (FWCA) requires that Reclamation consult with fish and wildlife agencies (federal and state) on all water development projects that could affect biological resources. The amendments enacted in 1946 require consultation with the USFWS and State fish and wildlife agencies where the “waters of any stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted or otherwise controlled or modified” by an agency under Federal discretion. Consultation is to be undertaken for the purpose of “preventing the loss of and damage to wildlife resources”.

The Proposed Action is the execution of a Warren Act contract for the conveyance of non-CVP water (groundwater) in existing facilities. No waters of any stream or other body of water are proposed, authorized, permitted or licensed to be impounded, diverted or otherwise controlled or modified; therefore, FWCA does not apply.

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

Section 7 of this Act requires Federal agencies to ensure that all federally associated activities within the United States do not have adverse impacts on the continued existence of threatened or endangered species or on designated areas (critical habitats) that are important in conserving species. Action agencies must consult with the Service, which maintains current lists of species that have been designated as threatened or endangered, to determine the potential impacts a project may have on protected species.

The Proposed Action would support existing uses and conditions. No native lands would be converted or cultivated with this water. The water would be delivered to Zone 7 for M&I purposes and non-potable water would be delivered to Livermore for irrigation, through existing facilities. No new facilities would be constructed. Therefore, the Proposed Action would have no effect on federally listed threatened or endangered species or their designated habitats.

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

Section 106 of the NHPA requires federal agencies to evaluate the effects of federal undertakings on historical, archaeological and cultural resources. The Proposed Action would result in the issuance of a WA Contract and the issuance of a license for the erection, maintenance, and operation of structures. The permitting and erection of structures is the kind of action that has the potential to affect historic properties as defined in the regulations at 36 CFR Part 800.3(a)(1). Reclamation will not finalize its decision until after consultation has concluded with SHPO.

4.4 Migratory Bird Treaty Act (16 USC § 703 et seq.)

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

The Proposed Action would have no effect on birds protected by the Migratory Bird Treaty Act.

4.5 Clean Air Act (42 USC § 176 et seq.)

Section 176 (c) of the Clean Air Act (42 U.S.C. 7506 (c)) requires any entity of the Federal government that engages in, supports, or in any way provided financial support for, licenses or permits, or approves any activity to demonstrate that the action conforms to the applicable SIP required under Section 110 (a) of the Federal Clean Air Act (42 U.S.C. 7401 (a)) before the action is otherwise approved. In this context, conformity means that such federal actions must be consistent with a SIP's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of those standards. Each federal agency must determine that any action that is proposed by the agency and that is subject to the regulations implementing the conformity requirements will, in fact conform to the applicable SIP before the action is taken.

On November 30, 1993, EPA promulgated final general conformity regulations at 40 CFR 93 Subpart B for all federal activities except those covered under transportation conformity. The general conformity regulations apply to a proposed federal action in a non-attainment or maintenance area if the total of direct and indirect emissions of the relevant criteria pollutants and precursor pollutant caused by the Proposed Action equal or exceed certain de minimis amounts thus requiring the federal agency to make a determination of general conformity.

The temporary emissions would not reach the de minimis threshold and therefore a conformity analysis is not required under the Clean Air.

4.6 Clean Water Act (16 USC § 703 et seq.)

Section 401

Section 401 of the Clean Water Act (CWA) (33 USC § 1311) prohibits the discharge of any pollutants into navigable waters, except as allowed by permit issued under sections 402 and 404 of the CWA (33 USC § 1342 and 1344). If new structures (e.g., treatment plants) are proposed, that would discharge effluent into navigable waters, relevant permits under the CWA would be required for the project applicant(s). Section 401 requires any applicant for an individual Corps

dredge and fill discharge permit to first obtain certification from the state that the activity associated with dredging or filling will comply with applicable state effluent and water quality standards. This certification must be approved or waived prior to the issuance of a permit for dredging and filling.

No pollutants would be discharged into any navigable waters under the Proposed Action so no permits under Section 401 of the CWA are required.

Section 404

Section 404 of the CWA authorizes the Corps to issue permits to regulate the discharge of “dredged or fill materials into waters of the United States” (33 USC § 1344). No activities such as dredging or filling of wetlands or surface waters would be required for implementation of the Proposed Action, therefore permits obtained in compliance with CWA section 404 are not required.

4.7 Executive Order 11988 – Floodplain Management and Executive Order 11990 - Protection of Wetlands

Executive Order 11988 requires Federal agencies to prepare floodplain assessments for actions located within or affecting flood plains, and similarly, Executive Order 11990 places similar requirements for actions in wetlands. This action would not adversely affect floodplains or wetlands.

