

# RECLAMATION

*Managing Water in the West*

## **Kern County Water Agency Improvement District No. 4 Cross Valley Canal Extension – Pool No. 8 Lining Project**

**WaterSMART: Water and Energy Efficiency Grant  
Bureau of Reclamation, Mid-Pacific Region  
Sacramento, California**

**18-12-MP**



U.S. Bureau of Reclamation  
Mid-Pacific Region  
Sacramento, California

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## **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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# List of Acronyms and Abbreviations

AE .....	Applied EarthWorks, Inc.
AFY .....	Acre-feet per year
APE .....	Area of Potential Effect
CRHR .....	California Register of Historic Resources
CVC .....	Cross Valley Canal
GHG .....	Greenhouse Gas
KCWA .....	Kern County Water Agency
ID4 .....	KCWA Improvement District No. 4
ITA .....	Indian Trust Assets
NAHC .....	Native American Heritage Commission
NHPA .....	National Historic Preservation Act
NRHP .....	National Register of Historic Places
Reclamation .....	U. S. Bureau of Reclamation
SJVAPCD .....	San Joaquin Valley Air Pollution Control District
SVB .....	South Valley Biology Consulting, LLC
USFWS .....	U. S. Fish and Wildlife Service



# Section 1 Introduction

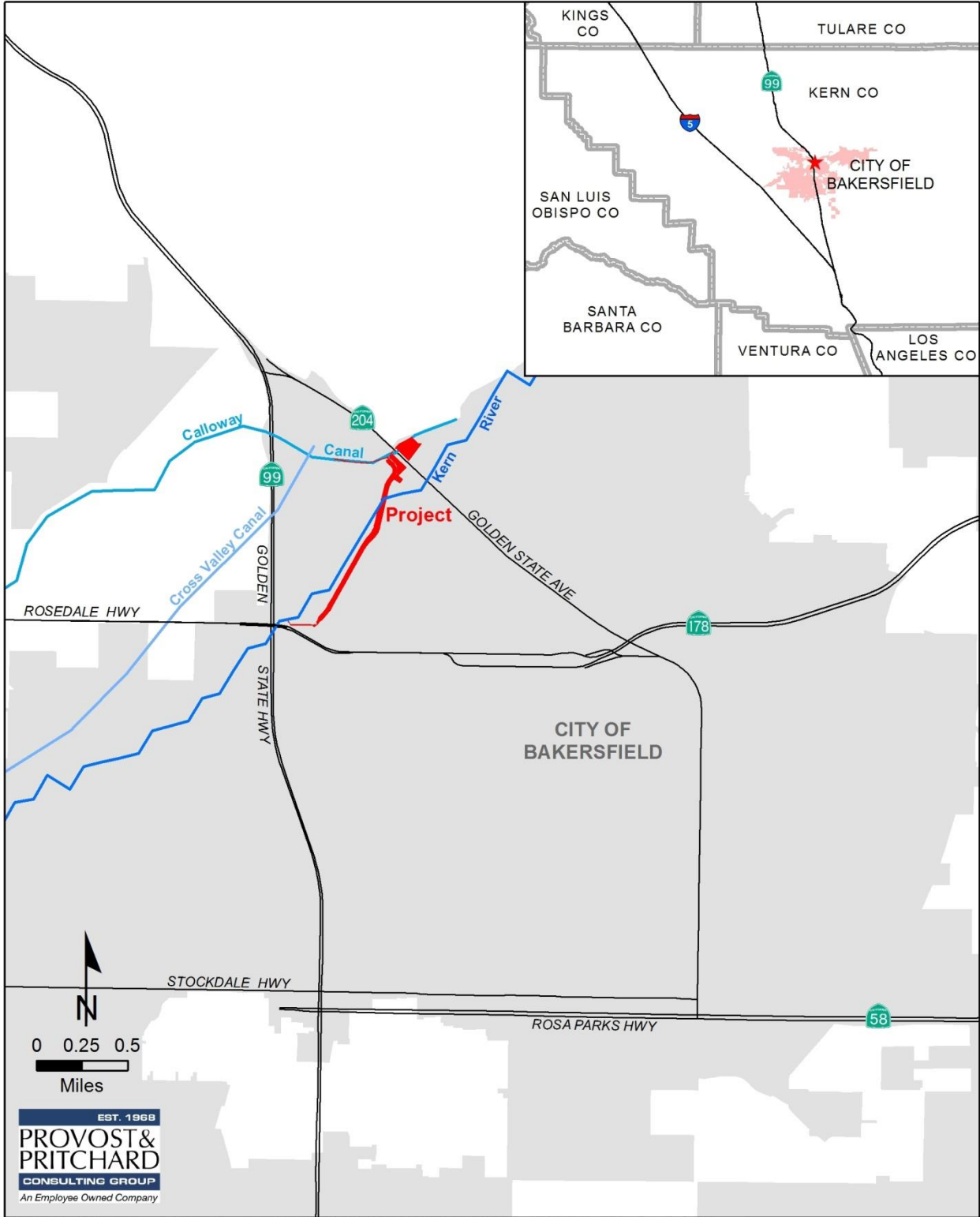
In conformance with the National Environmental Policy Act of 1969, Council on Environmental Quality regulations (40 CFR 1500-1508), and Department of the Interior Regulations (43 CFR Part 46), the Bureau of Reclamation (Reclamation) prepared this environmental assessment to evaluate and disclose potential environmental effects associated with providing federal grant funding to the Kern County Water Agency's Improvement District No. 4 (ID4), for the Cross Valley Canal Extension – Pool 8 Lining Project (Proposed Action). The Proposed Action is located within ID4's service area boundary, and within the City of Bakersfield, in Kern County, California (See Figure 1-1 and Figure 1-2 ).

The Kern County Water Agency operates and maintains the 22-mile-long Cross Valley Canal (CVC). The CVC was constructed in 1976, and is used to deliver surface water supplies to various purveyors and groundwater banking projects within Kern County for agricultural and urban use. Kern County Water Agency expanded the CVC in 2012 and constructed the CVC Extension. The CVC Extension is an approximately three-mile section consisting of Pool No. 7 and No. 8. Pool No. 7 is a two-mile canal and was concrete lined in 2016 and 2017. Pool No. 8 is a one mile canal that remains earthen.

Reclamation proposes to provide federal funding through a WaterSMART Grant to ID4 to install a fiber-reinforced concrete lining to a one mile section of the CVC Extension – Pool No. 8. Pool No. 8 begins at the Hwy 99-Rosedale Hwy siphon north of Riverside Drive and extends north to the intake structure at the Calloway Canal Siphon crossing, upstream of KCWA's Henry C. Garnett Water Purification Plant. The Proposed Action will not expand the existing footprint of the CVC Extension – Pool No. 8. A short segment of Pool No. 8 extending north of Calloway Canal Siphon crossing will remain earthen.

## 1.1 Need for the Proposal

The earthen lining of Pool No. 8 results in a loss of surface water supplies due to seepage into the ground. The long-term average seepage losses are approximately 2,900 acre-feet per year (AFY) based on data from 2004 to 2015. The Proposed Action would line the canal with concrete to reduce seepage losses and thereby retain more water volume delivered in the canal. By converting seepage loss to additional water supply, the Proposed Action will also reduce the need to operate groundwater extraction wells in dry years, thus, conserving energy. Additionally, seepage losses from the CVC Extension can provide more surface water in normal to wet water year types for recharge.



4/21/2017 : G:\Kern County Water Agency-1044\104414B4-WEG CVC Pool 8\GIS\Map\NEPA Pool 8\regional\_vicinity.mxd

Figure 1-1 Regional Vicinity Map





Figure 1-2 Project Area and Access Points

# Section 2 Proposed Action and Alternatives

## 2.1 No Action Alternative

Under the No Action Alternative, Reclamation would not award WaterSMART Grant funding to ID4. Although it is possible ID4 may find alternative sources of funding for the Proposed Action, for the purposes of this environmental assessment, the consequence of Reclamation not providing funding for the Proposed Action would be “no construction of the Proposed Action” and Pool No. 8 would remain an earthen canal. The CVC Extension would continue to provide water to ID4 and Cawelo Water District in its current condition.

## 2.2 Proposed Action

Under the Proposed Action, Reclamation would award a \$1 million WaterSMART – Water and Energy Efficiency Grant to ID4 to assist with funding the CVC Extension - Pool No. 8 Lining Project. The Proposed Action would line an approximately 1 mile segment of Pool No. 8 with concrete. The canal lining would begin near Riverside Drive where an existing box culvert daylighted as an open canal and end at the Calloway Canal siphon crossing (See Figure 1-2). All the work involved with the Proposed Action would be performed in areas that have been previously disturbed or constructed (e.g. the canal prism), and regularly-maintained canal-related infrastructure (e.g. canal levees and adjacent roadways and right-of-way).

### 2.2.1 Construction Activities

Construction Schedule. Construction of the Proposed Action is anticipated to begin in February 2019 and should take approximately six months to complete. Pursuant to Title 9 Public Peace, Morals and Welfare, Chapter 9.22 of the City’s Municipal Code, construction can occur between the hours of 6 a.m. and 9 p.m. weekdays and 8 a.m. to 9 p.m. on weekends. However, construction activities will only take place during day-light hours.

