

RECLAMATION

Managing Water in the West

Final Environmental Assessment

Kern-Tulare Water District Oil Field Water Reuse Project

EA-15-006



U.S. Department of the Interior
Bureau of Reclamation

March 2017

Mission Statements

The Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated 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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Appendix A Cultural Resources Determination

Section 1 Introduction

The Bureau of Reclamation (Reclamation) provided the public with an opportunity to comment on the Draft Finding of No Significant Impact (FONSI) and Draft Environmental Assessment (EA) between January 20, 2017 and February 21, 2017. No comments were received. Changes between this Final EA and the Draft EA, which are not minor editorial changes, are indicated by vertical lines in the left margin of this document.

1.1 Background

The Kern-Tulare Water District (District) relies upon surface water for a significant percentage of its water supply and the remaining portion of the District's water supply is from groundwater pumped from privately-owned wells. Because of recently enacted groundwater regulations, surface water supply uncertainty, and anticipated reduction in available water supplies, the District is pursuing opportunities to reduce its reliance upon these supplies. To address these challenges, the District released on May 20, 2016 an Environmental Impact Report (EIR) (SCH# 2015021024) pursuant to the California Environmental Quality Act to evaluate the use of "produced water" for agricultural use under its Oil Field Water Reuse Project (District 2016). The findings of the District's EIR are therefore incorporated by reference.

Produced water is a byproduct of oil production and if oil producers are not able to dispose of their produced water, their operations can become limited. The current method of produced water disposal is to inject treated water back into an underground geologic formation with unusable (i.e., non-potable) groundwater¹. This disposal method requires considerable electrical energy and the construction of wastewater injection wells. A method to utilize produced oil field water for agriculture irrigation purposes has been conducted by the Cawelo Water District and individual landowners within the District for about 30 years. Currently, individual landowners within the District have received treated produced water from an oil producer under a Central Valley Regional Water Quality Control Board's-approved Waste Discharge Requirements (WDR) permit (Order No. 98-205) (Central Valley RWQCB 2016). Under this WDR permit, the District began receiving produced water into its existing Big 4 Reservoir in January 2015.

The District's project site is located in the north-central portion of unincorporated Kern County, California, near the Kern County/Tulare County border (Figure 1). To date, the District has partnered with local oil producers located in the Jasmin, Dyer Creek, and Mount Poso Oil Fields. Although the District's EIR analyzed a larger footprint and proposed action, because of reduced oil production from local oil producers, the District decided to separate the larger project into two phases, Phase I partnering with Jasmin Oil Field (the Project or Proposed Action analyzed

¹ Underground injection is a process in which produced water, or water that is naturally occurring in an oil and gas formation is "produced" along with hydrocarbons, natural gas, and any other enhanced oil recovery constituents during the extraction process. This water is either treated and reused elsewhere or disposed through injection back into the ground using electric-fired pumps.

here), and Phase II partnering with Dyer Creek and Mount Poso. The Phase I project includes the construction of a produced water delivery and storage system from the nearby oil field and this project has independent utility from Phase II. The District has decided not to move forward with Phase II at this time, and it is unknown if and when they will pursue that phase.

Reclamation does not have a federal action associated with Phase II and is, therefore, only assessing Phase I.

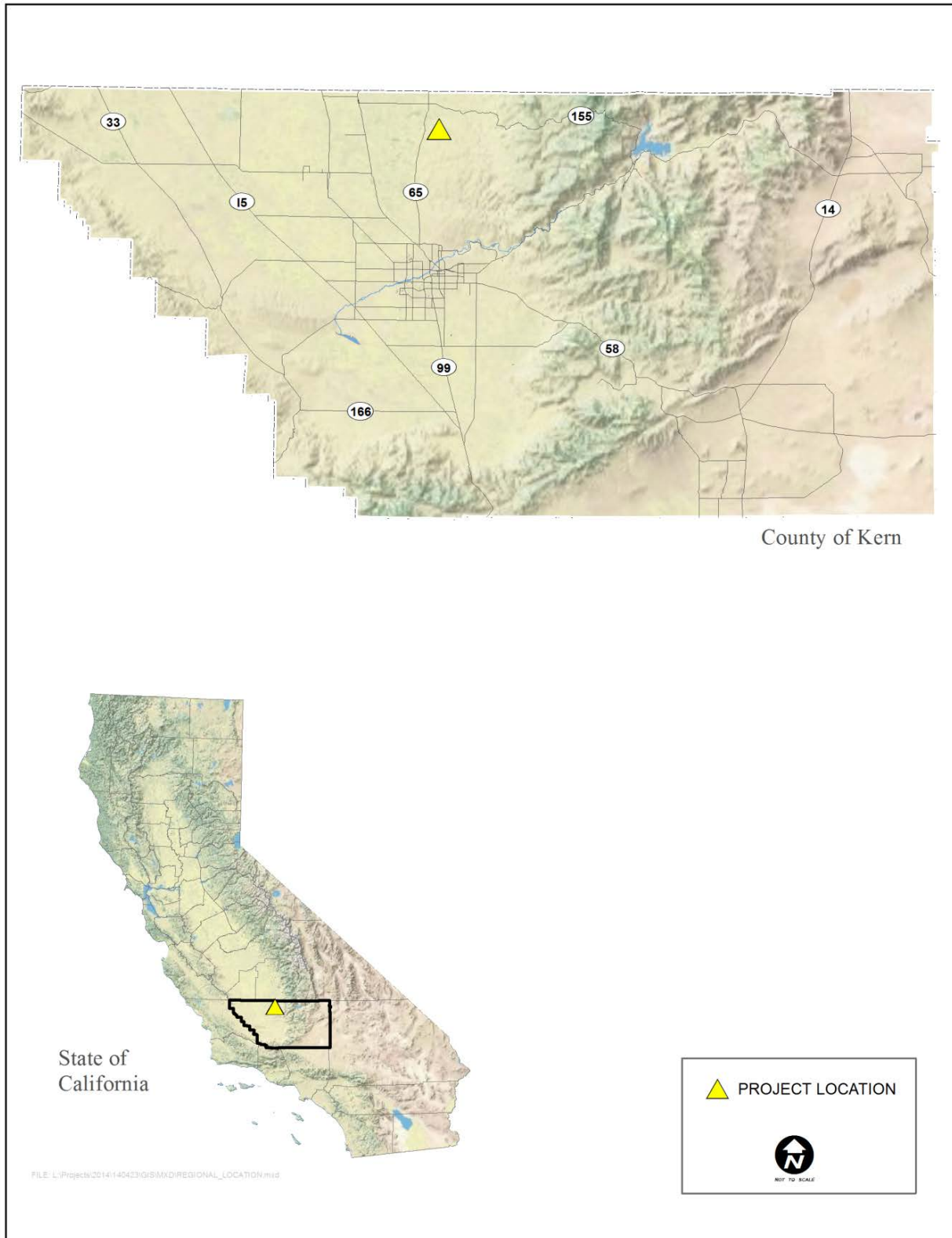


Figure 1 Proposed Action Area Regional Map

1.2 Need for the Proposed Action

The region is experiencing extreme drought conditions that have created severe water shortages and groundwater overdraft. The District relies upon the Sacramento-San Joaquin River Delta for a significant percentage of its water supply. Due to water supply uncertainty and anticipated reduction in available water allotments, the District is pursuing alternative opportunities to improve its water supply, reduce its reliance upon the Delta, and maximize irrigation efficiency. The Proposed Action would provide a reliable water supply to meet the District's needs for agricultural use. Therefore, the District needs to revise its Central Valley Project service area boundary in order to implement the Proposed Action. In addition, this would allow the oil producer of Jasmin Oil Field, Hathaway LLC, a means to dispose of their produced water, so as not to limit oil production.

Section 2 Alternatives Including the Proposed Action

This Environmental Assessment considers two possible actions: the No Action Alternative and the Proposed Action. The No Action Alternative reflects future conditions without the Proposed Action and serves as a basis of comparison for determining potential effects to the human environment.

2.1 No Action Alternative

Under the No Action Alternative, Reclamation would not provide funding to the District to construct a water delivery and storage system that would provide treated produced water to approximately 4,200 acres of existing crops. Also, Reclamation would not approve the inclusion of APN 051-101-41 and a portion of Guzman Reservoir site (APN 051-102-39 and 051-102-40) into the District's boundary (Figure 2). Without this additional source of water, the Project would not occur and the District may have to fallow irrigated agricultural lands.

2.2 Proposed Action

Reclamation proposes to provide partial funding to the District to construct the Project and to approve an inclusion into the District's Central Valley Project (CVP) service area from Assessor's Parcel Number (APN) 051-101-41 and a portion of the proposed Guzman Reservoir site (APN 051-102-39 and APN 051-102-40) for a total of 97.41 acres (Table 1).