Section 6 List of Preparers and Reviewers

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Appendix A – Water Quality

Appendix A

Table 1 - Water Quality Monitoring Requirements

What will be measured in the water?	Water to be Tested	How often will a sample be collected?	When will the samples be collected?	Who will collect samples? (7)
Constituents of Concern (1)(6)	CVP water in the canal	Quarterly	January, April, June, October	Reclamation (CVP Baseline Program)
Bacterial organisms (3)	Canal water upstream of discharge point (5)	Annual	Within 3 days of pumping into the canal	Contractor
	Non-project water at source (2)	Monthly	While pumping into the canal	Contractor
Electrical conductivity, turbidity (4)	Canal water downstream of discharge point (5)	Monthly	While pumping into the canal	Contractor
	Canal water upstream of discharge point (5)	Weekly	While pumping into the canal	Friant Water Authority
	Non-project water at source (2)	Weekly	While pumping into the canal	Friant Water Authority
	Canal water downstream of discharge point (5)	Weekly	While pumping into the canal	Friant Water Authority
Other constituents of concern (6)	Canal water upstream of discharge point (5)	(6)	While pumping into the canal	Contractor
	Non-project water at source (2)	(6)	While pumping into the canal	Contractor
	Canal water downstream of discharge point (5)	(6)	While pumping into the canal	Contractor

Notes:

- (1) See Table 2.
 (2) Definition of Non-Project Water from Article 1 of the Contract; perhaps list the specific sites of approved wells and mileposts on the canal of discharge points.
 (3) Cryptosporidium, Giardia, total coliform bacteria.
 (4) Field measurements.
 (5) Location to be determined by the Contracting Officer.
 (6) To be determined by the Contracting Officer, if necessary.
 (7) All samples must be collected and analyzed according to the 2004 Quality Assurance Project Plan.
 This water quality monitoring program is subject to review at any time by the Contracting Officer.

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Table 2. California and Federal Drinking Water Standards (Maximum Contaminant Levels)

CONSTITUENT OR PARAMETER	Units	California Department of Health Services (DHS)				U.S. Environmental Protection Agency (US EPA)				CAS Registry Number	Synonyms and Abbreviations
		Primary MCL	Note	Secondary MCL	Note	Primary MCL	Note	Secondary MCL	Note		
General Mineral											
Chloride	mg/L			250	f			250		16887-00-6	Cl ⁻
Chlorine (as Cl ₂)	mg/L		k, x			4	c			7782-50-5	Cl ₂
Chlorite	mg/L		1 k			1	t			7758-19-2	ClO ₂ ⁻
Cyanide	ug/L	150				200	r			57-12-5	CN ⁻ , HCN, Hydrogen cyanide
Fluoride	mg/L		2 o			4	o	2		16984-48-8	F ⁻ , Fluorine, soluble
Foaming agents (MBAS)	ug/L			500				500			Methylene blue active substances
Iron	ug/L			300				300		7439-89-6	Fe
Langlier Index (corrosivity)				Non-corrosive				Non-corrosive			
Manganese	ug/L			50				50		7439-96-5	Mn
Nitrate (as N)	mg/L	45	e			10	i			14797-55-8	NO ₃ ⁻
Nitrite	mg/L	1	i			1	i			14797-65-0	NO ₂ ⁻
pH	units							6.5 to 8.5	b		negative log of H ⁺ concentration
Specific conductance (EC)	uS/cm			900	g						Electrical Conductivity, EC
Sulfate	mg/L			250	f			250		14808-79-8	SO ₄ ⁼
Total dissolved solids (TDS)	mg/L			500	h			500			
Zinc	mg/L			5				5		7440-66-6	Zn
General Physical											
Color	units threshold			15				15			
Odor	units			3				3			
Turbidity	NTU	1 / 5	j, k	5		1 / 5	j				
Inorganic Chemical Metals											
Aluminum	ug/L	1,000		200				50 to 200	b	7429-90-5	Al
Antimony	ug/L	6				6				7440-36-0	Sb
Arsenic	ug/L	50				10	as of 1/23/2006			7440-38-2	As
Asbestos	MFL					7				1332-21-4	
Barium	ug/L	1,000				2,000				7440-39-3	Ba
Beryllium	ug/L	4				4				7440-41-7	Be
Cadmium	ug/L	5				5				7440-43-9	Cd
Chromium (total)	ug/L	50				100				7440-47-3	Cr (total)