Access and Staging. Access to the work area will be from: (1) Riverside Drive at the southwest end of Pool No. 8 and (2) from Arrow Road at its intersection with the 30-foot wide south levee road of the Calloway Canal to access the northeast end of the Pool No. 8 work area. Two areas adjacent to the canal area will be utilized for staging and stockpiling materials. An approximately 2.3-acre temporary construction easement was obtained from BT Property. This area is immediately adjacent to Pool No. 8 and lies southwest of Golden State Avenue. The temporary easement will be used for equipment, materials, and vehicle staging. The other area, owned by KCWA, is approximately six acres and is located directly across Golden State Avenue. Material excavated from the canal will be spread at the KCWA property. Access to the soil-receiving area would be via the levee roadway along the south edge of the Calloway Canal that extends underneath Golden State Avenue.

Portions of the existing Pool No. 8 right-of-way including north and south access roads will be used for construction equipment access. A 20-foot permanent easement from BT Property will also be used for equipment maneuvering and access.

Canal Lining. Existing vegetation within the canal prism will be cleared and grubbed. The contractor will dispose the material at an approved greenwaste facility. Unclassified soil (up to approximately 3 inches in depth) will be excavated from the canal bottom and relocated to the KCWA property. The excavated soil will be spread across the site which will raise the existing grade one to two feet. The material would be contoured to match the existing grade.

The existing canal prism will be modified to create an engineer-designed profile to accommodate a solid foundation for the concrete lining. The canal prism will be excavated to create staggered benches for the lining foundation. The maximum depth of cut in canal side slopes will be 4-feet. Maximum depth of canal earthwork at the canal bottom will be 3-feet. Approximately 20,000 cubic yards of engineered soil fill will be imported. The material will be imported from an approved borrow source within 10 miles of the project area.

The imported fill material will be mixed with water and newly exposed soil in the canal bottom to help meet compaction requirements. Concrete lining, 4 inches in thickness, will be placed with slip-forms built to match the design cross-section. Hand tools will be used to spread the concrete to a uniform thickness; the canal lining surface will be broom finished. Following construction, the Calloway Canal levee roadway will be re-furbished with a 3-inch depth aggregate base course and all construction related debris will be removed from the site.

Maintenance and Operation. Maintenance activities would be reduced after the canal is lined. Activities would include vegetation removal of the remaining earthen areas and periodic inspections of the levee banks and roadways. Operationally, once lined, the canal will be able to carry additional water to ID4's users. Because surface water delivery would increase, pumping and power consumption will also be reduced.

### **2.2.2 Environmental Commitments**

The following measures will be implemented to reduce effects on traffic, air quality, biological resources, and cultural resources. Environmental consequences for resource areas assume the measures specified would be fully implemented.

- a) All Proposed Action-related vehicle traffic will be restricted to the project area, which is the footprint of the Proposed Action, including staging areas, construction areas, and haul routes on established roads in which noise and dust could occur.
- b) To reduce fugitive dust emissions, workers will implement and comply with the best practices required by the San Joaquin Valley Unified Air Pollution Control District's (SJVAPCD) Rule 8121 and other Regulation VIII Fugitive PM<sub>10</sub> Prohibition Rules deemed applicable for site and construction conditions through the SJVAPCD permitting process, including but not limited to the following:
  - i. Material disturbed by earthwork operations shall be wetted during off-site removal loading operations.
  - ii. Where water is used as the dust suppressant, watering shall be applied to effectively limit Visible Dust Emissions.

- iii. Use of paved access aprons, gravel strips, wheel washers, or other measures designed to limit mud and dirt deposits on public paved roads will be required to minimize the need for removal of mud and dirt from paved public roads.
- c) All KCWA and construction personnel will comply with the measures listed for Construction and On-going Operational Requirements outlined in the U.S. Fish and Wildlife Service's (USFWS) 2011 *Standardized Recommendation for Protection of the Endangered San Joaquin Kit Fox Prior to or During Construction Disturbance*. Additionally, a qualified biologist will be employed, provide training for the contractor's workers, and be available on an on-call basis to assist personnel with implementation of the measures.
- d) Any temporary spoils piles and all other loose dirt, excavations, trenches, etc. that may attract San Joaquin kit foxes (kit fox) shall be fenced appropriately to prevent entry and use by kit foxes. This fencing shall be maintained for the duration of the Proposed Action and shall be checked regularly to make sure no openings or other possible entry points for kit foxes have developed. Any openings in the fencing shall be repaired immediately after it has been determined that no kit fox is inside the enclosure(s).
- e) Any pipes or similar structures/equipment with an opening of 3.5 inches or greater that are staged for this Proposed Action shall be capped prior to staging on the ground to prevent entry and use by kit foxes. If at any time a kit fox or other wildlife of protected status is observed in a pipe or elsewhere in the Proposed Action area, the monitoring biologist shall be contacted and all construction within the vicinity of the kit fox shall be suspended until the animal can be correctly identified. Any kit fox present in the Proposed Action area must be allowed to safely exit the area on its own accord. No attempt to handle, move, or otherwise interact with a kit fox is allowed.
- f) Any kit fox observed that exhibits symptoms of sarcoptic mange shall be promptly reported to the Endangered Species Recovery Program (661) 835-7810. Photographic examples and other oral instruction on sarcoptic mange infection in San Joaquin kit fox will be provided to Proposed Action personnel as a part of the worker education program identified in protection measure letter i) below.
- g) A pre-construction survey for San Joaquin kit fox and any new dens or sign (scat, tracks, prey remains, etc.) of kit fox presence in the Proposed Action area would be conducted by a qualified biologist no sooner than 14 days prior, but no longer than 30 days prior, to the initiation of ground disturbance. If a potential or active den is found, an avoidance buffer will be established, as per USFWS guidelines. If any natal/pupping dens are identified, the USFWS must be notified for guidance.
- h) Appropriate warning signs shall be installed at both entrances to the project area, Riverside Drive and at Arrow Street. The signage shall warn vehicle drivers of the potential presence of San Joaquin kit fox in the area and that a speed limit of 15 mph must be strictly adhered. Although the *January 2011 United States Fish and Wildlife Service Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance* specify a 20-mph speed limit, a 15-mph speed limit will be implemented during Proposed Action activities.
- i) A worker education program shall be provided to all employees, contractors, and any other personnel that will conduct work. At a minimum, this program shall include

information on the identification of the San Joaquin kit fox and its habitat needs, the legal protection status of the kit fox under both Federal and California Endangered Species Acts, the status of kit fox presence in the Proposed Action area, a list of all the measures that will be taken to protect this species during construction, and the penalties specified under the Federal and California Endangered Species Acts for unlawful take of the San Joaquin kit fox.

- j) If there are changes to the Proposed Action, consultation with USFWS will be reinitiated.
- k) If archaeological remains are encountered at any time during development or ground-moving activities within the project area, all work near the find should be halted until a qualified archaeologist can assess the discovery. Such finds include, but are not limited to, prehistoric grinding implements, stone tools, soapstone bowls, and ornaments (e.g., beads, pendants) as well as intact building foundations and high concentrations of historical artifacts.
- l) If human remains are uncovered, or in any other case when human remains are discovered during construction, the Kern County Coroner is to be notified to arrange their proper treatment and disposition. If the remains are identified—based on archaeological context, age, cultural associations, or biological traits—as those of a Native American, California Health and Safety Code 7050.5 and Public Resource Code 5097.98 require that the coroner notify the Native American Heritage Commission within 24 hours of discovery. The Native American Heritage Commission will then identify the most likely descendent who may recommend treatment of the remains.

## **Section 3 Affected Environment and Environmental Consequences**

### **3.1 Resources Not Analyzed in Detail**

Department of the Interior Regulations, Executive Orders, and Reclamation guidelines require a discussion of Indian sacred sites, Indian trust assets, and Environmental Justice, when preparing environmental documentation. Impacts to these resources, as well as, noise effects, were considered and found to be minor or absent. Brief explanations for their elimination from further consideration are provided below.

#### **3.1.1 Indian Sacred Sites**

Executive Order 13007 (May 24, 1996) requires that federal agencies accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, and avoid adversely affecting the physical integrity of such sacred sites. The Proposed Action is not on federal lands, and therefore, will not affect access to or use of Indian sacred sites.

#### **3.1.2 Indian Trust Assets**

Indian trust assets (ITA) are legal interests in assets that are held in trust by the United States for federally recognized Indian tribes or individuals. The nearest ITA is a public land allotment (a

parcel of land or real estate holding that may or may not be affiliated with a particular tribe or is in the process of being recorded) located approximately 36.5 miles east of the project site. The proposed action will have no effect on ITAs (Appendix A).

### **3.1.3 Environmental Justice**

Executive Order 12898 requires each Federal agency to identify and address disproportionately high and adverse human health or environmental effects, including social and economic effects of its programs, policies, and activities on minority and low-income populations. There would be no adverse human health or environmental effects on any population, therefore there would be no disproportionately negative impacts on low-income or minority populations from implementation of the Proposed Action.

### **3.1.4 Noise**

The Proposed Action will not generate an adverse increase in ambient noise pollution; therefore, the impacts are not analyzed in detail. Construction activities associated with the Proposed Action will generate short-term noise expected with general construction activities during the six-month construction period. Construction noise will be temporary and construction activities will comply with applicable noise and construction standards and regulations of the City of Bakersfield to minimize exposure to people in the vicinity. All elevated noise levels and ground borne vibrations will cease upon completion of construction of the project. Following construction, noise related to operation and maintenance activities as described in Chapter 2 will return to ambient levels in the project area. Consequently, the Proposed Action will not adversely impact the noise environment in the vicinity, both during the short-term temporary construction period or during the long-term operation and maintenance of the canal improvements.