Table 1 Parcels Proposed for Inclusion to the District

Assessor's Parcel Number	Approximate Acreage	Location within Kern County (MDB&M)
051-101-41	30.44	Section 15, Township 25S, Range 27E
051-102-39	33.94	Section 22, Township 25S, Range 27E
051-102-40	33.03	Section 22, Township 25S, Range 27E

In order to provide a supplemental supply of water to serve the District's customers for irrigation purposes, the District partnered with Hathaway LLC to acquire up to 2,640 acre-feet (AF) per year (AFY) of produced water from Jasmin Oil Field. Under the Proposed Action, a water delivery and storage system would be installed that consists of underground pipelines and a new reservoir.

Prior to leaving the Jasmin Oil Field and using the existing treatment facility, the produced water would be treated to meet current water quality criteria of the Central Valley Regional Water Quality Control Board's Tulare Lake Basin Plan (Basin Plan) standards.



Figure 2 Parcels Proposed for Inclusion into the District

The treatment consists of collecting and separating the wastewater from oil extraction and production in a primary surge tank where the oil is dispensed from the top and the water is dispensed from the bottom. The water is then transported to a Wemco separator that removes oil and suspended solids from produced water using an aeration system to “float” residual oil and suspended solids to the top of the machine for collection. The water that is left is considered treated produced water.

This treated produced water would be delivered to the proposed Guzman Reservoir for storage, and then transported to the District’s existing Big 4 Reservoir where it would be “blended” with CVP water from the Friant-Kern Canal in order to meet proposed Water Quality Objectives (WQOs) for agricultural use. From the Big 4 Reservoir, water would then be delivered to landowners within the District for the irrigation of existing crops in Section 17 and Cameo service areas (see Figure 3).

Pipelines

The District has proposed a pipeline alignment and profile that would allow the treated water to be pumped from the oil producer’s property to the Guzman Reservoir using an existing booster pump. The District would construct a 12-inch buried pipeline from the oil producer’s properties in Jasmin Oil Field to the proposed Guzman Reservoir (partially located within Jasmin Rancho Mutual Water Company service area [JMWC²]; see Figure 3). The 12-inch pipeline would be approximately 1.5 miles in length. From the Guzman Reservoir, an 18-inch pipeline would be connected to a 24-inch section of pipeline in order to convey the treated produced water from the Guzman Reservoir to the District’s Big 4 Reservoir. The total length of the 18- and 24-inch pipeline would be approximately 0.75 mile. The pipelines would be buried under existing private dirt roads, and depending upon the diameter of the pipeline, a 4 to 5 foot deep trench would be excavated. The trenches would then be backfilled.

Reservoir Site

The District proposes to construct the Guzman Reservoir to store the treated produced water (see Figure 3). This site would have an approximate 590 AF capacity and would require the construction of a 46-foot-high primary and 10-foot-high secondary embankment. Construction of the reservoir would consist of excavating material from within the reservoir’s footprint to create the earthen embankment. It is estimated that 151,300 cubic yards are needed to create the primary embankment and 2,620 cubic yards to create the secondary embankment. The earthen embankments would be formed and then compacted to specifications approved by the California Department of Water Resources (DWR) Division of Safety of Dams. Operations and Maintenance of the reservoir would be conducted by the District pursuant to a permit issued by DWR Division of Safety of Dams.

The storage capacity of the reservoir is necessary because produced water is provided at a constant flow rate all year long and there is little agricultural irrigation demand in the winter. The District would store the treated produced water until it is needed in the summer months when agricultural demand is at its peak. Treated produced water would be discharged into the new reservoir and delivered to the existing District reservoir for delivery to District constituents using the District’s existing distribution system.

² JMWC Service Area already receives treated produced water and is not a part of this action.

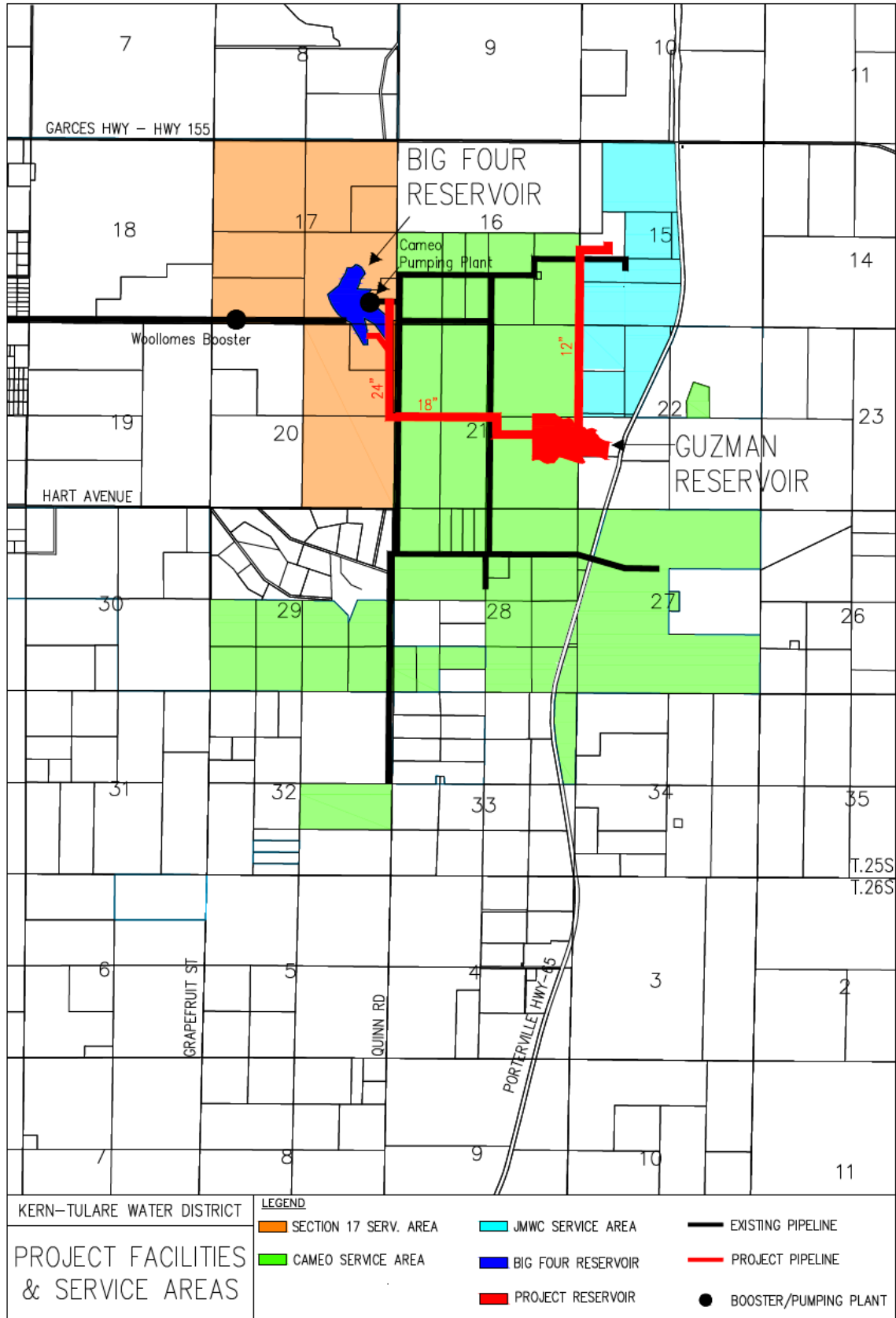


Figure 3 Project Facilities and Service Areas within Kern-Tulare Water District

Project Construction

Construction would require approximately 6 months to complete, and is anticipated to begin August 2017. During this anticipated timeframe, it is assumed that construction would occur 8 hours per day, 5 days per week, and that construction hours would be limited to between 6 AM and 9 PM Monday through Friday and between 8 AM and 9 PM Saturday and Sunday. During construction, it is anticipated that up to a maximum of 15 construction workers would be working at the Project site, including the foreman, managers, inspectors, testers, and construction workers. The following pieces of equipment would be utilized during construction:

- 1 Crane;
- 1 Excavator;
- 1 Grader;
- 1 Roller;
- 3 Scrapers;
- 1 Tractor/Loader/Backhoe; and
- 1 Trencher.

Operation and Maintenance

Operation and Maintenance (O&M) will include testing and monitoring as required by the Regional Water Quality Control Boards WDR permit. Additionally,

2.2.1 Environmental Commitments

The District would also implement the following environmental protection measures to avoid and/or reduce environmental consequences associated with the development of the Project (see Table 2). Environmental consequences for resource areas assume the measures specified would be fully implemented. Copies of all environmental compliance reports shall be submitted to Reclamation.