Copper	ug/L	1,300	q	1,000	1,300	q	1,000	7440-50-8	Cu
Lead	ug/L	15	q		15	q		7439-92-1	Pb
Mercury (inorganic)	ug/L	2			2			7439-97-6	Hg (inorganic)
Nickel	ug/L	100						7440-02-0	Ni
Selenium	ug/L	50			50			7782-49-2	Se
Silver	ug/L			100			100	7440-22-4	Ag
Thallium	ug/L	2			2			7440-28-0	Th
Radiochemistry									
Radioactivity, Gross Alpha	pCi/L	15	p		15	p			Gross Alpha radioactivity
Radioactivity, Gross Beta	pCi/L	50 pCi/L or 4 mreml/yr	k, w						Gross Beta radioactivity
Radium-226 + Radium-228	pCi/L	5			5			7440-14-4	226Ra + 228Ra
Radon	pCi/L				300	k		14859-67-7	Rn
Strontium-90	pCi/L	8	w					10098-97-2	90Sr
Tritium	pCi/L	20,000	w					10028-17-8	3H
Uranium	pCi/L	20			30	as of 12/8/2003		7440-61-1	U
Microbiology									
Cryptosporidium									
Fecal Coliform									
Giardia									
Total Coliform									
Organics									
Acrylamide	ug/L		m			m		79-06-1	2-Propenamide
Atachlor	ug/L	2			2			15972-60-8	Atachlor, Lasso, Alanex
Aldicarb	ug/L				3	u		116-06-3	Temik
Aldicarb sulfone	ug/L				3	u		1646-88-4	
Aldicarb sulfoxide	ug/L				4	u		1646-87-3	
Atrazine	ug/L	1			3			1912-24-9	Aatrex, Atranex, Crisazina
Bentazon	ug/L	18						25057-89-0	Basagran
Benz(a)anthracene	ug/L				0.1	k		56-55-3	1,2-Benzanthracene, polynuclear aromatic hydrocarbon
Benzene	ug/L	1			5			71-43-2	BaP, 3,4-Benzopyrene, a polynuclear aromatic hydrocarbon
Benzo(a)pyrene	ug/L	0.2			0.2			50-32-8	
Bromate	ug/L	10	k		10	t		15541-45-4	A haloacetic acid
Bromoacetic acid	ug/L	60	k, n		60	n, t		79-08-3	Dichlorobromomethane, BDCM, a trihalomethane
Bromodichloromethane	ug/L	100 / 80	a, k		80	a, v		75-27-4	

Bromofom	ug/L	100 / 80	a, k	80	a, v	75-25-2	Tribromomethane, a trihalomethane
Carbofuran	ug/L	18		40		1563-66-2	Furadan
Carbon tetrachloride	ug/L	0.5		5		56-23-5	Tetrachloromethane, Freon 10
Chloramine	ug/L	4,000	k, x	4,000	c	127-65-1	NH ₂ Cl, Monochloramine
Chlordane	ug/L	0.1		2		57-74-9	Chlordan
Chlorine dioxide	ug/L	800	k, y	800	d	10049-04-4	ClO ₂
Chloroacetic acid	ug/L	60	k, y	60	n, t	79-11-8	Monochloroacetic acid, A haloacetic acid
Chlorobenzene	ug/L	70		100		108-90-7	Monochlorobenzene
Chloroform	ug/L	100 / 80	a, k	80	a, v	67-66-3	Trichloromethane, Freon 20
2,4-D	ug/L	70		70		94-75-7	2,4-Dichlorophenoxyacetic acid
Dalapon	ug/L	200		200		75-99-0	Dowpon, 2,2-Dichloropropionic acid
Dibromoacetic acid	ug/L	60	k, n	60	n, t	631-64-1	A haloacetic acid
Dibromochloromethane (THM)	ug/L	100 / 80	a, k	80	a, v	124-48-1	Chlorodibromomethane
Dibromochloropropane (DBCP)	ug/L	0.2		0.2		96-12-8	1,2-Dibromo-3-chloropropane, DBCP
1,2-Dibromoethane	ug/L	0.05		0.05		106-93-4	Ethylene dibromide, EDB
Dichloroacetic acid	ug/L	60	k, n	60	n, t	79-43-6	A haloacetic acid
1,2-Dichlorobenzene	ug/L	600		600		95-50-1	o-Dichlorobenzene, o-DCB
1,4-Dichlorobenzene	ug/L	5		75	10 k	106-46-7	p-Dichlorobenzene, PDB, p-DCB
1,1-Dichloroethane	ug/L	5		5		75-34-3	1,1-DCA
1,2-Dichloroethane	ug/L	0.5		5		107-06-2	1,2-DCA, Ethylene dichloride, Freon 150
1,1-Dichloroethylene	ug/L	6		7		75-35-4	1,1-Dichloroethene, 1,1-DCE, Vinylidene chloride
cis-1,2-Dichloroethylene	ug/L	5		70		156-59-2	cis-1,2-Dichloroethene, cis-1,2-DCE
trans-1,2-Dichloroethylene	ug/L	10		100		156-60-5	trans-1,2-Dichloroethene, trans-1,2-DCE
Dichloromethane	ug/L	5		5		75-09-2	Methylene chloride
1,2-Dichloropropane	ug/L	5		5		78-87-5	Propylene dichloride component of D-Minor component of Telone
1,3-Dichloropropene	ug/L	0.5		400		542-75-6	1,3-Dichloropropylene component of D-Major component of Telone
Di(2-ethylhexyl)adipate	ug/L	400		6		103-23-1	DEHA
Di(2-ethylhexyl)phthalate	ug/L	4		6		117-81-7	Bis(2-ethylhexyl) phthalate, DEHP, a phthalate acid ester (PAE)
Dinoseb	ug/L	7		7		88-85-7	DNBP
Dioxin	ug/L	0.00003		0.00003		1746-01-6	2,3,7,8-TCDD, 2,3,7,8-Tetrachlorodibenzo-p-dioxin
Diquat	ug/L	20		20		85-00-7	Aquacide, Reglone
EDB (Ethylene dibromide)	ug/L			0.05		206-93-4	