## **3.2 Water Resources**

### **3.2.1 Affected Environment**

#### **3.2.1.1 Surface Water**

The CVC begins at the California Aqueduct near the small community of Tupman and conveys water across the valley to meet agricultural and urban demands (through ID4) in addition to delivering surface water for groundwater banking. The CVC Extension conveys surface water from primarily the State Water Project, and recovered groundwater from banking facilities.

The Pool No. 8 earthen lining results in the loss of vital surface water supplies due to seepage into the ground. These losses may be as high as 6,700 AFY in dry years when surface water supplies are already substantially limited. The long-term average seepage losses are approximately 2,900 AFY based on data from 2004 to 2015.

#### **3.2.1.2 Groundwater**

The Proposed Action lies within the Kern County subbasin of the San Joaquin Valley Groundwater Basin. Average precipitation values range from 5 inches at the subbasin interior to

9 to 13 inches at the subbasin margins. Natural groundwater recharge occurs primarily from stream seepage along the eastern subbasin and along the Kern River.

Groundwater level data from the Kern County Water Agency monitoring well nearest the project site indicates depth to groundwater has been slowly and steadily rising for the period 2001 – 2017. This recovery is largely attributable to increased use of surface water for urban and irrigation uses and corresponding reduction in groundwater pumping. Water banking was initiated in the subbasin in 1978, and as of 2000, seven projects contain over 3 million acre-feet of banked water in a combined potential storage volume of 3.9 million acre-feet (Smith, 2016). The Kern County subbasin was included on the California Department of Water Resource’s January 2016 list of “Critically Overdrafted Groundwater Basins” for the North Central and South Central Regions.

### **3.2.2 Environmental Consequences**

The Proposed Action would construct a concrete liner in Pool No. 8 to reduce seepage losses by approximately 2,300 AFY on an average annual basis. The Proposed Action does not create or eliminate surface water or groundwater supplies available to the CVC Extension participants or other users of the groundwater basin. A majority of seepage losses in the CVC Extension are not attributable to the groundwater basin balance, and are not available for use by groundwater basin users other than ID4. Seepage losses in the CVC Extension from participant operations are credited to ID4 and are available for recovery and use by ID4, except for non-State Water Project water conveyed on behalf of other CVC Extension participants. By reducing seepage losses, the Proposed Action will conserve energy by reducing the need for groundwater pumping in dry or drought years and provide more surface water in normal to wet years. Excess wet year water can also be banked via recharge into groundwater banking facilities or the Kern River channel for later extraction when needed.

Reducing seepage losses in dry years allows water supplies to be retained on the surface and groundwater recovery to be reduced. In normal to wet years, water that would have been recharged in the CVC Extension will be available to recharge in more suitable areas, including the Kern River and multiple groundwater banking facilities. Although ID4’s priority is to recharge water in suitable locations within its boundaries, KCWA acknowledges that Kern River capacity may not be available, particularly in wet years, to accommodate recharge in the channel. If the Kern River channel is unavailable, ID4, and the other CVC Extension participant, have sufficient recharge capacity in other facilities to fully accommodate any wet year surface water supplies available for recharge. No new recharge facilities will be needed.

The Proposed Action will beneficially impact water resources by preventing seepage from the CVC extension by approximately 2,300 AFY. As a result, the Proposed Action will conserve energy (from less pumping) and provide more surface water in normal to wet years for recharge into groundwater banking facilities or the Kern River channel. Therefore, there will be no substantial adverse impacts to quantity or quality of water resources.

## 3.3 Air Quality

### 3.3.1 Affected Environment

The Proposed Action is in the San Joaquin Valley Air Basin and is under SJVAPCD jurisdiction. The San Joaquin Valley Air Basin is currently in extreme non-attainment for ozone (O<sub>3</sub>) and in moderate non-attainment for PM<sub>2.5</sub> under both the Federal and State standards, and in non-attainment for PM<sub>10</sub> under the State standard. SJVAPCD is responsible for maintaining and bringing air quality within Federal and State air quality standards.

The Environmental Protection Agency issued the General Conformity Rule to ensure that actions taken by federal agencies do not interfere with State Implementation Plan to attain and maintain national standards for air quality. A conformity determination is required for each pollutant where the total of direct and indirect emissions caused by a Federal action in a non-attainment (or maintenance) area exceeds *de minimus* rates listed in the rule (40 CFR 93.153).

SJVAPCD requires all projects to comply with Regulation VIII Fugitive Dust Rule through the submittal and approval of a Dust Control Plan (SJVAPCD 2017). The Dust Control Plan will stipulate actions to be taken to control fugitive dust emissions. Regulation VIII control measures typically require soil stabilization, trackout control, and the use of water with all “land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities” for fugitive dust suppression and other best management practices deemed appropriate by SJVAPCD for the site-specific conditions and construction activities.

### 3.3.2 Environmental Consequences

Short-term effects on air quality would occur during construction activities. Criteria pollutants would be generated from fugitive dust and during the operation of construction equipment. Ground disturbing activities would result in the temporary emissions of fugitive dust and vehicle combustion pollutants during earthwork activities and construction equipment and haul truck engine emissions. Fugitive dust is a source of airborne particulates, including PM<sub>10</sub> and PM<sub>2.5</sub>. Standard best management practices, such as stabilizing unpaved roads and stockpiles, pavement track out sweeping, limiting vehicle speeds on unpaved roads, and vehicle maintenance will be implemented to minimize these impacts.

Operation of large earth-moving equipment, trucks, and other mobile sources powered by diesel or gasoline are also sources of criteria pollutants, including nitrogen dioxide (NO<sub>2</sub>), carbon monoxide (CO), volatile organic compounds (VOC)/ reactive organic gas (ROG) (as an ozone precursor), and sulfur dioxide (SO<sub>x</sub>). Emissions generated by construction, and operation and maintenance activities were calculated using CalEEMOD, Version 2016.3.1. (See Appendix B for full model run outputs). As shown in Table 1 and Table 2, the CalEEMod-estimated emissions for the Proposed Action during construction, operation and maintenance would not produce emissions that are greater than the GCR *de minimus* thresholds. Therefore, the proposed action is consistent with the EPA-approved State Implementation Plan and a written Conformity Determination is not required. In addition, emissions would not exceed SJVAPCD thresholds for non-attainment pollutants. Regardless of significance determination, SJVAPCD requires all construction projects to implement Regulation VIII control measures for construction emissions



of PM<sub>10</sub> as best management practices. A Fugitive Dust Control Plan would be submitted to the SJVAPCD for approval prior to construction.

Table 1 – CalEEMod-Estimated Construction Generated Emissions-Pool No. 8 Lining Project

<b>Pollutant</b>	<b>Construction (tons/year)</b>	<b>General Conformity <i>De Minimis</i> Threshold (tons/year)</b>	<b>SJVAPCD Recommended Thresholds of Significant Impact (tons/year)</b>
VOC/ROG	0.3899	10	10
NO <sub>x</sub>	4.1062	10	10
Carbon dioxide equivalents (CO <sub>2</sub> e)	408.6887	-	-
PM <sub>10</sub>	0.7895	100	15
PM <sub>2.5</sub>	0.4942	100	15
CO	2.3939	100	100
SO <sub>x</sub>	0.00443	100	27

Modeled using CalEEMOD version 2016.3.1. (Appendix B)

Table 2 – CalEEMod-Estimated Operation and Maintenance Generated Emissions-Pool No. 8 Lining Project

<b>Pollutant</b>	<b>Construction (tons/year)</b>	<b>General Conformity <i>De Minimis</i> Threshold (tons/year)</b>	<b>SJVAPCD Recommended Thresholds of Significant Impact (tons/year)</b>
VOC/ROG	.0037300	10	10
NO <sub>x</sub>	0.0000	100	10
Carbon dioxide equivalents (CO <sub>2</sub> e)	0.00002	-	-
PM <sub>10</sub>	0.0000	100	15
PM <sub>2.5</sub>	0.0000	100	15
CO	0.00001	100	100
SO <sub>2</sub>	0.0000	100	27

Modeled using CalEEMOD version 2016.3.1. (Appendix B)

### 3.4 Climate Change

Climate change is the change in global or regional climate patterns (e.g., temperature, precipitation, or wind). Gases that trap heat in the atmosphere are often called greenhouse gases (GHG). Some GHG such as (CO<sub>2</sub>) 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 GHGs that enter the atmosphere because of human activities are: CO<sub>2</sub>, methane (CH<sub>4</sub>), nitrous oxides (N<sub>2</sub>O), and fluorinated gasses (EPA,

2010). Many environmental changes (changes in sun's intensity, changes in ocean circulation, deforestation, urbanization, burning fossil fuels, etc.) can contribute to rising greenhouse gas levels (EPA, 2010).

During the past century, humans have substantially added to the amount of GHG in the atmosphere by burning fossil fuels such as coal, natural gas, and oil. The added GHG, primarily CO<sub>2</sub> and CH<sub>4</sub>, to the atmosphere is enhancing the natural greenhouse effect and has contributed to an increase in the global average temperature and humidity, as well as, a change to wind and precipitation patterns, and seasons.

### **3.4.1 Affected Environment**

More than 20 million Californians rely on regulated delivery of water resources such as the State Water Project and the Central Valley Project, as well as established water rights from rivers. 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 the State's water resources and operations. While there is consensus in their trend, the magnitudes and onset-timing of temperature rise, changing precipitation pattern, sea-level rise, soil moisture retention and additional climate change related impacts are uncertain and are scenario-dependent.