Table 2 Environmental Protection Measures and Commitments

Resource	Protection Measure
Air Quality	The District shall comply with applicable emission standards set by the San Joaquin Valley Air Pollution Control District. This would include following construction dust ordinance or other Best Management Practices.
Biological Resources	<u>Bald Eagles and Raptors</u> Specific to bald eagle and other raptors, the qualified biologist shall conduct surveys on and within 500 feet of an activity site for active raptor nests prior to onsite activities. If raptors are found to occur, their active nest shall be avoided by 500 feet. The 500-foot, no-disturbance area can be reduced if it is determined by a qualified biologist that activities do not affect breeding success. If found to occur, active golden eagle nests shall be avoided by 1 mile and activities shall not occur within line-of-sight of active nests.

Resource	Protection Measure
Biological Resources	<u>Migratory Birds</u> Specific to other migratory birds protected by the Migratory Bird Treaty Act, the qualified biologist shall conduct the survey for active bird nests at an activity site if activities at the site are scheduled to occur during the breeding season (February 15 through September 15). The survey shall include the site and no less than 500 feet outside of site boundaries. If active nests are located within the site boundaries, construction activities shall be restricted as necessary to avoid disturbance of the nest until it is abandoned or a qualified biologist deems disturbance potential to be minimal (in consultation with U.S. Fish and Wildlife Service and California Department of Fish and Wildlife). Restrictions may include establishment of avoidance buffers (no ingress of personnel or equipment at a minimum radius of 50 feet or more around the nest as recommended by the biologist) or alteration of the construction schedule. All observed nests shall be monitored by a qualified biologist to determine nest status and the potential for nest abandonment.
Biological Resources	<u>San Joaquin Kit Fox</u> Applicable avoidance measures from Service (2011) would be implemented. Those measures that are applicable are the ones that do not involve take (such as den destruction).
Cultural Resources	In the unlikely event that unanticipated buried archaeological deposits are encountered during construction, work in the immediate vicinity of the discovery must cease until the find can be evaluated by Reclamation and managed pursuant to the requirements of 36 Code of Federal Regulations (CFR) 800.13 and other applicable Federal laws and regulations. If human remains are inadvertently discovered, Reclamation will comply fully with Native American Graves Protection and Repatriation Act of 1990 as outlined at 43 CFR Part 10, and other Federal laws and regulations as applicable.
Water Resources	The District would be subject to the National Pollutant Discharge Elimination System (NPDES) Permit for stormwater discharges associated with construction and land disturbance activities.
Water Resources	The District shall follow the Monitoring and Reporting Program, as per their NPDES permit, to minimize impact to water resources.
Water Resources	The District would meet the Central Valley Regional Water Quality Control Board issued WQOs associated with their WDR permit to protect and enhance the beneficial uses of water in the Tulare Lake Basin.
Water Resources	The District shall follow the Monitoring and Reporting Program, as per their WDR permit, to minimize impact to water resources.
Various	Treated produced water shall not exceed the daily maximum limitation of 35 mg/L of oil and grease.
Various	The District would be subject to any certifications of approval from the California Department of Water Resources Division of Safety of Dams.

Section 3 Affected Environment and Environmental Consequences

This section identifies the potentially affected environment and the environmental consequences involved with the Proposed Action and the No Action Alternative, in addition to environmental trends and conditions that currently exist.

3.1 Resources Eliminated from Further Analysis

Reclamation analyzed the affected environment and determined that the Proposed Action did not have the potential to cause direct, indirect, or cumulative adverse effects to the resources listed in Table 3.

Table 3 Resources Eliminated from Further Analysis

Resource	Reason Eliminated
Environmental Justice	The Proposed Action would not cause dislocation, changes in employment, or increase flood, drought, or disease nor would it disproportionately affect economically disadvantaged or minority populations.
Indian Sacred Sites	The Proposed Action would not limit access to ceremonial use of Indian Sacred Sites on Federal lands by Indian religious practitioners or significantly adversely affect the physical integrity of such sacred sites.
Indian Trust Assets	The Proposed Action would not affect Indian Trust Assets as there are none in the Action Area.

3.2 Air Quality

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 provides financial support for, licenses or permits, or approves any activity to demonstrate that the action conforms to the applicable State Implementation Plan 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 State Implementation Plan's purpose of eliminating or reducing the severity and number of violations of the National Ambient Air Quality Standards 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 would, in fact conform to the applicable State Implementation Plan 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.

3.2.1 Affected Environment

The Proposed Action area lies within the San Joaquin Valley Air Basin under the jurisdiction of the San Joaquin Valley Air Pollution Control District. The pollutants of greatest concern in the San Joaquin Valley are carbon monoxide (CO), ozone, ozone precursors such as reactive organic gases (ROG) or volatile organic compounds (VOC), inhalable particulate matter between 2.5 and 10 microns in diameter (PM₁₀) and particulate matter less than 2.5 microns in diameter (PM_{2.5}).

The San Joaquin Valley Air Basin has reached Federal and State attainment status for CO, nitrogen dioxide, and sulfur dioxide (SO₂). Although Federal attainment status has been reached for PM₁₀, the State standard has not been met and both are in non-attainment for ozone and PM_{2.5} (San Joaquin Valley Air Basin 2014). There are no established standards for nitrogen oxides (NO_x); however, they do contribute to nitrogen dioxide standards and ozone precursors (San Joaquin Valley Air Basin 2014).

3.2.2 Environmental Consequences

No Action

Under the No Action Alternative, there would be no construction-related air pollutant emissions. Therefore, there would be no effect on conditions and trends in air quality within the San Joaquin Valley Air Basin.

Proposed Action

Construction The District completed an air quality analysis for the larger footprint (Phases I and II) in their EIR (District 2016). Table 4 lists the estimated air pollutant construction emissions for the larger project, and shows that the overall project would not exceed the San Joaquin Valley Air Pollution Control District *de minimis* thresholds. As the footprint that we are looking at in this EA is smaller, the estimated emissions under the Proposed Action are expected to be less, and would also not exceed *de minimis* thresholds. Therefore, a federal general conformity analysis report is not required.

Table 4 Estimated Maximum Construction Air Pollutant Emissions

Emissions Source	ROG (tons/yr)	NO _x (tons/yr)	CO (tons/yr)	SO _x (tons/yr)	PM ₁₀ (tons/yr)	PM _{2.5} (tons/yr)
Unmitigated						
Proposed Action (less cut and fill) ¹	0.57	6.85	4.06	0.00	0.81	0.33
Cut and fill fugitive emissions ²	--	--	--	--	1.39	0.56
Mitigated						
Proposed Action (less cut and fill) ¹	0.57	6.29	4.06	0.00	0.50	0.30
Cut and fill fugitive emissions ²	--	--	--	--	0.68	0.27
Threshold	10	10	100	27	15	15
Is threshold exceeded after mitigation?	No	No	No	No	No	No

Source: District 2016

¹Captures all emissions associated with construction for both Phases I and II, including equipment exhaust, less fugitive dust from trenching.

²Utilizes the CalEEMod "Material Imported" and "Material Exported" to calculate fugitive dust from the extraction (export) and from burying water pipes (import).

Operation The Proposed Action would not have any long-term (operation) effects, and in fact would result in beneficial impacts on air quality because of reduced air pollutant emissions from other existing activities. For example, with implementation of the Project, the Jasmin Oil Field would not dispose of produced water by underground injection. Also, the Project would reduce landowner need to pump groundwater from private water wells for irrigation purposes.

It is anticipated that the Proposed Action would save approximately 781,000 kilowatt hours (kWh) of electricity annually by reducing existing water injection in oil fields (Dalke 2016 *pers. comm.*). In addition, there would be a savings of 1,200,000 kWh per year from reduced water pumping of private wells for irrigation and 664,000 kWh per year from reduced District distribution system pumping charges. Thus the Proposed Action would save a combined total of approximately 2,645,000 kWh per year. This savings results in a reduction of 17.2 tons/year of SO₂³ and 7.9 tons/year NO_x⁴. Therefore, operation of the Project would have a beneficial impact on air quality in the San Joaquin Valley Air Basin.

Cumulative Effects

The Proposed Action would not contribute to an exceedance of applicable air quality standards and thresholds via emissions. The emissions would be temporary, and would not substantially contribute to a cumulative impact within the San Joaquin Valley Air Basin.

3.3 Biological Resources

3.3.1 Affected Environment

A list of potential Federally-listed species was obtained on September 15, 2016 by Reclamation from the U.S. Fish and Wildlife Service (<https://ecos.fws.gov/ipac/>). Bakersfield cactus (*Opuntia basilaris* var. *treleasei*) was added to the list on the recommendation of the California Department of Fish and Wildlife Service. The list can be found in Table 5. The California Natural Diversity Database (CNDDDB 2016) was queried for records in the Proposed Action Area. Other information was provided by a reconnaissance-level biological survey report conducted by Quad Knopf (Quad Knopf 2015), as well as a site visit by Reclamation on July 27, 2016.