Endothal	ug/L	100		100	145-73-3	Endothall
Endrin	ug/L	2		2	72-20-8	Endrex, Hexadlin
Epichlorohydrin	ug/L		s		106-89-8	Chloropropylene, 1-Chloro-2,3-epoxypropane
Ethylbenzene	ug/L	300		700	100-41-4	Phenylethane
Glyphosate	ug/L	700		700	1071-83-6	Roundup, Glyphosate isopropylamine salt
Halomethanes	ug/L			100 / 80		Methanes, halo-
Heptachlor	ug/L	0.01		0.4	76-44-8	
Heptachlor epoxide	ug/L	0.01		0.2	1024-57-3	
Hexachlorobenzene	ug/L	1		1	118-74-1	PerchlorobenzeneHCB
Hexachlorocyclopentadiene	ug/L	50		50	77-47-4	HEX, HCCPD
Lindane (gamma-BHC)	ug/L	0.2		0.2	58-89-9	Lindane, gamma-Benzene hexachloride, gamma-Hexachlorocyclohexane
Methoxychlor	ug/L	30		40	72-43-5	
Methyl t-butyl ether (MIBE)	ug/L	13	5		1634-04-4	MIBE, 2-Methoxy-2-methylpropane, Methyl 1,1-dimethylethyl ether
Molinate	ug/L	20		200	2212-87-1	Ordram
Oxamyl	ug/L	50		1	23135-22-0	Vydate
Pentachlorophenol	ug/L	1		500	87-86-5	PCP, Penta
Picloram	ug/L	500		0.5	1918-02-1	Tordon
Polychlorinated biphenyls	ug/L	0.5		4	1336-36-3	PCBs
Simazine	ug/L	4		100	122-34-9	Princep
Styrene	ug/L	100		0.00003	100-42-5	Vinylbenzene
2,3,7,8-TCDD (Dioxin)	ug/L	0.00003		1	1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin, Dioxin
1,1,2,2-Tetrachloroethane	ug/L	1		5	79-34-5	Tetrachloroethene, Perchloroethylene, PCE
Tetrachloroethylene (PCE)	ug/L	5		1,000	127-18-4	Benthocarb, Bolero
Thiobencarb	ug/L	70		3	28249-77-6	Methylbenzene
Toluene	ug/L	150		50	108-88-3	Camphchlor, Chlorocamphene
Toxaphene	ug/L	3		60	8001-35-2	Silvex, 2 (2,4,5-Trichlorophenoxy) propionic acid
2,4,5-TP (Silvex)	ug/L	50		60	93-72-1	A haloacetic acid unsymmetrical-Trichlorobenzene
Trichloroacetic acid	ug/L	60	k, n	70	76-03-9	1,1,1-TCA, Methyl chloroform
1,2,4-Trichlorobenzene	ug/L	5		200	120-82-1	1,1,2-TCA, Vinyl trichloride
1,1,1-Trichloroethane	ug/L	200		5	71-55-6	Trichloroethene, TCE
1,1,2-Trichloroethane	ug/L	5		5	79-00-5	Fluorotrichloromethane, Freon 11
Trichloroethylene (TCE)	ug/L	5		150	79-01-6	Trichlorotrifluoroethane, Freon 113
Trichlorofluoromethane	ug/L	150		1,200	75-69-4	
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/L	1,200			76-13-1	