The SJVAPCD provides guidance for addressing greenhouse gas emissions. The SJVAPCD guidance for evaluating GHG significance states that projects implementing best performance standards or would reduce project specific GHG emissions by at least 29 percent compared to "business as usual" and are consistent with GHG emissions reduction targets established in the AB 32 Scoping Plan. Project implementing these measures would have a less than significant individual and cumulative impact on global climate change.

### **3.4.2 Environmental Consequences**

The Proposed Action would involve short-term effects consisting of emissions during construction and long-term effects attributable to operations including as-needed maintenance employee trips to the site and groundwater pumping. Construction related emissions would be limited to a six-month construction period as presented in Tables 1 and 2. The estimated GHG emission due to construction activities is 408.69 metric tons/year of carbon dioxide equivalents (reference Appendix B). The estimated GHG emissions due to on-going operation and maintenance activities are 0.00002 metric tons/year of carbon dioxide equivalents. GHG emissions from the construction and maintenance of the canal would be negligible and would not significantly increase regional GHG inventories.

It should be noted that although CO<sub>2</sub> emissions can now be calculated, there is no Federal standard, nor State or local threshold. However, the SJVAPCD has guidance for addressing GHG emission impacts and recommends implementing best performance standards to have a less than significant individual and cumulative impact on global climate change. Therefore, the contractor would be required to implement the following:

- Use alternative-fueled (e.g. biodiesel, electric) construction vehicles/equipment for at least 15 percent of the fleet.

- Recycle at least 50 percent of construction waste.
- Use at least 10 percent local building materials (from within 100 miles of the project area).

## 3.5 Biological Resources

### 3.5.1 Affected Environment

The project area includes 5,280 linear feet of the existing 60-ft wide Pool No. 8 earthen canal, equipment staging, work area access, travel, and soil haul routes, excavated canal-bottom soil disposal area, and a buffer around those activities in which noise and dust could occur. The project area consists of lands which have all been previously heavily disturbed by construction and are subject to frequent and periodic canal and ground maintenance activities. The present land use surrounding the project area consists of urban commercial and residential development, highways, shoulders and other existing canal and water treatment infrastructure.

A list of species protected by the Endangered Species Act of 1973 (as amended) was generated using the USFWS IPaC website. There are no designated critical habitats in the project area. According to the list, the following 11 listed species have the potential to be present in the project area:

- San Joaquin kit fox (*Vulpes macrotis mutica*),
- Tipton kangaroo rat (*Dipodomys nitratooides nitratooides*),
- southwestern willow flycatcher (*Empidonax traillii extimus*),
- yellowbilled cuckoo (*Coccyzus americanus*),
- blunt-nosed leopard lizard (*Gambelia sila*),
- giant garter snake (*Thamnophis gigas*),
- California red-legged frog (*Rana draytonii*),
- delta smelt (*Hypomesus transpacificus*),
- vernal pool fairy shrimp (*Branchinecta lynchi*),
- Bakersfield cactus (*Opuntia treleasei*), and
- San Joaquin woolly-threads (*Monolopia congdonii*).

Of the listed species, Tipton kangaroo rat, southwestern willow flycatcher, yellow-billed cuckoo, blunt-nosed leopard lizard, giant garter snake, California red-legged frog, delta smelt, vernal pool fairy shrimp, Bakersfield cactus, and San Joaquin woollythreads have no potential to occur because the project area is outside the species' known range and suitable habitat is absent.

South Valley Biology Consulting, LLC (SVB) biologists surveyed the project area March 22 and 23, 2017. The survey consisted of both driving and walking areas of the project area. Due to the highly-disturbed conditions within the project area and the results of the field survey, SVB determined there is potential suitable habitat for the kit fox.

### **3.5.1.1 San Joaquin Kit Fox**

Kit foxes historically ranged in alkali scrub/shrub and arid grasslands throughout the level terrain of the San Joaquin Valley floor from southern Kern County north to Tracy in San Joaquin County, and up into more gradual slopes of the surrounding foothills and adjoining valleys of the interior Coast Range. Within this range, kit foxes are associated with areas having open, level, sandy ground that is relatively stone-free to depths of about 3 – 4.5 feet. Kit foxes are generally nocturnal and utilize subsurface dens, which may extend to six feet or more below ground surface, for shelter and for reproduction. Kit foxes are absent or scarce in areas where soils are shallow due to high water tables, impenetrable hardpans, or proximity to parent material, such as bedrock. Kit foxes also do not den in saturated soils or in areas subjected to periodic flooding (USFWS 2010).

Kit foxes are highly adaptable, intelligent mammal. This species has adapted to living near humans, and have learned how to escape predators by using a variety of human structures such as pipes, building foundations, and road culverts. The urban Bakersfield population appears to be stable or even expanding, numbering from 200 to 400 individuals. This makes the Bakersfield population of kit foxes one of the most important populations.

No kit fox, or signs of their past presence (no individuals, potential dens, known dens, scat, tracks, prey remains, etc.), were observed during the SVB survey. However, SVB biologists have observed kit foxes foraging and denning within 0.25 miles of the project area (SVB 2012). Additionally, the records search performed by SVB found that areas such as canal rights-of-way are often used by kit foxes for denning and movement areas during foraging runs. It is reasonable to expect that kit foxes are present in the project area as a transient forager or while moving to and from feeding sources such as neighboring businesses, restaurants, and other artificial sources of food. The absence of burrows within the project area that support normal prey species such kangaroo rats and mice make it more likely that kit foxes would only pass through the project area while moving to more desirable feeding areas.

### **3.5.2 Environmental Consequences**

Implementation of the Proposed Action could result in a temporary disturbance due to construction and excavation, equipment movement activities, and installation concrete. Short term effects, such as disturbance from noise and vibrations from heavy equipment could affect kit foxes, if they are present.

Effects on kit foxes would be reduced since all project construction activities will be conducted during daylight hours when kit foxes not actively foraging. However, urban kit foxes within the Bakersfield area do not always adhere to nighttime foraging only and have been observed during daylight hours. If kit foxes are active during the day, they could be struck by vehicles or construction equipment, resulting in injury or mortality. The environmental commitments c. – f. in Section 2.2.2 have been incorporated into the project to reduce the potential for injury, or interference with movement.

The implementation of the environmental commitments will reduce potential effects to kit foxes during construction. Upon completion of the project, Proposed Action would not prohibit kit

foxes from using the area as a potential movement corridor and it would not change the habitat encountered during dispersal.

Indirect effects to kit foxes could occur from possible vehicle strikes related to vehicles traveling on the Calloway Canal and Pool No. 8 levee roads to conduct ongoing operations monitoring and maintenance activities. However, operational inspections and maintenance efforts of the canal banks will be reduced because of the concrete lining. The concrete lining would make the canal more stable and reduce weed growth, therefore, reducing the frequency of vehicle trips to perform maintenance. Due to the reduced maintenance needs, the potential indirect effect on kit foxes is expected to be less than existing conditions.

### **3.6 Cultural Resources**

The area of potential effects (APE) consists of the approximately one-mile length of Pool No. 8 to be concrete lined and the staging and soil stockpile areas. The vertical APE is considered to be no more than 4-feet along the canal bank and slope, and 3-feet at the bottom of the canal. Activities associated with the implementation of the Proposed Action will include areas that have been previously disturbed from the construction of the canal, including the canal prism, and adjacent areas used for access, staging, operations and maintenance. The Proposed Action must comply with Section 106 of the National Historic Preservation Act of 1966, as amended. The act mandates government agencies consider the effects of their actions on important cultural resources.

Reclamation coordinated with Applied EarthWorks, Inc. (AE) to conduct background research, complete a records search, assess the potential for buried sites, and conduct a cultural resources survey within the Proposed Action APE. The records search revealed historic properties, State Route (SR) 204/ U.S. Highway 99 (P-15-018885) and the Calloway Canal Bridge (No. 50-0209) are within the APE. The Calloway Canal (P-15-007233/CA-KER-8810H) is immediately adjacent to an entrance/exit road that will be used to access the APE. However, the canal has been previously evaluated as not eligible for listing on the California Register of Historic Resources (CRHR) or National Register of Historic Places (NRHP). AE's pedestrian survey resulted in no archaeological resources being identified within the APE.

Consistent with state and federal statutes, if archaeological remains are encountered during ground-disturbing activities within any portion of the Proposed Action area, all work near the find would be halted until a qualified archaeologist can evaluate the discovery. In addition, if human remains are uncovered during construction, they will be treated in accordance to the provisions of the Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C 3001) and the Kern County Coroner is to be notified to arrange their proper treatment and disposition. If human remains are discovered on lands owned by any other non-federal entity, they will be treated in accordance to the provisions in the California Health and Safety Code (HSC 7050.5).

#### **3.6.1 Environmental Consequences**

SR 204 is eligible for listing on the CRHR/NRHP under Criteria 1/A. The Calloway Canal Bridge is also eligible for CRHR/NRHP listing as a contributing element of SR 204. However,

no alterations, modifications, improvements, or changes are planned for either SR 204 or the bridge and neither will be visually affected or directly impacted by the Proposed Action. The Calloway Canal is not eligible for listing on either the CRHR or NRHP. AE's pedestrian archaeological and built-environment survey did not identify any additional historic properties within the APE. Therefore, there will be no historic properties affected by the Proposed Action.