In the Proposed Action area there are no critical habitats and only the San Joaquin kit fox has the potential to occur. Additionally, a bald eagle, protected under the Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act, was observed in the Proposed Action Area.

Many of the special-status species named on the official species list have no potential to be present in the Action Area, as described in Table 5 below. The Federally protected species with the potential to be in the Action Area include bald eagles and San Joaquin kit fox.

³ 2,645,000 kWh/year X 0.013 pounds SO₂/kWh generated in coal-fired power plant (EPA 2014d) = 34,385 pounds/year SO₂ offset = 17.2 tons/year SO₂ offset

⁴ 2,645,000 kWh/year X 0.006 pounds NO_x/kWh generated in coal-fired power plant (EPA 2014d) = 15,870 pounds/year NO_x offset = 7.9 tons/year NO_x offset

Table 5 Federally-Listed Threatened and Endangered Species

Species	Status	Habitat Requirements	Effects
AMPHIBIANS			
California red-legged frog (<i>Rana draytonii</i>)	T	Small streams, ponds and marshes preferably with dense shrubby vegetation such as cattails and willows near deep water pools.	No effect determination; no suitable aquatic habitat occurs on the site. This species would not be effected by the Proposed Action.
FISH			
Delta smelt (<i>Hypomesus transpacificus</i>)	T	Delta smelt are found only in the Sacramento and San Joaquin estuaries of the San Francisco Bay.	No effect determination; no suitable habitat occurs on the site. This species occurs in the brackish water of San Francisco Bay estuaries. The Proposed Action will not affect this species.
INVERTEBRATES			
vernal pool fairy shrimp (<i>Branchinecta lynchi</i>)	T	Vernal pool fairy shrimp occur in a variety of vernal pool habitats from small, clear sandstone rock pools to large and turbid, alkaline, grassland valley floor pools.	No effect determination; suitable habitat is present on the site, but the site is outside of this species range. The Proposed Action will not affect this species.
MAMMALS			
Tipton kangaroo rat (<i>Dipodomys nitratoides</i>)	E	Found in saltbrush scrub and sink scrub communities in the Tulare Lake Basin of the southern San Joaquin valley.	No effect determination; no suitable habitat occurs on the site (cannot use active agricultural fields). The Proposed Action will not affect this species.
San Joaquin kit fox (<i>Vulpes macrotis mutica</i>)	E	San Joaquin kit foxes occur in open, dry grassland and shrub and open forest habitats on the floor of the San Joaquin Valley and surrounding foothills.	No effect determination. Habitat for the kit fox exists in the vicinity of the site and this species could be a transient within any portion of the Proposed Action. Potential foraging habitat exists in the area. The last observation was made in 1975, approximately five miles away. Avoidance measures would ensure that no impact would occur to this species.
REPTILES			
blunt-nosed leopard lizard (<i>Gambelia sila</i>)	E	Reside in sparsely vegetated alkali and desert scrub habitats, in areas of low topographic relief. They seek cover in mammal burrows (they do not excavate their own burrows), under shrubs, or structures such as fence posts.	No effect determination; no suitable habitat occurs on the site. Additionally, records show that this species has been extirpated from the project vicinity and the last sighting in the project area are from 1946 (about one mile southwest of the proposed 15-inch pipeline) and 1974 (over one mile south of the southern terminus of the 15-inch pipeline). The proposed project will not adversely affect this species
giant garter snake (<i>Thamnophis gigas</i>)	T	Require permanent or semi-permanent marshes and sloughs.	No effect determination; no suitable habitat occurs on the site. The Proposed Action will not affect this species.
PLANTS			
California jewelflower (<i>Caulanthus californicus</i>)	E	Chenopod scrub, valley and foothill grassland, pinyon-juniper woodland, and primarily grows in sub-alkaline and sandy loam soils on 0% to 25% slopes. Flowering period: Feb-May. Elev. range: 200-3,300 feet.	No effect determination; site soils are not suitable for this species. The Proposed Action will not affect this species.
Bakersfield cactus (<i>Opuntia basilaris</i> var. <i>treleasei</i>)	E	Chenopod scrub, valley and foothill grassland, and cismontane woodland. Found on coarse or cobbly well-drained granitic sand on	No effect determination; species not observed at the site and site soils are not suitable for this species. The Proposed Action will not affect this species.

		bluffs, low hills, and flats within grassland. Flowering period: Apr-May. Elev. range: 120-1,140 feet.	
San Joaquin adobe sunburst (<i>Pseudobahia peirsonii</i>)	E	San Joaquin adobe sunburst is associated with abode clay soils within foothill woodlands and grasslands. Flowering period: Mar-Apr. Elev. range: 300-2,625 feet	No effect determination; site soils are not suitable for this species. The Proposed Action will not affect this species.

Status = List of Federally special status species.
 E: Listed as Endangered
 T: Listed as Threatened

Bald Eagle

Bald eagles typically nest in large, mature trees in close proximity to rivers, lakes, and reservoirs. Bald eagles winter throughout the lower 48 states and in southern Canada and Alaska. The breeding range in California is primarily confined to the northern half of the state, particularly from the central Sierra Nevada north to the southern Cascades and Coast Ranges. Bald eagles are known to winter in various portions of the San Joaquin Valley foothills. Year round residents have been identified at Bass Lake in Fresno County, at Millerton Lake in Fresno County, and near Lake Kaweah in Tulare County.

A bald eagle was observed flying over the Proposed Action area during the field survey, in the eastern portion of the site. It is likely that this was a transient bird that was foraging. It is unlikely that bald eagles regularly occupy the Proposed Action area as no nesting or potential nesting habitat for this species occurs within there.

San Joaquin Kit Fox

San Joaquin kit foxes are arid-adapted species that preferentially occupy saltbush scrub, alkali scrub, and arid grassland habitat, as well as open areas within some cities (e.g. Bakersfield), including schools, parks, golf courses, and recharge ponds. Although not the best habitat, kit foxes may use agricultural lands at times. In particular, they may use these lands for foraging, especially when the lands lies near more suitable habitat (Warrick et al. 2007). The agricultural lands, because of the way they are typically maintained, do not provide denning habitat. There are 965 occurrences of San Joaquin kit fox located within the nine quadrangles surrounding the Proposed Action area. Two sightings are within a mile of the Proposed Action area (CNDDB 2016).

No sign or sightings of San Joaquin kit foxes were observed during the surveys. However, kit fox could be present, as foragers and transients, in the Proposed Action area.

3.3.2 Environmental Consequences

No Action

Under the No Action alternative, there is the possibility that more lands may be fallowed if the District cannot obtain their water needs to support existing crops. This might increase available foraging habitat for the San Joaquin kit fox, but if the lands were regularly disced, foxes would not be able to use the fields for denning.

Proposed Action

The following analysis focuses on special-status wildlife species that have the potential to occur in the Proposed Action area and whether construction or operation of the water delivery and storage system may result in an adverse effect to these wildlife species.

The Bald Eagle is at a very low risk of take from the Proposed Action, as it is believed to only use the area for foraging. The measures incorporated in the Proposed Action would protect Bald Eagles and any other raptors from take.

Reservoir construction would not impact any suitable habitat for the San Joaquin kit fox, as the area is so regularly disced that kit foxes and their prey cannot burrow or den there. Similarly, the areas that would be subject to ground disturbance for installation of pipelines provide at best very marginal habitat, and the implementation of avoidance measures (Service 2011) would further ensure that no impacts would occur to this species.

Operation of the pipeline alignments would not affect special-status wildlife species because they would be placed underground and areas disturbed by construction of these facilities would be returned to their baseline condition and revegetation would be allowed to occur. Therefore, no operational effect would occur as a result of the Proposed Action.

The proposed reservoir would impound treated produced water that was extracted from Jasmin Oil Field. Discharges, blended water quality of the reservoir seepage, and percolation below the crop root zone as a result of the Proposed Action would not exceed proposed WQOs. Environmental commitments require that the District obtain approved WDR from the Central Valley Regional Water Quality Control Board that includes WQOs. 40 CFR 435 subpart E allows onshore oil extraction facilities in the continental United States roughly west of the Mississippi to use produced water for “agriculture or wildlife propagation when discharged into navigable waters” provided that produced water discharges do not exceed the daily maximum limitation of 35 mg/L of oil and grease. Although the project would not discharge into navigable waters, in compliance with the Clean Water Act, an environmental commitment has been incorporated into the Proposed Action to adhere the daily maximum limitation of 35 mg/L of oil and grease in order to propagate wildlife in accordance with this daily maximum limit stated in Federal law (Table 2). This would protect foraging birds, such as the Bald Eagle, from take as a result of contaminated water or prey.

