



MITIGATED NEGATIVE DECLARATION

Orange Cove Water Treatment / Water Storage Project

March 2019

PREPARED FOR:

City of Orange Cove
633 Sixth Street
Orange Cove, CA 93646

PREPARED BY:



Crawford & Bowen Planning, Inc.
113 N. Church Street, Suite 302
Visalia, CA 93291

Initial Study/Mitigated Negative Declaration
Orange Cove Water Treatment / Water Storage Project

Prepared for:

City of Orange Cove
633 Sixth Street
Orange Cove, CA
(559) 626-4488

Prepared by:



Crawford & Bowen Planning, Inc.
113 N. Church Street, Suite 302
Visalia, CA 93291

Contact: Travis Crawford, AICP
(559) 840-4414

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Chapter 1

INTRODUCTION

INTRODUCTION

1.1 Project Summary

This document is the Initial Study/Mitigated Negative Declaration describing the potential environmental effects of implementing a series of upgrades to the City of Orange Cove's water treatment plant (WTP) and water storage facilities. The City intends to line existing raw water storage basins, construct and operate a series of improvements including water treatment facilities, and construct a new 10-acre water storage basin. The proposed Project is more fully described in Chapter Two – Project Description.

The City of Orange Cove will act as the Lead Agency for this project pursuant to the *California Environmental Quality Act (CEQA)* and the *CEQA Guidelines*.

The Project is expected to be funded through a combination of City funds, Drinking Water State Revolving Fund (DWSRF) funds administered through the California State Water Resources Control Board (Water Board). One requirement of DWSRF funding is that the City will be required to comply with the Water Board's environmental requirements including CEQA-Plus. CEQA-Plus involves additional environmental analysis of certain topics to include federal thresholds, rules and regulations (for topics such as air, biology, cultural, etc.). In addition to this Mitigated Negative Declaration, the City is preparing a separate Environmental Package for submittal to the Water Board which includes the CEQA-Plus analysis.

1.2 Document Format

This IS/MND contains five chapters, and appendices. Section 1, Introduction, provides an overview of the project and the CEQA environmental documentation process. Chapter 2, Project Description, provides a detailed description of project objectives and components. Chapter 3, Initial Study Checklist, presents the CEQA checklist and environmental analysis for all impact areas, mandatory findings of significance, and feasible mitigation measures. If the proposed project does not have the potential to significantly impact a given issue area, the relevant section provides a brief discussion of the reasons why no impacts are expected. If the project could have a potentially significant impact on a resource, the issue area discussion provides a description of potential impacts, and appropriate mitigation measures and/or permit requirements that would reduce those impacts to a less than significant level. Chapter 4, Mitigation Monitoring and Reporting Program, provides the proposed mitigation measures,

completion timeline, and person/agency responsible for implementation and Chapter 5, List of Preparers, provides a list of key personnel involved in the preparation of the IS/MND.

Environmental impacts are separated into the following categories:

Potentially Significant Impact. This category is applicable if there is substantial evidence that an effect may be significant, and no feasible mitigation measures can be identified to reduce impacts to a less than significant level. If there are one or more “Potentially Significant Impact” entries when the determination is made, an EIR is required.

Less Than Significant After Mitigation Incorporated. This category applies where the incorporation of mitigation measures would reduce an effect from a “Potentially Significant Impact” to a “Less Than Significant Impact.” The lead agency must describe the mitigation measure(s), and briefly explain how they would reduce the effect to a less than significant level (mitigation measures from earlier analyses may be cross-referenced).

Less Than Significant Impact. This category is identified when the project would result in impacts below the threshold of significance, and no mitigation measures are required.

No Impact. This category applies when a project would not create an impact in the specific environmental issue area. “No Impact” answers do not require a detailed explanation if they are adequately supported by the information sources cited by the lead agency, which show that the impact does not apply to the specific project (e.g., the project falls outside a fault rupture zone). A “No Impact” answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis.)

Regardless of the type of CEQA document that must be prepared, the basic purpose of the CEQA process as set forth in the CEQA Guidelines Section 15002(a) is to:

- (1) Inform governmental decision makers and the public about the potential, significant environmental effects of proposed activities.
- (2) Identify ways that environmental damage can be avoided or significantly reduced.
- (3) Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.
- (4) Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

According to Section 15070(b), a Mitigated Negative Declaration is appropriate if it is determined that:

- (1) Revisions in the project plans or proposals made by or agreed to by the applicant before a proposed mitigated negative declaration and initial study are released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur, and
- (2) There is no substantial evidence, in light of the whole record before the agency, that the project as revised may have a significant effect on the environment.

The Initial Study contained in Section Three of this document has determined that with mitigation measures and features incorporated into the project design and operation, the environmental impacts are less than significant and therefore a Mitigated Negative Declaration will be adopted.

Chapter 2

PROJECT DESCRIPTION

Project Description

2.1 Location / Surrounding Land Use

The City of Orange Cove (City) is in an agricultural area of Fresno County, approximately 28 miles southeast of the City of Fresno, about 22 miles east of State Route (SR) 99 and seven miles south of SR 180. The existing Water Treatment Plant (WTP) is within the eastern edge of the City and the water storage basins are adjacent to the City (see Figure 1). The proposed Project is bisected by the Friant-Kern Canal and is immediately south of SR 63. The Project includes three components and the locations of these are as follows:

1. Line raw water storage basins: The existing water storage basins are on the south side of State Route 63, roughly 0.15 miles east of the intersection with Hills Valley Road in Tulare County (see Figure 2). The existing basins are surrounded by orchards, a fallow field, and an approximately 8-acre solar farm.
2. Construct new water storage basin: This component is just west of the existing water storage basins in a fallow field on the southeast corner of the State Route 63 and Hills Valley Road intersection in Tulare County (see Figure 2). The site is surrounded by orchards, an approximately 8-acre solar farm, the existing water storage basins, and the Friant-Kern Canal.
3. Construct and operate new treatment facilities: The existing water treatment plant is at 602 2nd Street, in the City of Orange Cove in Fresno County (see Figure 2). The site is surrounded by residential and municipal development and the Friant-Kern Canal.