Unless the Proposed Action changes to encompass other areas not surveyed during this inventory, no further studies are recommended. The following recommendations have been incorporated into the project description:

1. If archaeological remains are encountered at any time during development or ground-moving activities within the Proposed Action area, all work near the find should be halted until a qualified archaeologist can assess the discovery. Such finds include, but are not limited to, prehistoric grinding implements, stone tools, soapstone bowls, and ornaments (e.g., beads, pendants) as well as intact building foundations and high concentrations of historical artifacts.
2. If human remains are uncovered, or in any other case when human remains are discovered during construction, the Kern County Coroner is to be notified to arrange their proper treatment and disposition. If the remains are identified—based on archaeological context, age, cultural associations, or biological traits—as those of a Native American, California Health and Safety Code 7050.5 and Public Resource Code 5097.98 require that the coroner notify the NAHC within 24 hours of discovery. The NAHC will then identify the Most Likely Descendent who may recommend treatment of the remains.

### **3.7 Cumulative Impacts**

According to Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA, a cumulative impact is defined as:

*The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).*

The Proposed Action is exempt from General Conformity Regulations and will have no effect on cultural resources, ITAs, Indian sacred sites, or environmental justice. GHG emissions generated by the Proposed Action would predominantly be in the form of CO<sub>2</sub>. SJVAPCD guidance for evaluating GHG significance states that emission reductions achieved through implementation of best performance standards would have a less than significant cumulative impact on climate change. The project would incorporate best performance standards (as described in section 3.4.2) which would reduce GHG impacts. In addition, the Proposed Action would also lead to fewer vehicle trips to and from site, reducing CO<sub>2</sub> emissions. The area surrounding the Proposed Action is expected to remain the same and no significant changes in GHG emissions would

occur. There are no adverse impacts associated with implementing the Proposed Action, and therefore there are no cumulative effects to consider.

## **Section 4 Consultation and Coordination**

### **4.1 Agencies and Persons Consulted**

Reclamation has consulted with the following regarding the Proposed Action:

- Kern County Water District
- Provost & Pritchard Consulting Group
- U.S. Fish and Wildlife Service
- California Office of Historic Preservation

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

Section 7 of the Endangered Species Act requires Federal agencies 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. In a memo dated February 2018, Reclamation requested written concurrence from the Service that the Proposed Action may affect, but is not likely to adversely affect, the San Joaquin kit fox.

### **4.3 National Historic Preservation Act (54 USC § 306108)**

Reclamation consulted under Title 54 USC § 306108, commonly known as Section 106 of the NHPA, which requires federal agencies to consider the effects of their undertakings on historic properties that are eligible for inclusion in the National Register. The 36 CFR Part 800 regulations implement Section 106 of the NHPA. Reclamation determined that there would be no historic properties affected by the Proposed Action pursuant to 36 CFR § 800.4(d)(1) and consulted with the State Historic Preservation Officer on this finding (Appendix C).

## Section 5 References

- California Emissions Estimator Model (CalEEMod). 2013. Windows Version 2016.3.1. February, 2017.
- Smith, J. 2016. Improving Water Management through Groundwater Banking: Kern County and the Rosedale-Rio Bravo Water Storage District. Pacific Institute Farm Water Success Stories: Groundwater Banking. Page 3. Accessed 3 May 2017. <http://docplayer.net/24406483-Improving-water-management-through-groundwater-banking-kern-county-and-the-rose-dale-rio-bravo-water-storage-district.html>
- San Joaquin Valley Groundwater Basin Kern County Subbasin. California Groundwater: Bulletin 118. 2006. Accessed 3 May 2017. [http://www.water.ca.gov/pubs/groundwater/bulletin\\_118/basindescriptions/5-22.14.pdf](http://www.water.ca.gov/pubs/groundwater/bulletin_118/basindescriptions/5-22.14.pdf)
- SJVAPCD, Recommended Thresholds of Significant Impact. Accessed 3 May, 2017. <http://www.valleyair.org/transportation/ceqaanalysislevels.htm#thresholds>
- South Valley Biology Consulting LLC. 2012. Biological report for the Kern County Water Agency Improvement District Number 4 modifications to the precipitated solids beds. August 7, 2012.
- United States Fish and Wildlife Service. 2010. San Joaquin kit fox (*Vulpes macrotis mutica*) 5-year review: Summary and evaluation. U.S. Fish and Wildlife Service, Sacramento, CA. 121pp.



# **Appendix A**

## **Indian Trust Assets**

## Indian Trust Assets Request Form

\*\*Please send your request to: Kevin Clancy

**Date:**

<b>Requested by</b>	Jamie LeFevre, x 5035
<b>Fund</b>	14XR0680A1
<b>WBS</b>	RY30180006FIDCA4E
<b>Cost Center</b>	2015200
<b>Region # (if other than MP)</b>	(NA)
<b>Project Name</b>	The Kern County Water Agency, Cross Valley Canal Extension Lining Project
<b>CEC or EA Number</b>	
<b>Project Description</b>	The project would install 5,280 lineal feet of fiber-reinforced concrete lining on an existing earthen canal to reduce seepage and improve water reliability.
<b>*Project Location (Township, Range, Section, e.g., T12 R5E S10, or XY cords)</b>	The project would take place within the City of Bakersfield, Kern County, California (Figure 1). The western end of the canal is located east of Coffee Rd at Brimhall Rd. The eastern end of the canal is located near Arrow St at Rio Mirada Dr.

\*Please include map with request, if available.

**ITA Determination:**

The closest ITA to the proposed The Kern County Water Agency, Cross Valley Canal Extension Lining Project is public land allotment (a parcel of land or real estate holding, that may or may not be affiliated with a particular tribe or is in the process of being recorded) which is approximately 37 miles east of the project site. (See attached image).

Based on the nature of the planned work it does not appear to be in an area that will impact Indian hunting or fishing resources or water rights nor is the proposed activity on actual Indian lands. It is reasonable to assume that the proposed action will not have any impacts on ITAs.

<u><i>K. Clancy</i></u>	<u>Kevin Clancy</u>	<u>01/05/2017</u>
Signature	Printed name of approver	Date

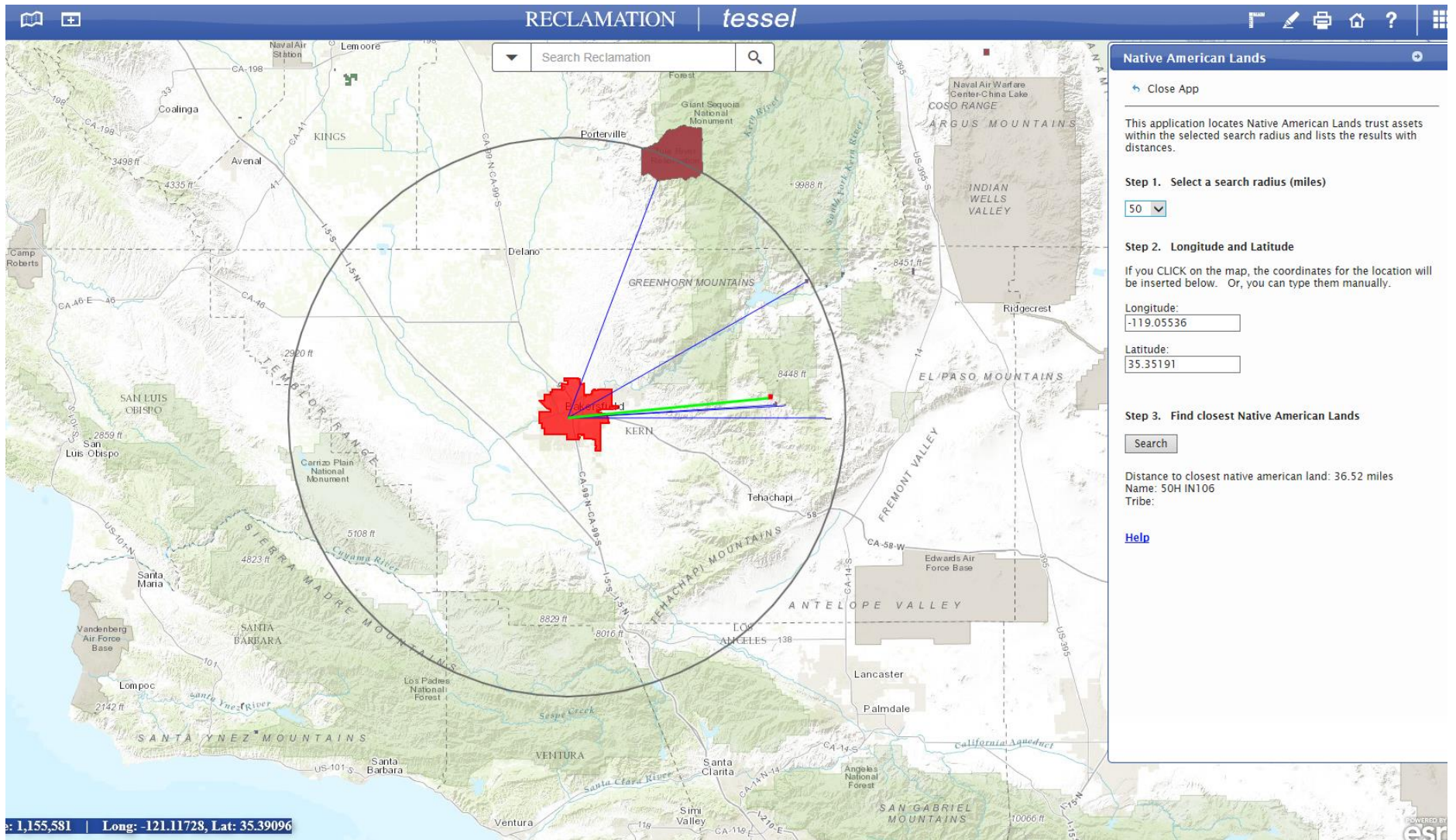


Figure 1. Kern County Water Agency Boundaries

# **Appendix B**

## **CalEEMod Air Quality Model Run Outputs**

**KCWA - CVC Pool 8**  
**Kern-San Joaquin County, Annual**

## 1.0 Project Characteristics

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### 1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	1.00	Acre	19.00	43,560.00	0