It is important to note that the extraction of oil that would result in the produced water for the Proposed Action does not require steam injection or fracking, or the use of fracking fluids at this time. In the future, the extraction of oil that would result in the produced water may require steam injection and/or fracking, but such changes in the process of extracting the oil to create the produced water would require compliance with current WDR as well as future environmental review and likely future WDR. It is speculative to discuss the effects of steam injection or fracking on water quality and the subsequent effect on wildlife because these processes are not part of the baseline condition for the Proposed Action and the project would not result in changes in the baseline condition.

Cumulative Effects

As the Proposed Action would not result in any direct or indirect impacts to Federally protected species, it would not result in any cumulative contribution toward impacts to these species.

3.4 Cultural Resources

Cultural resources is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. Title 54 U.S.C. 300101 et seq., formerly and commonly known as the National Historic Preservation Act (NHPA), is the primary legislation for Federal historic preservation. Section 106 of the NHPA (54 U.S.C. 306108) requires Federal agencies to take into consideration the effects of their undertakings on historic properties and to afford the Advisory Council on Historic Preservation an opportunity to comment. Historic properties are those cultural resources that are listed on or eligible for inclusion in the National Register of Historic Places (National Register). The Section 106 implementing regulations at 36 CFR Part 800 outline the process the Federal agency takes to identify historic properties within the area of potential effects (APE) and to assess the effects the proposed undertaking will have on those historic properties. The Section 106 process consultations involve the State Historic Preservation Officer (SHPO), Indian tribes, and other identified consulting and interested parties.

3.4.1 Affected Environment

The APE for the current undertaking consists of all construction related activities for the pipelines and the reservoir, for a total area of approximately 120 acres. A cultural resources inventory and paleontological records search was conducted by Applied Earthworks, Inc. for the District to determine whether cultural or paleontological resources are present within the APE to identify historic properties. The cultural resources investigation included a records search of the California Historical Resources Information System to identify previously recorded cultural resources and prior studies in the Proposed Action vicinity, a search of the Native American Heritage Commission's Sacred Lands File for known resources and identification of individuals or tribes that may have information of sacred lands in the Proposed Action area, and a pedestrian survey of the APE and assessment of the potential for buried cultural resources. No prehistoric sites or isolates were documented during the survey.

Applied Earthworks, Inc. identified a portion of the Magunden-Vestal No.1 and No. 2 Transmission Lines that crosses the current APE. This structure is part of the Big Creek East and West Transmission Lines established between 1909 and 1929. Shoup (1988) evaluated this system as eligible under National Register Criteria A, B, and C and received concurrence from SHPO. Applied Earthworks, Inc. field checked the structure's current integrity levels, and evaluated the portion within the APE as being eligible for listing in the National Register under Criteria A and C.

3.4.2 Environmental Consequences

No Action

There would be no impacts to cultural resources under this alternative as no construction activities would occur.

Proposed Action

The Proposed Action is the type of activity that has the potential to affect historic properties, and the records search, cultural resources survey, and Tribal consultation identified historic properties within the APE.

Reclamation determined the Magunden-Vestal No.1 and No. 2 Transmission Lines as eligible for inclusion in the National Register. Reclamation considers it eligible under Criterion A as being associated with the early development of electrical power distribution in California that profoundly influenced California's economic landscape; and under Criterion C because of significant technical innovations in its engineering and construction methods. The system as a whole has retained integrity of location, setting, feeling, and association. The system still functions for the original purpose for which it was constructed.

Reclamation applied the criteria of adverse effect [36 CFR § 800.5(a)] and found that the Proposed Action would result in no significant alterations to the historic characteristics that make the Magunden-Vestal No.1 and No. 2 Transmission Lines eligible for the National Register. The proposed actions of installing new pipelines and a reservoir would not substantially alter any physical characteristics of the transmission line system.

Reclamation consulted with SHPO, and received concurrence on a finding of no adverse effect to historic properties pursuant to 36 CFR § 800.5(b) (Appendix A). Reclamation has no further obligations under Section 106 implementing regulations at 36 CFR Part 800.3(a)(1) (54 U.S.C. § 306108). The proposed action would result in no impacts to cultural resources.

Cumulative Effects

The Proposed Action area has been identified to have a low to moderate sensitivity for cultural resources. The pedestrian survey conducted for this Project did not locate any archaeological resources. However, excavation activities associated with the Proposed Action in conjunction with other actions in the area could contribute to the progressive loss of as-yet unrecorded cultural resources. Although unlikely, construction activities associated with the Project's development could contribute to the cumulative loss of historical or archaeological resources and result in adverse cumulative effects. With implementation of environmental commitments, cumulative effects on historical or archaeological resources and buried human remains, including those interred outside of formal cemeteries, would be unlikely.

3.5 Global Climate Change

3.5.1 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 2014a).

Gases that trap heat in the atmosphere are often called greenhouse gases. Some greenhouse gases, such as carbon dioxide (CO₂), occur naturally and are emitted to the atmosphere through natural processes and human activities. Other greenhouse gases (e.g., fluorinated gases) are

created and emitted solely through human activities. The principal greenhouse gases that enter the atmosphere because of human activities are: CO₂, methane (CH₄), nitrous oxide, and fluorinated gasses (EPA 2014a).

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. At present, there are uncertainties associated with the science of climate change (EPA 2014b).

Climate change has only recently been widely recognized as an imminent threat to the global climate, economy, and population. As a result, the national, state, and local climate change regulatory setting is complex and evolving.

In 2006, the State of California issued the California Global Warming Solutions Act of 2006, widely known as Assembly Bill 32, which requires California Air Resources Board to develop and enforce regulations for the reporting and verification of statewide greenhouse gases emissions. California Air Resources Board is further directed to set a greenhouse gases emission limit, based on 1990 levels, to be achieved by 2020.

In addition, the EPA has issued regulatory actions under the Clean Air Act as well as other statutory authorities to address climate change issues (EPA 2014c). In 2009, the EPA issued a rule (40 CFR Part 98) for mandatory reporting of greenhouse gases by large source emitters and suppliers that emit 25,000 metric tons or more of greenhouse gases [as CO₂ equivalents (CO_{2e}) per year] (EPA 2009). The rule is intended to collect accurate and timely emissions data to guide future policy decisions on climate change and has undergone and is still undergoing revisions (EPA 2014c).

3.5.2 Environmental Consequences

No Action

Under the No Action Alternative, there would be no construction activities; therefore construction-related greenhouse gas emissions would not be generated.

Proposed Action

As described in the Air Quality Section 3.2 above, the District analyzed emissions as part of their EIR (District 2016). The estimated construction and operational greenhouse gas emissions for the larger footprint are 592 metric tons CO_{2e} (Table 6). Greenhouse gas emissions are assumed to be less for the Proposed Action as the footprint is smaller.

Table 6 Estimated Annual Greenhouse Emissions

Source	CO ₂ (tons/yr)	CH ₄ (tons/yr)	N ₂ O (tons/yr)	CO _{2e} (tons/yr)
Construction Emissions	588	0.18	0	592
Operational Emissions (Area/Energy/Mobile/Waste/Water)	0	0	0	0

Source: District 2016, and includes estimates from both Phases I and II.

As discussed above in Section 3.2, it is anticipated the Proposed Project would save approximately 2,645,000 kWh in combined energy savings per year. If it is assumed that this electrical energy is derived from a coal-fired power plant, this would result in a reduction of approximately 1,859 metric tons of CO_{2e} per year (EPA 2017). Therefore, the Proposed Action would have a beneficial impact on greenhouse gas emissions.

Cumulative Impacts

The Proposed Action would result in a reduction of 1,859 tons/year of CO₂ (equivalent of taking 393 vehicles off the road each year) in comparison to the No Action Alternative. By reducing the energy intensity and emissions associated with nearby water pumping for irrigation and water injection for the disposal of produced water, the Proposed Action would result in offsetting cumulative impacts as a result of other past, present, and reasonable foreseeable future projects in the area.

3.6 Land Use and Mineral Resources

3.6.1 Affected Environment

The Project site is in an area that consists of agricultural lands and scattered industrial uses generally associated with oil production. The District's Section 17 Agricultural Service Area is 1,197 acres located in the northwest corner of the Project site (Figure 3). The area is planted primarily with pistachios with some citrus. Cameo Agricultural Service Area is 2,214 acres located in the central to northern portion of the Project site. The area is citrus and pistachios with a small area with vineyards.

The Guzman Reservoir and pipeline alignment are on lands designated as prime farmland, unique farmland, or farmland of statewide importance by the California Department of Conservation (DOC 2014). Much of the Project footprint is on lands currently under a Williamson Act land use contract. Existing crops include oranges, grapes, lemons, grapefruit, and pistachios.