Total trihalomethanes	ug/L		80			
Vinyl chloride	ug/L	0.5	2		75-01-4	VC, Chloroethene, Chloroethylene
Xylene(s)	ug/L	1,750	10,000	20	1330-20-7	o-Xylene, m-Xylene, p-Xylene

Source Data:
Adapted from Marshack, Jon B. August 2003. A Compilation of Water Quality Goals. Prepared for the California Environmental Protection Agency, Regional Water Quality Control Board.

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Notes for Table 2. California and Federal Drinking Water Standards (Maximum Contaminant Levels)

Note	Marshack	Notes
a	(19)	For total trihalomethanes (sum of bromoform, bromodichloromethane, chloroform and dibromochloromethane); based largely on technology and economics.
b	(30)	This limit has a range of values between the first and second numbers shown.
c	(66)	Measured as Cl ₂ . Federal limit effective 1/1/02 for surface water systems serving >10,000 people. Federal limit effective 1/1/04 for all other systems. Maximum residual disinfectant level and goal. Applies only if this disinfectant is used.
d	(67)	Measured as ClO ₂ . Federal limit effective 1/1/02 for surface water systems serving >10,000 people. Federal limit effective 1/1/04 for all other systems. Maximum residual disinfectant level and goal. Apply only if this disinfectant is used.
e	(72)	As NO ₃ ; in addition, MCL for total nitrate plus nitrite = 10,000 ug/L (as N).
f	(73)	Recommended level; Upper level = 500 mg/L; Short-term level = 600 mg/L.
g	(74)	Recommended level; Upper level = 1600 umhos/cm; Short-term level = 2200 umhos/cm.
h	(75)	Recommended level; Upper level = 1000 mg/L; Short-term level = 1500 mg/L.
i	(77)	For 1,2- and 1,3-dichlorobenzenes.
j	(84)	Systems that use conventional or direct filtration may not exceed 1 NTU at any time or 0.3 NTU for 95th percentile value; stems that use other "alternative" filtration systems may not exceed 5 NTU at any time or 1 NTU for 95th percentile value.
k	(100)	Proposed; applies only to second value if two separate values are listed; applies to range if a range of values is listed.
l	(103)	As nitrogen (N); in addition, limit for total nitrate + nitrite = 10,000 ug/L (as N).
m	(105)	Treatment Technique: Not to exceed 0.05% monomer in polyacrylamide when dosed at 1 mg/L for drinking water treatment.
n	(106)	For five haloacetic acids (sum of monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid).
o	(109)	Optimal fluoride level and (range) vary with annual average of maximum daily air temperature; 50.0 to 53.7 degrees F - 1.2 (1.1 to 1.7) mg/L; 53.8 to 58.3 degrees F - 1.1 (1.0 to 1.7) mg/L; 58.4 to 63.8 degrees F - 1.0 (0.9 to 1.5) mg/L; 63.9 to 70.6 degrees F - 0.9 (0.8 to 1.4) mg/L; 70.7 to 79.2 degrees F - 0.8 (0.7 to 1.3) mg/L; 79.3 to 90.5 degrees F - 0.7 (0.6 to 1.2) mg/L.
p	(110)	Picocuries per liter; including Radium-226 but excluding Radon and Uranium.
q	(111)	MCL includes this "Action level" to be exceeded in no more than 10% of samples at the tap.
r	(137)	Expressed as free cyanide (as CN).
s	(145)	Treatment Technique: Not to exceed 0.01% residual when dosed at 20 mg/L for drinking water treatment.
t	(147)	Effective 1/1/2002 for surface water systems serving >10,000 people; effective 1/1/2004 for all other systems.
u	(148)	The sum of aldicarb, aldicarb sulfoxide and aldicarb sulfone should not exceed 7 ug/L because of similar mode of action. Administrative stay of the effective date.
v	(149)	Former 100 ug/L total trihalomethane MCL effective until 1/1/2004 for systems serving 10,000 people or less.
w	(171)	Intended to ensure that exposure above 4 millirem/yr does not occur.
x	(175)	Measured as Cl ₂ . Maximum residual disinfectant level.
y	(176)	Measured as ClO ₂ . Maximum residual disinfectant level.