### 1.2 Other Project Characteristics

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.7	<b>Precipitation Freq (Days)</b>	32
<b>Climate Zone</b>	7			<b>Operational Year</b>	2019
<b>Utility Company</b>	Southern California Edison				
<b>CO2 Intensity (lb/MW hr)</b>	702.44	<b>CH4 Intensity (lb/MW hr)</b>	0.029	<b>N2O Intensity (lb/MW hr)</b>	0.006

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - ~19 acres

Construction Phase - 6 month construction period

Off-road Equipment - excavator, service truck, water truck and grader

Off-road Equipment - excavator, service truck

Off-road Equipment - 2 compactors, 1 grader, 1 water truck

Off-road Equipment - 1 excavator, 1 service truck

Grading - 19 total acres

Trips and VMT - 6 construction workers for most phases, 10 for the main construction period.  
 1,038 loads, to move 16,000 cubic yards of import with a 16 cubic yard truck

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	300.00	66.00
tblConstructionPhase	NumDays	20.00	16.00
tblConstructionPhase	NumDays	30.00	65.00
tblConstructionPhase	NumDays	10.00	16.00
tblConstructionPhase	PhaseEndDate	8/31/2017	12/22/2017
tblConstructionPhase	PhaseEndDate	8/31/2017	9/22/2017
tblConstructionPhase	PhaseEndDate	8/31/2017	3/1/2018
tblConstructionPhase	PhaseEndDate	8/31/2017	9/22/2017
tblConstructionPhase	PhaseStartDate	9/1/2017	9/22/2017
tblConstructionPhase	PhaseStartDate	9/1/2017	12/1/2017
tblGrading	AcresOfGrading	162.50	19.00
tblGrading	MaterialImported	0.00	16,000.00
tblLandUse	LotAcreage	1.00	19.00
tblOffRoadEquipment	HorsePower	402.00	81.00
tblOffRoadEquipment	HorsePower	187.00	158.00
tblOffRoadEquipment	HorsePower	172.00	187.00
tblOffRoadEquipment	HorsePower	402.00	97.00
tblOffRoadEquipment	HorsePower	158.00	247.00
tblOffRoadEquipment	LoadFactor	0.38	0.73
tblOffRoadEquipment	LoadFactor	0.41	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.42	0.41
tblOffRoadEquipment	LoadFactor	0.38	0.37
tblOffRoadEquipment	LoadFactor	0.38	0.40
tblOffRoadEquipment	OffRoadEquipmentType	Concrete/Industrial Saws	Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType	Graders	Other Construction Equipment

tblOffRoadEquipment	OffRoadEquipmentType	Tractors/Loaders/Backhoes	Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType	Rubber Tired Dozers	Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblProjectCharacteristics	OperationalYear	2018	2019
tblTripsAndVMT	HaulingTripNumber	2,000.00	1,038.00
tblTripsAndVMT	VendorTripNumber	7.00	0.00
tblTripsAndVMT	WorkerTripNumber	18.00	20.00
tblTripsAndVMT	WorkerTripNumber	13.00	12.00
tblTripsAndVMT	WorkerTripNumber	28.00	12.00
tblTripsAndVMT	WorkerTripNumber	23.00	12.00

## 2.0 Emissions Summary

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**2.2 Overall Operational**

**Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.7300e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>3.7300e-003</b>	<b>0.0000</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.0000e-005</b>	<b>2.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.0000e-005</b>

## 2.2 Overall Operational

### Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	3.7300e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>3.7300e-003</b>	<b>0.0000</b>	<b>1.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.0000e-005</b>	<b>2.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.0000e-005</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

## 3.0 Construction Detail

### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Building Construction	Building Construction	9/22/2017	12/22/2017	5	66	
2	Demolition	Demolition	9/1/2017	9/22/2017	5	16	
3	Grading	Grading	12/1/2017	3/1/2018	5	65	
4	Site Preparation	Site Preparation	9/1/2017	9/22/2017	5	16	

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 19**

**Acres of Paving: 19**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)**

**OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Graders	1	8.00	187	0.41
Demolition	Excavators	1	8.00	158	0.38
Demolition	Off-Highway Trucks	1	8.00	81	0.73
Grading	Graders	1	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Architectural Coating	Excavators	1	8.00	158	0.38
Architectural Coating	Off-Highway Trucks	2	8.00	402	0.38
Grading	Off-Highway Trucks	1	8.00	402	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Other Construction Equipment	2	8.00	187	0.41
Grading	Excavators	2	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Off-Highway Trucks	1	8.00	97	0.37
Site Preparation	Excavators	1	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Welders	1	8.00	46	0.45
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37

**Trips and VMT**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Building Construction	9	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	5	12.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	11	12.00	0.00	1,038.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	9	12.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

### 3.1 Mitigation Measures Construction

### 3.2 Building Construction - 2017

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1028	0.8763	0.6000	8.9000e-004		0.0590	0.0590		0.0554	0.0554	0.0000	79.3626	79.3626	0.0196	0.0000	79.8515
<b>Total</b>	<b>0.1028</b>	<b>0.8763</b>	<b>0.6000</b>	<b>8.9000e-004</b>		<b>0.0590</b>	<b>0.0590</b>		<b>0.0554</b>	<b>0.0554</b>	<b>0.0000</b>	<b>79.3626</b>	<b>79.3626</b>	<b>0.0196</b>	<b>0.0000</b>	<b>79.8515</b>

### 3.2 Building Construction - 2017

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5800e-003	2.6400e-003	0.0257	6.0000e-005	5.3200e-003	4.0000e-005	5.3600e-003	1.4100e-003	4.0000e-005	1.4500e-003	0.0000	5.3658	5.3658	1.9000e-004	0.0000	5.3706
<b>Total</b>	<b>3.5800e-003</b>	<b>2.6400e-003</b>	<b>0.0257</b>	<b>6.0000e-005</b>	<b>5.3200e-003</b>	<b>4.0000e-005</b>	<b>5.3600e-003</b>	<b>1.4100e-003</b>	<b>4.0000e-005</b>	<b>1.4500e-003</b>	<b>0.0000</b>	<b>5.3658</b>	<b>5.3658</b>	<b>1.9000e-004</b>	<b>0.0000</b>	<b>5.3706</b>

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1028	0.8763	0.6000	8.9000e-004		0.0590	0.0590		0.0554	0.0554	0.0000	79.3625	79.3625	0.0196	0.0000	79.8514
<b>Total</b>	<b>0.1028</b>	<b>0.8763</b>	<b>0.6000</b>	<b>8.9000e-004</b>		<b>0.0590</b>	<b>0.0590</b>		<b>0.0554</b>	<b>0.0554</b>	<b>0.0000</b>	<b>79.3625</b>	<b>79.3625</b>	<b>0.0196</b>	<b>0.0000</b>	<b>79.8514</b>

### 3.2 Building Construction - 2017

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.5800e-003	2.6400e-003	0.0257	6.0000e-005	5.3200e-003	4.0000e-005	5.3600e-003	1.4100e-003	4.0000e-005	1.4500e-003	0.0000	5.3658	5.3658	1.9000e-004	0.0000	5.3706
<b>Total</b>	<b>3.5800e-003</b>	<b>2.6400e-003</b>	<b>0.0257</b>	<b>6.0000e-005</b>	<b>5.3200e-003</b>	<b>4.0000e-005</b>	<b>5.3600e-003</b>	<b>1.4100e-003</b>	<b>4.0000e-005</b>	<b>1.4500e-003</b>	<b>0.0000</b>	<b>5.3658</b>	<b>5.3658</b>	<b>1.9000e-004</b>	<b>0.0000</b>	<b>5.3706</b>

### 3.3 Demolition - 2017

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0272	0.2793	0.1307	2.3000e-004		0.0145	0.0145		0.0135	0.0135	0.0000	20.8180	20.8180	5.4400e-003	0.0000	20.9540
<b>Total</b>	<b>0.0272</b>	<b>0.2793</b>	<b>0.1307</b>	<b>2.3000e-004</b>		<b>0.0145</b>	<b>0.0145</b>		<b>0.0135</b>	<b>0.0135</b>	<b>0.0000</b>	<b>20.8180</b>	<b>20.8180</b>	<b>5.4400e-003</b>	<b>0.0000</b>	<b>20.9540</b>