Portions of the Proposed Action area are located in the Jasmin Oil Field (see Figure 3). The 12-inch pipeline alignment and northeast portion of Guzman Reservoir are located on land designated as known mineral and petroleum resources (Kern County 2009). These areas contain producing or potentially productive petroleum fields, natural gas, geothermal resources, and/or mineral deposits of regional and Statewide significance.

APN 051-102-39 and 051-102-40 are approximately 34 acres and 33 acres, respectively, and are currently owned by private landowners. These parcels are non-irrigated agricultural lands used for dryland farming and bee storage. Both of these parcels are proposed to be purchased by the District and added to the District's service area boundary. Portions of these parcels would become part of the Guzman Reservoir. About half of the proposed Guzman Reservoir site is found on land designated as prime farmland and unique farmland, with the remainder of the site designated as grazing land. Based on the observations in the field at the proposed Guzman Reservoir, the site was formerly a lemon orchard, but the trees were previously removed and the site is now regularly disced.

APN 051-101-41 is approximately 30 acres, and also is owned by a private owner. Approximately 20 acres of this parcel are irrigated pistachios and the remainder is where oil field operations are located. The irrigated portion of this parcel would be added to the District's boundary as part of a proposed long-term agreement to receive treated produced water.

3.6.2 Environmental Consequences

No Action

Under the No Action Alternative, Reclamation would not approve the inclusions into the District's boundaries and/or provide potential funding for the Project, and District would not construct the water delivery and storage system. Land use would remain the same as it is under existing conditions. Also, there is the possibility more lands may become fallow if the District cannot obtain their water needs to support existing crops.

Proposed Action

Construction and operation of the proposed pipelines would not convert farmland to a non-agricultural use as the pipelines would be installed within existing road right-of-ways and/or in actively farmed areas that would be returned to existing conditions.

Although construction and operation of the Guzman Reservoir would prohibit future agricultural use on the portion of the reservoir site designated as prime farmland and unique farmland, the Guzman Reservoir is part of a proposed water delivery and storage system to be used to store irrigation water for agricultural use. Water facilities, such as those proposed by the District, are considered compatible uses for agricultural lands and would therefore not convert prime farmland, unique farmland, or farmland of statewide importance to non-agricultural use.

As described in Section 2.2., the Project would provide treated produced water to existing agriculture within Section 17 and Cameo Agricultural Service Areas in the District. This would benefit approximately 3,500 acres of irrigated agriculture that might otherwise become fallowed if an alternative water source were not obtained.

The 12-inch pipeline alignment and northeast portion of Guzman Reservoir are located on land designated for mineral and petroleum resources; however, there are no known extraction wells in the Proposed Action area. The District has coordinated and collaborated with Hathaway LLC to ensure that placement of the pipelines and reservoir would not be in areas that are actively being drilled for oil, therefore, not impede oil pumping to the greatest extent practicable. In addition, the Proposed Action area has a limited footprint within the area of oil production. As Hathaway LLC has the ability to utilize flexible drilling methodologies, such as directional drilling, the Project's placement would not impede oil production in those areas that are currently drilled and/or would be drilled in the future (DOGGR 2015).

The Proposed Action would not preclude access to mineral resources that would result in the loss of availability of petroleum reserves. The ability of mineral rights' holders to exercise their legal rights to access the sites for the exploration and/or extraction of underlying oil or other natural resources would not change as a result of the Proposed Action. Therefore, construction and

operation of the Proposed Action would not result in the loss of availability of a known mineral resource and there would be no impact.

Cumulative Effects

The Proposed Action provides the District with water supply reliability that could allow farmers to maintain their existing crops. Also, construction and operation of the Proposed Action would not preclude access to oil resources. Therefore, the Proposed Action, when added to other past, present, and future actions, would not contribute to cumulative impacts to land use or mineral resource availability.

3.7 Water Resources

3.7.1 Affected Environment

Surface Water

The District is a Friant Division and Cross Valley CVP contractor which provides irrigation water to over 19,000 acres of high-value permanent crops in Kern and Tulare counties. A large portion of the District's surface water supply is imported from the CVP (both Delta and Friant Division water supplies). Surface water from the Friant-Kern Canal is available for use in the District and the Project site. Water quality and monitoring requirements are established annually by Reclamation and are instituted to protect water quality in federal facilities by ensuring that imported non-Project water does not impair existing uses or negatively impact existing water quality conditions. These standards are updated periodically and are currently those set out in Title 22 of the California Code of Regulations.

For comparison purposes, two water quality sample dates (wet-year and dry-year) from the Friant-Kern Canal at Lake Woollomes are provided in Table 7 below. The table shows water quality of the different constituents were elevated during the dry-year, but still meet the Basin Plan standards.

Groundwater

Groundwater resources for the District are located in the Tulare Lake Hydrologic Region, San Joaquin Valley Basin. This Basin is relied upon for groundwater for agricultural and urban purposes (DWR 2003). The District monitors groundwater elevations that underlie the District's boundaries, as part of their Groundwater Management Plan (District 2012). From 1960 to 1977, groundwater levels fell and was largely attributable to the exclusive use of groundwater for irrigation purposes. In 1977, the District began importing surface water as an alternative irrigation water supply to groundwater pumping, and the groundwater elevations have since rebounded. Other sources of groundwater replenishment include underflow from foothill recharge areas and intermittent streams located east of the District.

Groundwater wells are pumped by individual landowners within the District to meet crop demand. Of the three wells sampled, water quality tends to vary among the wells but do meet the Basin Plan standards (Table 7).

Table 7 Preliminary Water Quality Analysis

	Basin Plan Standards ¹	FKC ² (Wet Year)	FKC ² (Dry Year)	Ground-water Well 6B	Ground-water Well LW14	Ground-water Well CL15	Jasmin Treated Produced Water ³
Sample Date	--	7/15/2009	8/13/2014	8/5/2015	5/24/2014	8/5/2015	--
EC (µmho/cm)	1,000	30	270	830	270	570	656
Sodium (mg/L)	--	3	34	160	32	100	133
Chloride (mg/L)	200	4.1	18	130	25	63	58
Boron (mg/L)	1	0.02	0.02	0.75	0.04	0.32	0.69
Total Dissolved	--	23	200	500	175	360	390
Oil and Grease (mg/L)	--	--	--	--	--	--	<6.5

Source: District 2016, Dalke pers. comm.

-- = not applicable or not determined

EC = Electrical Conductivity

µmhos/cm = micromhos per centimeter

mg/L = milligrams per liter

1 Basin Plan Standards (Central Valley RWQCB 2016).

2 FKC = Friant-Kern Canal samples taken from the Lake Woollomes. This is the District's storage area for CVP water supplies from Friant-Kern Canal.

3 Average water quality based on three samples during 2014 and 2015

Treated Produced Water

Average water quality of Jasmin Oil Field treated produced water was calculated based on three samples collected during 2014 and 2015 (Table 7). As shown in Table 7, water quality meets the Basin Plan standards.

Water Quality Objectives

For operation of the Proposed Action, an antidegradation groundwater report was completed by the District to address requirements of the State Water Resources Control Board to protect groundwater and surface water from degradation (District 2016). The antidegradation analysis developed proposed WQOs for the Proposed Action, which was based on the beneficial uses for the underlying groundwater and the work by Ayers and Westcot (1985) (Table 8). For many constituents, agricultural uses have the lowest (most restrictive) WQOs, and the common constituents evaluated are electrical conductance, sodium, chloride, and boron (Central Valley RWQCB 2016). As shown in Table 8, the constituents for the Proposed Action would also meet the Basin Plan standards.

Table 8 Proposed Water Quality Objectives

Parameter	Proposed Value	Basin Plan Standards ¹	Rationale
EC (µmhos/cm)	1,000	1,000	This level protects sensitive crops grown in the District (Ayers and Westcot 1985)
Sodium (mg/L)	160	--	This level protects sensitive crops grown in the District (Ayers and Westcot 1985)
Chloride (mg/L)	175	200	This level protects sensitive crops grown in the District (Ayers and Westcot 1985)
Boron (mg/L)	0.75	1	This level is consistent with the water quality goals for nearby Water Districts

Source: District 2016.

-- = not measured, defined, or applicable

EC = Electrical Conductivity
 umhos/cm = micromhos per centimeter
 mg/L = milligrams per liter
 1 Central Valley RWQCB 2016.

3.7.2 Environmental Consequences

No Action

Under the No Action Alternative, water resource conditions would remain the same as existing conditions. Hathaway LLC would continue to dispose of produced water from Jasmin Oil Field back underground into wastewater injection wells. In addition, the District would continue to rely on available surface water and pumped groundwater. These water resources are already limited due to extreme drought and groundwater overdraft.

Proposed Action

Construction of the Proposed Action could result in temporary effects to local water resources from erosion. However, as per the Environmental Commitments in Table 2, the District would obtain a NPDES Permit from the Central Valley Regional Water Quality Control Board to control for stormwater discharge during land disturbance activities.