Adapted from Marshack, Jon B. August 2003. A Compilation of Water Quality Goals. Prepared for the California Environmental Protection Agency, Regional Water Quality Control Board.

Appendix B – Lateral Photos





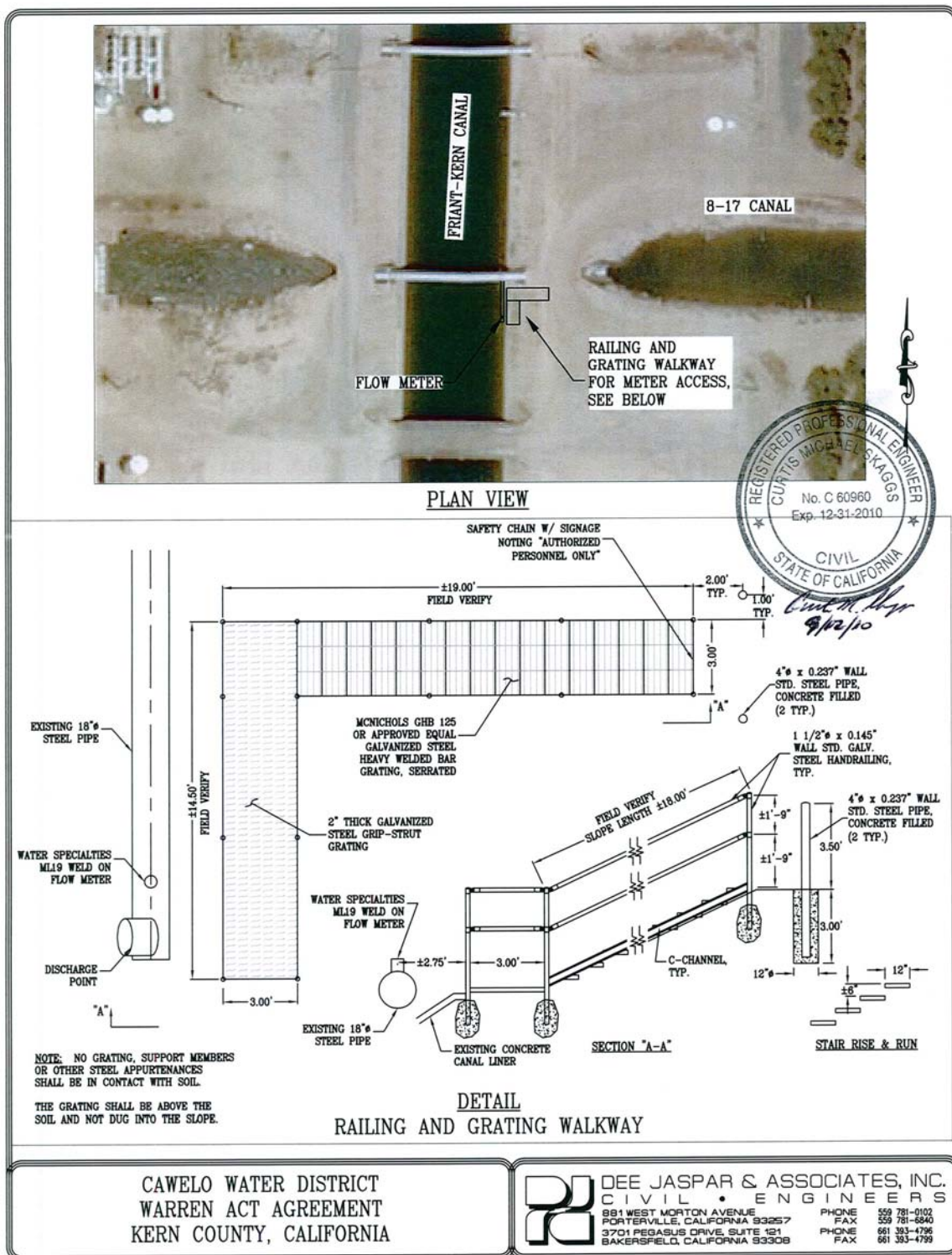




NKWSD 8.25 Lateral
Looking West at Friant-
Kern Canal Siphon
06/01/06



Appendix C – Drawings and Specifications



Appendix D – Reclamation Determination Documentation