### 3.3 Demolition - 2017

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.2000e-004	3.8000e-004	3.7400e-003	1.0000e-005	7.7000e-004	1.0000e-005	7.8000e-004	2.1000e-004	1.0000e-005	2.1000e-004	0.0000	0.7805	0.7805	3.0000e-005	0.0000	0.7812
<b>Total</b>	<b>5.2000e-004</b>	<b>3.8000e-004</b>	<b>3.7400e-003</b>	<b>1.0000e-005</b>	<b>7.7000e-004</b>	<b>1.0000e-005</b>	<b>7.8000e-004</b>	<b>2.1000e-004</b>	<b>1.0000e-005</b>	<b>2.1000e-004</b>	<b>0.0000</b>	<b>0.7805</b>	<b>0.7805</b>	<b>3.0000e-005</b>	<b>0.0000</b>	<b>0.7812</b>

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0272	0.2793	0.1307	2.3000e-004		0.0145	0.0145		0.0135	0.0135	0.0000	20.8180	20.8180	5.4400e-003	0.0000	20.9540
<b>Total</b>	<b>0.0272</b>	<b>0.2793</b>	<b>0.1307</b>	<b>2.3000e-004</b>		<b>0.0145</b>	<b>0.0145</b>		<b>0.0135</b>	<b>0.0135</b>	<b>0.0000</b>	<b>20.8180</b>	<b>20.8180</b>	<b>5.4400e-003</b>	<b>0.0000</b>	<b>20.9540</b>

### 3.3 Demolition - 2017

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.2000e-004	3.8000e-004	3.7400e-003	1.0000e-005	7.7000e-004	1.0000e-005	7.8000e-004	2.1000e-004	1.0000e-005	2.1000e-004	0.0000	0.7805	0.7805	3.0000e-005	0.0000	0.7812
<b>Total</b>	<b>5.2000e-004</b>	<b>3.8000e-004</b>	<b>3.7400e-003</b>	<b>1.0000e-005</b>	<b>7.7000e-004</b>	<b>1.0000e-005</b>	<b>7.8000e-004</b>	<b>2.1000e-004</b>	<b>1.0000e-005</b>	<b>2.1000e-004</b>	<b>0.0000</b>	<b>0.7805</b>	<b>0.7805</b>	<b>3.0000e-005</b>	<b>0.0000</b>	<b>0.7812</b>

### 3.4 Grading - 2017

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2070	0.0000	0.2070	0.1089	0.0000	0.1089	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0724	0.8244	0.4791	7.8000e-004		0.0384	0.0384		0.0353	0.0353	0.0000	71.9931	71.9931	0.0221	0.0000	72.5445
<b>Total</b>	<b>0.0724</b>	<b>0.8244</b>	<b>0.4791</b>	<b>7.8000e-004</b>	<b>0.2070</b>	<b>0.0384</b>	<b>0.2453</b>	<b>0.1089</b>	<b>0.0353</b>	<b>0.1441</b>	<b>0.0000</b>	<b>71.9931</b>	<b>71.9931</b>	<b>0.0221</b>	<b>0.0000</b>	<b>72.5445</b>

### 3.4 Grading - 2017

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.7000e-003	0.0566	7.8900e-003	1.4000e-004	7.4300e-003	2.9000e-004	7.7300e-003	1.9100e-003	2.8000e-004	2.1900e-003	0.0000	13.2589	13.2589	8.8000e-004	0.0000	13.2808
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.8000e-004	5.0000e-004	4.9100e-003	1.0000e-005	1.0200e-003	1.0000e-005	1.0200e-003	2.7000e-004	1.0000e-005	2.8000e-004	0.0000	1.0244	1.0244	4.0000e-005	0.0000	1.0253
<b>Total</b>	<b>2.3800e-003</b>	<b>0.0571</b>	<b>0.0128</b>	<b>1.5000e-004</b>	<b>8.4500e-003</b>	<b>3.0000e-004</b>	<b>8.7500e-003</b>	<b>2.1800e-003</b>	<b>2.9000e-004</b>	<b>2.4700e-003</b>	<b>0.0000</b>	<b>14.2833</b>	<b>14.2833</b>	<b>9.2000e-004</b>	<b>0.0000</b>	<b>14.3061</b>

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2070	0.0000	0.2070	0.1089	0.0000	0.1089	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0724	0.8244	0.4791	7.8000e-004		0.0384	0.0384		0.0353	0.0353	0.0000	71.9930	71.9930	0.0221	0.0000	72.5444
<b>Total</b>	<b>0.0724</b>	<b>0.8244</b>	<b>0.4791</b>	<b>7.8000e-004</b>	<b>0.2070</b>	<b>0.0384</b>	<b>0.2453</b>	<b>0.1089</b>	<b>0.0353</b>	<b>0.1441</b>	<b>0.0000</b>	<b>71.9930</b>	<b>71.9930</b>	<b>0.0221</b>	<b>0.0000</b>	<b>72.5444</b>

### 3.4 Grading - 2017

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.7000e-003	0.0566	7.8900e-003	1.4000e-004	7.4300e-003	2.9000e-004	7.7300e-003	1.9100e-003	2.8000e-004	2.1900e-003	0.0000	13.2589	13.2589	8.8000e-004	0.0000	13.2808
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.8000e-004	5.0000e-004	4.9100e-003	1.0000e-005	1.0200e-003	1.0000e-005	1.0200e-003	2.7000e-004	1.0000e-005	2.8000e-004	0.0000	1.0244	1.0244	4.0000e-005	0.0000	1.0253
<b>Total</b>	<b>2.3800e-003</b>	<b>0.0571</b>	<b>0.0128</b>	<b>1.5000e-004</b>	<b>8.4500e-003</b>	<b>3.0000e-004</b>	<b>8.7500e-003</b>	<b>2.1800e-003</b>	<b>2.9000e-004</b>	<b>2.4700e-003</b>	<b>0.0000</b>	<b>14.2833</b>	<b>14.2833</b>	<b>9.2000e-004</b>	<b>0.0000</b>	<b>14.3061</b>

### 3.4 Grading - 2018

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2070	0.0000	0.2070	0.1089	0.0000	0.1089	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1331	1.4906	0.9092	1.6300e-003		0.0682	0.0682		0.0628	0.0628	0.0000	148.4369	148.4369	0.0462	0.0000	149.5922
<b>Total</b>	<b>0.1331</b>	<b>1.4906</b>	<b>0.9092</b>	<b>1.6300e-003</b>	<b>0.2070</b>	<b>0.0682</b>	<b>0.2752</b>	<b>0.1089</b>	<b>0.0628</b>	<b>0.1716</b>	<b>0.0000</b>	<b>148.4369</b>	<b>148.4369</b>	<b>0.0462</b>	<b>0.0000</b>	<b>149.5922</b>

### 3.4 Grading - 2018

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.1100e-003	0.1097	0.0151	2.9000e-004	8.2200e-003	4.2000e-004	8.6400e-003	2.2000e-003	4.0000e-004	2.6000e-003	0.0000	27.5488	27.5488	1.6800e-003	0.0000	27.5908
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2500e-003	9.0000e-004	8.7500e-003	2.0000e-005	2.1300e-003	2.0000e-005	2.1400e-003	5.7000e-004	1.0000e-005	5.8000e-004	0.0000	2.0793	2.0793	7.0000e-005	0.0000	2.0809
<b>Total</b>	<b>4.3600e-003</b>	<b>0.1106</b>	<b>0.0239</b>	<b>3.1000e-004</b>	<b>0.0104</b>	<b>4.4000e-004</b>	<b>0.0108</b>	<b>2.7700e-003</b>	<b>4.1000e-004</b>	<b>3.1800e-003</b>	<b>0.0000</b>	<b>29.6281</b>	<b>29.6281</b>	<b>1.7500e-003</b>	<b>0.0000</b>	<b>29.6717</b>

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2070	0.0000	0.2070	0.1089	0.0000	0.1089	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1331	1.4906	0.9092	1.6300e-003		0.0682	0.0682		0.0628	0.0628	0.0000	148.4368	148.4368	0.0462	0.0000	149.5920
<b>Total</b>	<b>0.1331</b>	<b>1.4906</b>	<b>0.9092</b>	<b>1.6300e-003</b>	<b>0.2070</b>	<b>0.0682</b>	<b>0.2752</b>	<b>0.1089</b>	<b>0.0628</b>	<b>0.1716</b>	<b>0.0000</b>	<b>148.4368</b>	<b>148.4368</b>	<b>0.0462</b>	<b>0.0000</b>	<b>149.5920</b>

### 3.4 Grading - 2018

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.1100e-003	0.1097	0.0151	2.9000e-004	8.2200e-003	4.2000e-004	8.6400e-003	2.2000e-003	4.0000e-004	2.6000e-003	0.0000	27.5488	27.5488	1.6800e-003	0.0000	27.5908
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2500e-003	9.0000e-004	8.7500e-003	2.0000e-005	2.1300e-003	2.0000e-005	2.1400e-003	5.7000e-004	1.0000e-005	5.8000e-004	0.0000	2.0793	2.0793	7.0000e-005	0.0000	2.0809
<b>Total</b>	<b>4.3600e-003</b>	<b>0.1106</b>	<b>0.0239</b>	<b>3.1000e-004</b>	<b>0.0104</b>	<b>4.4000e-004</b>	<b>0.0108</b>	<b>2.7700e-003</b>	<b>4.1000e-004</b>	<b>3.1800e-003</b>	<b>0.0000</b>	<b>29.6281</b>	<b>29.6281</b>	<b>1.7500e-003</b>	<b>0.0000</b>	<b>29.6717</b>