Under the Proposed Action, the District would “blend” treated produced water and CVP water from the Friant-Kern Canal within the existing Big 4 Reservoir. This water would then be used within the District’s service area. There would be no impact to federal facilities because the treated produced water would not touch federal facilities or impact operation.

The water quality that would service the District’s two service areas depends on the individual blends of treated produced water, groundwater, and surface water by water-season type (wet-year, dry-year, and normal year conditions) (Table 9). This blended water could impact groundwater quality through seepage from the reservoir and as water percolating through the crop root zone. However, as shown in Table 10, the overall average seepage and percolate water quality for all service areas are below the Basin Plan standards and proposed WQOs for the Proposed Action. In addition, the seepage and percolate water quality are comparable to groundwater wells within the District (see Table 7). Therefore, seepage and percolation from the Proposed Action would not adversely impact groundwater quality.

Table 9 Agricultural Service Area Water Quality after Blending With Treated Produced Water

Parameter	Cameo	Section 17
Wet-Year Condition		
EC (µmhos/cm)	424	312
Sodium (mg/L)	80	53
Chloride (mg/L)	49	35
Boron (mg/L)	0.33	0.21
Dry-Year Condition		
EC (µmhos/cm)	606	420
Sodium (mg/L)	111	69
Chloride (mg/L)	69	45
Boron (mg/L)	0.41	0.24

Normal-Year Condition		
EC (µmhos/cm)	605	419
Sodium (mg/L)	111	69
Chloride (mg/L)	69	45
Boron (mg/L)	0.41	0.24

Source: District 2016.

EC = Electrical Conductivity

µmhos/cm = micromhos per centimeter

mg/L = milligrams per liter

Table 10 Seepage and Percolate Water Quality for the Proposed Project

Parameter	EC (µmhos/cm)	Sodium (mg/L)	Chloride (mg/L)	Boron (mg/L)
Reservoir Blended Seepage	830	170	101	0.80
Service Area Percolate Water Quality ¹	821	155	98	0.64
Basin Plan Discharge Limit ²	1,000	--	200	0.75
Water Quality Objectives	1,000	160	175	0.75

Source: District 2016. Includes water quality estimates for both Phases I and II.

-- = not measured, defined, or applicable

EC = Electrical Conductivity

µmhos/cm = micromhos per centimeter

mg/L = milligrams per liter

ac-ft = acre-feet

1 Overall annual average that is weighted based on climate (three wet years, 3 dry years, and six average years).

2 Central Valley RWQCB 2016.

With the District implementing the Environmental commitments listed in Table 2, the operation of the Proposed Action would minimize the potential for impacts to water resources. As a result of the Proposed Action, up to 56,000 barrels per day of oil field produced water would be recycled, which would otherwise be returned into underground geologic formations with unusable groundwater through deep well injection (Dalke 2016 *pers. comm.*). The Proposed Action would convey and store up to 2,640 AF of treated produced water annually. This would reduce reliance on groundwater extraction within the District from private groundwater wells during periods of reduced surface water deliveries in order to improve sustainable groundwater levels that underlie the District.

Cumulative Effects

Groundwater levels that underlie the District are currently sustainable and stable, and the Project would further assist in this sustainability. While it has been acknowledged that the Proposed Action would deplete groundwater that underlies the Jasmin Oil Field, this produced water is non-potable. Therefore, the Proposed Action's effects to groundwater would not contribute cumulatively to adverse impacts to groundwater levels.

The Proposed Action would provide a supplemental water supply to serve the District's existing irrigation purposes. The Project would comply with water quality standards to protect groundwater and surface water from degradation. Therefore, the Project would not contribute to cumulative impacts to water resources.

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Section 4 Consultation and Coordination

4.1 Public Review Period

Reclamation provided the public with an opportunity to comment on the Draft Finding of No Significant Impact and Draft Environmental Assessment during a 30-day public review period. No comments were received.

4.2 List of Agencies and Persons Consulted

Reclamation and/or the District has consulted with the following regarding the Proposed Action:

- California Department of Water Resources
- Department of Water Resources Division of Safety of Dams
- State Historic Preservation Officer
- U.S. Army Corps of Engineers

Reclamation and/or the District is coordinating the Proposed Action with the U.S. Fish and Wildlife Service.

4.4 Clean Water Act (33 U.S.C. § 1251 et seq.)

Section 301 of the Clean Water Act (33 U.S.C. § 1311) prohibits the discharge of any pollutants into waters of the United States, except as allowed by permit issued pursuant to various sections of the Clean Water Act.

Section 401

Section 401 of the Clean Water Act (33 U.S.C. § 1341) requires any applicant for an individual Army Corps of Engineers (Corps) dredge and fill discharge permit (see Section 404, below) 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.

The District would obtain all necessary permits prior to initiation of the Proposed Action.

Section 404

Section 404 of the Clean Water Act (33 U.S.C. § 1344) authorizes the Corps to issue permits to regulate the discharge of “dredged or fill materials into waters of the United States”. 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 Clean Water Act section 404 are not required.

The District would obtain all necessary permits prior to initiation of the Proposed Action.

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

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

Reclamation has determined that the Proposed Action would not result in any effects on Federally listed or proposed species or critical habitat. Therefore, no consultation is required.

4.13 National Historic Preservation Act (16 U.S.C. § 470 et seq.)

The NHPA of 1966, as amended (16 U.S.C. 470 et seq.), requires that federal agencies give the Advisory Council on Historic Preservation an opportunity to comment on the effects of an undertaking on historic properties, properties that are eligible for inclusion in the National Register. The 36 CFR Part 800 regulations implement Section 106 of the NHPA.

Section 106 of the NHPA requires federal agencies to consider the effects of federal undertakings on historic properties, properties determined eligible for inclusion in the National Register. Compliance with Section 106 follows a series of steps that are designed to identify interested parties, determine the area of potential effects, conduct cultural resource inventories, determine if historic properties are present within the area of potential effects, and assess effects on any identified historic properties.

Reclamation consulted with the SHPO, and received concurrence on a finding of no adverse effect to historic properties pursuant to 36 CFR § 800.5(b) (Appendix A). Reclamation has no further obligations under Section 106 implementing regulations at 36 CFR Part 800.3(a)(1) (54 U.S.C. § 306108). The proposed action would result in no impacts to cultural resources.

Section 5 References

Ayers, R.S., and D.W. Westcot. 1985. Water Quality for Agriculture. FAO Irrigation and Drainage Paper, 29 Rev. 1.

Central Valley RWQCB (Central Valley Regional Water Quality Control Board). 2016. Revised monitoring and reporting program order no. 98-205, Hathaway, LLC and Jasmin Ranchos Mutual Water Company, Quinn Lease, Jasmin Oil Field, Kern County. January.

CNDDDB (California Natural Diversity Database). 2016. CNDDDB personal computer program updated August 1, 2016. Sacramento, CA. Website: http://www.dfg.ca.gov/biogeodata/cnddb/rf_ftpinf.asp.

Dalke, Steven. General Manager of Kern-Tulare Water District. August 22, 2015 and November 15, 2016—telephone call.

District (Kern-Tulare Water District). 2012. Groundwater Management Plan. December.

District (Kern-Tulare Water District). 2016. Final and Draft Environmental Impact Report for the Kern-Tulare Water District oil field water reuse project. SCH# 2015021024. Prepared by Quad Knopf, Inc. Bakersfield, CA. February.

DOC (California Department of Conservation). 2014. Farmland Mapping and Monitoring Program. Website: <http://www.conservation.ca.gov/dlrp/fmmp/Pages/Index.aspx>. Accessed: January 6, 2015.

DOGGR (Department of Oil, Gas, and Geothermal Resources). 2015. Well Finder. Website: <http://maps.conservation.ca.gov/doggr/index.html#close>.

DWR (California Department of Water Resources). 2003. California's Groundwater. Bulletin 118, Update 2003.

EPA (U.S. Environmental Protection Agency). 2009. Mandatory Reporting of Greenhouse Gases, Final Rule (40 CFR Parts 86, 87, 89 et al.) Federal Register. 4(209): 56260-56519.

EPA (U.S. Environmental Protection Agency). 2014a. Climate Change – Basic Information. Website: <http://www.epa.gov/climatechange/basicinfo.html>.

EPA (U.S. Environmental Protection Agency). 2014b. Climate Change – Science. Website: <http://www.epa.gov/climatechange/science/index.html>.

EPA (U.S. Environmental Protection Agency). 2014c. Climate Change – Regulatory Initiatives. Website: <http://www.epa.gov/climatechange/initiatives/index.html>.

EPA (U.S. Environmental Protection Agency). 2014d. Air Emissions. Available: <http://www.epa.gov/cleanenergy/energy-and-you/affect/air-emissions.html>. Accessed: September 28, 2015.