### 3.5 Site Preparation - 2017

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1445	0.0000	0.1445	0.0795	0.0000	0.0795	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0431	0.4645	0.2051	3.7000e-004		0.0245	0.0245		0.0225	0.0225	0.0000	34.5709	34.5709	0.0106	0.0000	34.8358
<b>Total</b>	<b>0.0431</b>	<b>0.4645</b>	<b>0.2051</b>	<b>3.7000e-004</b>	<b>0.1445</b>	<b>0.0245</b>	<b>0.1690</b>	<b>0.0795</b>	<b>0.0225</b>	<b>0.1020</b>	<b>0.0000</b>	<b>34.5709</b>	<b>34.5709</b>	<b>0.0106</b>	<b>0.0000</b>	<b>34.8358</b>

### 3.5 Site Preparation - 2017

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.2000e-004	3.8000e-004	3.7400e-003	1.0000e-005	7.7000e-004	1.0000e-005	7.8000e-004	2.1000e-004	1.0000e-005	2.1000e-004	0.0000	0.7805	0.7805	3.0000e-005	0.0000	0.7812
<b>Total</b>	<b>5.2000e-004</b>	<b>3.8000e-004</b>	<b>3.7400e-003</b>	<b>1.0000e-005</b>	<b>7.7000e-004</b>	<b>1.0000e-005</b>	<b>7.8000e-004</b>	<b>2.1000e-004</b>	<b>1.0000e-005</b>	<b>2.1000e-004</b>	<b>0.0000</b>	<b>0.7805</b>	<b>0.7805</b>	<b>3.0000e-005</b>	<b>0.0000</b>	<b>0.7812</b>

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1445	0.0000	0.1445	0.0795	0.0000	0.0795	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0431	0.4645	0.2051	3.7000e-004		0.0245	0.0245		0.0225	0.0225	0.0000	34.5709	34.5709	0.0106	0.0000	34.8357
<b>Total</b>	<b>0.0431</b>	<b>0.4645</b>	<b>0.2051</b>	<b>3.7000e-004</b>	<b>0.1445</b>	<b>0.0245</b>	<b>0.1690</b>	<b>0.0795</b>	<b>0.0225</b>	<b>0.1020</b>	<b>0.0000</b>	<b>34.5709</b>	<b>34.5709</b>	<b>0.0106</b>	<b>0.0000</b>	<b>34.8357</b>





**4.2 Trip Summary Information**

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

**4.3 Trip Type Information**

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.466291	0.031960	0.164877	0.131500	0.023119	0.007290	0.020969	0.142348	0.001645	0.001858	0.006120	0.000997	0.001026

**5.0 Energy Detail**

~~4.4 Fleet Mix~~

Historical Energy Use: N

**5.1 Mitigation Measures Energy**



### 5.2 Energy by Land Use - NaturalGas

#### Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

### 5.3 Energy by Land Use - Electricity

#### Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

### 5.3 Energy by Land Use - Electricity

#### Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

### 6.0 Area Detail

#### 6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	3.7300e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Unmitigated	3.7300e-003	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005

### 6.2 Area by SubCategory

#### Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	9.1000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	2.8200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
<b>Total</b>	<b>3.7300e-003</b>	<b>0.0000</b>	<b>1.0000e-005</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.0000e-005</b>	<b>2.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.0000e-005</b>

#### Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Consumer Products	2.8200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0000	0.0000	1.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-005	2.0000e-005	0.0000	0.0000	2.0000e-005
Architectural Coating	9.1000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>3.7300e-003</b>	<b>0.0000</b>	<b>1.0000e-005</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.0000e-005</b>	<b>2.0000e-005</b>	<b>0.0000</b>	<b>0.0000</b>	<b>2.0000e-005</b>

### 7.0 Water Detail

### 7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

### 7.2 Water by Land Use

#### Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

## 7.2 Water by Land Use

### Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

## 8.0 Waste Detail

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### 8.1 Mitigation Measures Waste

#### Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

## 8.2 Waste by Land Use

### Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

### Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

## 9.0 Operational Offroad

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Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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## 10.0 Vegetation

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**Appendix C**  
**NHPA Section 106 Compliance**

**CULTURAL RESOURCE COMPLIANCE  
Mid-Pacific Region  
Division of Environmental Affairs  
Cultural Resources Branch**

MP-153 Tracking Number: 16-SCAO-175

Project Name: Kern County Water Agency Improvement District No. 4 (ID4) Cross Valley Canal Extension Pool No. 8 Lining Project

NEPA Document:

MP 153 Cultural Resources Reviewer: Lex Palmer

Date: August 3, 2017

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Reclamation proposes to award WaterSMART grant funds to the ID4 for their Cross Valley Canal Extension Pool No. 8 Lining Project in Kern County, California. The award of Federal funding constitutes an undertaking as defined in 36 CFR § 800.16(y) and is a type of activity that has the potential to cause effects on historic properties under 36 CFR § 800.3(a). Reclamation consulted with, and received concurrence from, the State Historic Preservation Officer (SHPO) on a finding of no historic properties affected pursuant to 36 CFR § 800.4(d)(1). Consultation correspondence between Reclamation and the SHPO has been provided with this cultural resources compliance document for inclusion in the administrative record for this action.

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). 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. Thank you for providing the opportunity to comment.

Attachments: SHPO to Reclamation letter dated June 26, 2017

**OFFICE OF HISTORIC PRESERVATION  
DEPARTMENT OF PARKS AND RECREATION**

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June 26, 2017

Reply to: BUR\_2017\_0626\_003

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 County Water Agency Improvement  
District No. 4 (ID4) Cross Valley Canal Extension Pool No. 8 Lining Project,  
Kern County, California (Project 16-SCAO-175)

Dear Ms. Leigh:

The Office of Historic Preservation (OHP) received on June 26, 2017 your letter initiating consultation on the above referenced project to comply with Section 106 of the National Historic Preservation Act of 1966 (as amended) and its implementing regulations that are found at 36 CFR Part 800. Reclamation proposes to award WaterSMART grant funds to ID4 to assist with this project to install a concrete lining on the Cross Valley Canal (CVC) at Pool No. 8 to reduce seepage by 80 percent and to improve water reliability. Reclamation has determined a finding of no historic properties affected for this undertaking.

ID4 operates and maintains the 22-mile-long Cross Valley Canal (CVC), which was constructed in 1976. It is used to deliver surface water supplies to various purveyors and groundwater banking projects within Kern County for agricultural and urban use. The majority of the length of the CVC is concrete lined, except for Pool No. 8 of the CVC Extension. ID4 wants to install 5,280 lineal feet of fiber-reinforced concrete lining at Pool No. 8 to reduce seepage by 80 percent and to improve water reliability by delivering The additional conserved water to various users in the water district.

The area of potential effects (APE) consists of a linear canal alignment area about 5,280 feet long with a maximum depth of 4 feet in the existing canal prism and includes an 8-acre staging area, for a total APE of 14.2 acres. The vertical APE will be no more than 4 feet along the canal banks and slope and three feet at the bottom of the unlined canal base.

Historic property identification efforts are provided in a report done by Applied Earthworks on behalf of ID4 (*Cultural Resource Inventory for the Cross Valley Canal Extension Pool No. 8 Lining Project, Reclamation Project 16-SCAO-175, in Bakersfield, Kern County, California; June 2017 [by: Applied Earthworks, Inc., Fresno, CA][For: Provost and Pritchard Consulting Group, Bakersfield, CA]*). On March 17, 2017, a records review and background research were conducted and an intensive pedestrian survey was done March 20-21, 2017, which covered the entire APE. The records review identified two previously recorded cultural resources, which are located adjacent to the undertaking and are at the staging and access areas within the APE. California State Route 204 (SR 204), formerly an original route of US Highway 99 through urban Bakersfield, and the Calloway Canal Bridge (Bridge No. 50-209), by which SR 204 crosses the Kern River near the Cross Valley Canal are determined eligible for listing in the National Register of Historic Places (NRHP) under Criterion A for association with early to mid-twentieth century highway construction and its associated commercial development. The period of significance is 1933-1963, when a new peripheral highway alignment of

Ms. Anastasia T. Leigh  
June 26, 2017  
Page 2

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US Highway 99 bypassed this through-town route. The 22-mile Cross Valley Canal, built in 1976, is a standard prism, shallow-type canal and is thus not considered to be of exceptional significance under Criteria Consideration G and therefore, is not eligible for NRHP listing.

No alterations, modifications, improvements or changes are planned for SR 204 and the Calloway Canal Bridge. The roadway will only be driven on for access and staging and access will occur under and near the bridge without affecting its setting or structure.

Reclamation states that it has determined that consultation with Indian tribes was not necessary for this undertaking. Although the APE is nearby the Kern River, it is located within a canal prism excavated during the construction of the CVC in 1976. The surrounding area is a mix of urban and commercial development. Given the substantial alterations to the area, Reclamation considers that there is no potential for the presence of properties of religious or cultural significance to tribes anywhere within the APE.

Based on the information presented, Reclamation has reached a finding of no historic properties affected for this undertaking and invites comments on the delineation of the APE, the appropriateness of the historic properties identification efforts and for its finding.

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 1976 Cross Valley Canal, a locally built, standard-type structure lacking historic context, is not eligible for listing in the National Register of Historic Places.
- Reclamation has determined that the proposed undertaking will result in no historic properties affected. Pursuant to 36 CFR 800.4(d)(1), **I do not object**.

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](mailto:Jeanette.Schulz@parks.ca.gov) or (916) 445-7031.

Sincerely,



Julianne Polanco  
State Historic Preservation Officer