EPA (U.S. Environmental Protection Agency). 2017. Greenhouse Gas Equivalencies Calculator. Energy and the Environment. Available: <https://www.epa.gov/energy>. Accessed: January 6.

Kern County. 2009. Kern County General Plan.

Lloyd, J., K. Asselin, M.J. Mirro, and S. Lukowski. 2015. Cultural Resources Inventory and Paleontological Records Search for the Kern Tulare Water District Oil Field Water Reservoirs and Pipelines Project, Kern County, California.

Quad Knopf. 2015. Biological Feasibility Analysis, Kern-Tulare Water District Oil Field Water Reuse Project. Prepared for Kern-Tulare Water District. April 2015. 81 pp.
Reclamation (Bureau of Reclamation). 2014. Guidelines for Accepting Non-Project Water in Friant Division Facilities – Central Valley Project Water Quality Monitoring Requirements. Mid-Pacific Region. March.

Service (U.S. Fish and Wildlife Service). 2011. Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance.

San Joaquin Valley Air Pollution Control District. 2014. Ambient Air Quality Standards and Valley Attainment Status. Website: <http://www.valleyair.org/aqinfo/attainment.htm>

San Joaquin Valley Air Pollution Control District. 2015. Guide for Assessing and Mitigating Air Quality Effects. Website: http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf.

Warrick, G. D., H. O. Clark, Ir., P. A. Kelly, D. F. Williams, and B. L. Cypher . 2007. Use of agricultural lands by San Joaquin kit foxes. *Western North American Naturalist* 67:270- 277.

Appendix A: Cultural Resources Determination

CULTURAL RESOURCES COMPLIANCE
Mid-Pacific Region
Division of Environmental Affairs
Cultural Resources Branch (MP-153)

MP-153 Tracking Number: 16-SCAO-159

Project Name: Kern-Tulare Water District (KTWD) Oil Field Water Reuse Project

NEPA Document: EA-15-006

NEPA Contact: Jennifer Lewis, SCAO Natural Resources Specialist

MP-153 Cultural Resources Reviewer: Kevin (Lex) Palmer, Architectural Historian

Date: January 9, 2017

Reclamation proposes to approve a request by KTWD to include a portion of the proposed delivery and storage system area into its service boundary for delivery of Central Valley Project (CVP) water. Reclamation determined that the issuance of the grant and approval of the requested inclusion constitutes an undertaking as defined in 36 CFR § 800.16(y) and involves the type of activity that has the potential to cause effects on historic properties under 36 CFR § 800.3(a).

Reclamation consulted with the State Historic Preservation Officer, and received concurrence on a finding of no adverse effect to historic properties pursuant to 36 CFR § 800.5(b). Reclamation has no further obligations under Section 106 implementing regulations at 36 CFR Part 800.3(a)(1) of the National Historic Preservation Act (NHPA) (54 U.S.C. § 306108). The proposed action would result in no impacts to cultural resources.

This document conveys the completion of the cultural resources review and NHPA Section 106 process for this undertaking. Please retain a copy with the administrative record for this action. Should the proposed action change, additional review under Section 106, possibly including consultation with the State Historic Preservation Officer, may be required.

Enclosure: State Historic Preservation Office letter dated January 4, 2017

**OFFICE OF HISTORIC PRESERVATION
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January 04, 2016

In reply refer to: BUR_2016_1130_001

Ms. Anastasia T. Leigh, Regional Environmental Officer
U.S. Bureau of Reclamation, Mid-Pacific Regional Office
2800 Cottage Way, Sacramento, CA 95825-1898

Subject: Section 106 Consultation for the Kern-Tulare Water District (KTWD) Oil Field
Water Reuse Project, Kern County, CA (Project #16-SCAO-159)

Dear Ms. Leigh:

The Office of Historic Preservation (OHP) received on November 30, 2016 your letter initiating consultation on the above referenced undertaking under Section 106 of the NHPA, and its implementing regulations found at 36 CFR Part 800. Reclamation proposes to award partial grant funding to the KTWD for their proposed construction of a water delivery and storage system in Kern County, California and to approve a request by KTWD to include a portion of the proposed delivery and storage system area into its service boundary for delivery of Central Valley Project (CVP) water. Reclamation has determined that the overall project, as currently described, constitutes a no adverse effect on historic properties pursuant to 36 CFR 800.5(b). The following documentation was included with the submittal:

- *Figure 1: Project Location; Figure 2: Area of Potential Effects; Figure 3: Existing and Proposed Project Elements.*
- *Cultural Resources Inventory and Paleontological Records Search for the Kern Tulare Water District Oil Field Water Reservoirs and Pipelines Project, Kern County, California. (By: J.B. Lloyd, K. Asselin, M.J. Mirro & S. Lukowski. Applied Earthworks, Inc. Fresno, CA) (For: Quad Knopf, Inc. Fresno, CA)[Draft: July 2015; Added Letter Report October, 2016] [Lloyd 2015]*

The grant is for developing a water delivery and storage system for water produced as a byproduct of oil extraction from nearby oil fields to existing and proposed KTWD facilities. The project will include three underground pipelines, an agricultural turnout and 40 foot pipe connector, and a new reservoir with a total storage capacity of 590 acre-feet. One pipeline is 18 inches and 4.0 miles in length; a second is 24-inches and 0.75 miles in length; and the third is 12 inches and about 1.5 miles in length. The proposed Guzman Reservoir is for storage and will consist of about a 46-foot-high primary and 10-foot-high secondary embankment; an estimated 2,620 cubic yards of earth will be excavated to create the reservoir.

The area of potential effects (APE) is a total area of about 120 acres and consists of all construction related activities for the pipelines and the reservoir. The vertical APE is 6 feet deep and 4 feet wide for the pipeline trenches and 15 feet deep for the reservoir excavation. Staging and materials storage will be on existing roads and at the proposed reservoir site.

On behalf of Reclamation, in order to identify historic properties, KTWD contracted with Applied Earthworks (AE) to conduct a cultural resources inventory in 2015. After this inventory was complete, KTWD determined that the original project APE was financially unviable and reduced the scale of the project to the current APE (Figure 2). AE identified a portion of the Magunden-

Vestal No. 1 and No. 2 Dual Transmission Line system that crosses the current APE. This linear structure section is part of Big Creek Hydroelectric System Historic District (BCHSHD) established between 1909 and 1929 (HAER-CA-167-N) which was evaluated in 1988 as eligible under National Register of Historic Places (NRHP) Criteria A, B, and C and received concurrence (1993). After field checking the identified structure for current integrity levels, AE evaluated it as being eligible for listing in the NRHP under Criteria A and C as a contributor to the BCHSHD. Reclamation agrees with this significance assessment. No surface indications of archaeological resources were located during the inventory. Analysis of depositional characteristics of landform and soils within and surrounding the APE indicates that there is variably low to no potential for encountering intact subsurface cultural resources (Lloyd 2015: pp. 12, 14-23, 33-34, Appendix E: Figure E-1, Sheet 1).

Reclamation contacted the Native American Heritage Commission (NAHC) and sent letters to listed Indian tribes to invite their participation in the Section 106 process and to request their assistance in the identification of sites of religious and cultural significance or historic properties that may be affected by the proposed undertaking. Should any Native American concerns be raised, Reclamation will work to address them and make notifications as required.

The studies identified no archaeological resources within the APE. The evaluation concluded that the Magunden-Vestal No. 1 and No. 2 Dual Transmission Line portion is eligible as a contributor to the Big Creek Hydroelectric System Historic District and that the work proposed for the undertaking will not alter directly or indirectly its contributing historic characteristics.

Reclamation has requested comments on the APE for the proposed undertaking, on the adequacy of the identification efforts, and for concurrence with its evaluations and findings.

After OHP staff review of the documentation, the following comments are offered:

- Pursuant to 36 CFR 800.4(a)(1), there are no objections to the APE as defined;
- Pursuant to 36 CFR 800.4(b), Reclamation has documented a reasonable and good faith effort to identify historic properties within the area of potential effects.
- Pursuant to 36 CFR 800.4(c)(2), **I do not object** that Reclamation finds that the Magunden-Vestal No. 1 and No. 2 Dual Transmission Line portion is eligible for listing in the NRHP under Criteria A and C as a contributor to the eligible BCHSHD.
- Reclamation has determined that the proposed undertaking will result in no adverse effects to the historic properties affected. Pursuant to 36 CFR 800.5(b), **I concur**.

Please be advised that under certain circumstances, such as unanticipated discovery or a change in project description, Reclamation may have additional future responsibilities for this undertaking under 36 CFR Part 800 (as amended). Should you require further information, please contact Jeanette Schulz at Jeanette.Schulz@parks.ca.gov or (916) 445-7031.

Sincerely,



Julianne Polanco
State Historic Preservation Officer