2.2 Setting

The proposed Project site is located in the central portion of the San Joaquin Valley of California. The valley is a large, nearly flat alluvial plain bordered by the Sierra Nevada to the east, the Tehachapi Mountains to the south, the California coast ranges to the west, and the Sacramento-San Joaquin Delta to the north.

Like most of California, the central/southern San Joaquin Valley experiences a Mediterranean climate. Warm dry summers are followed by cool moist winters. Summer temperatures commonly exceed 90 degrees Fahrenheit, and the relative humidity is generally very low. Winter temperatures rarely exceed 70 degrees Fahrenheit, with daytime highs often below 60

degrees Fahrenheit. According to the Western Regional Climate Center, annual precipitation in the vicinity of the project sites is about 12 inches, about 85% of which falls between the months of October and March. Nearly all precipitation falls in the form of rain.

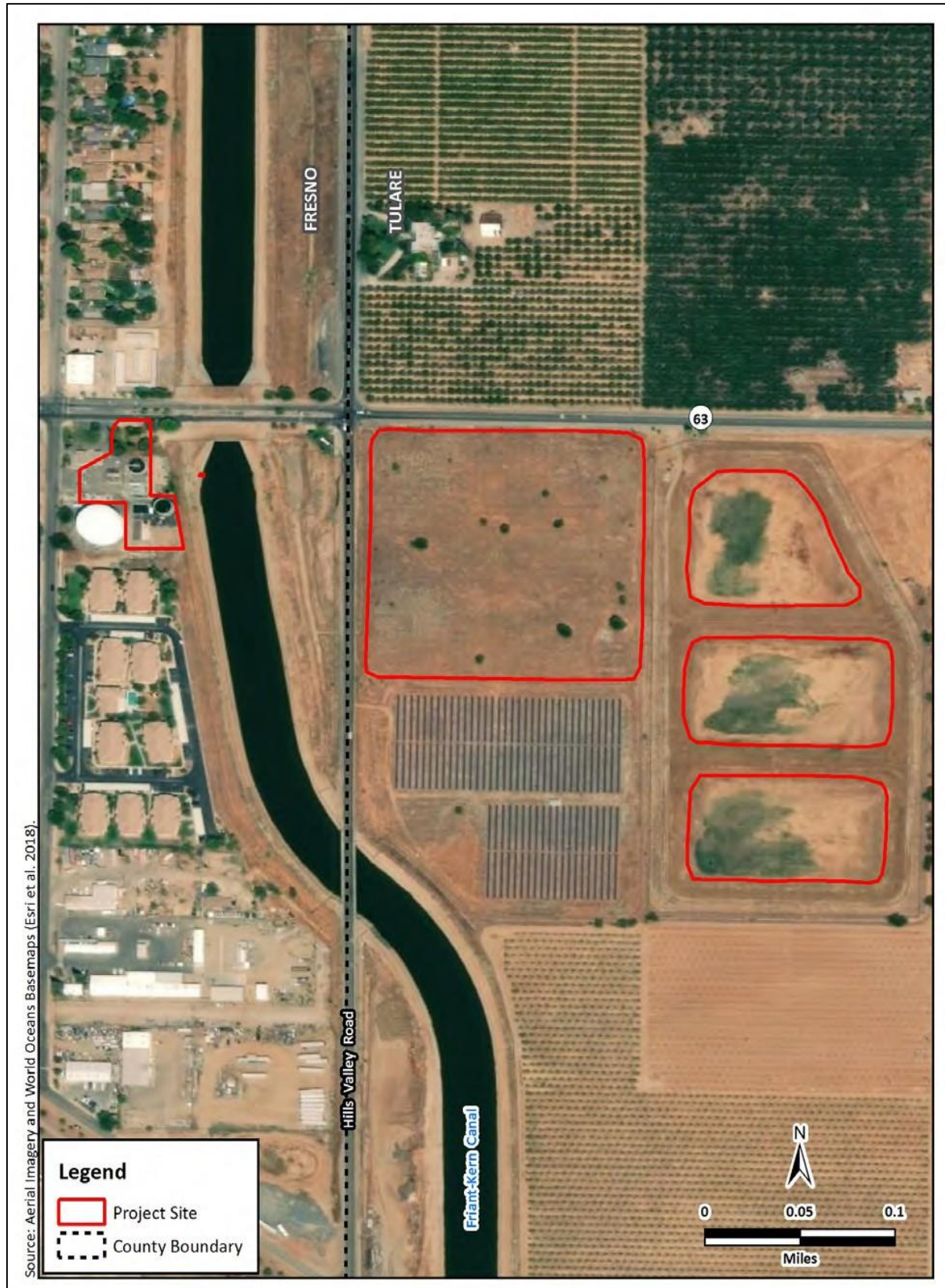
2.3 Project Background

The City of Orange Cove (City) proposes to improve its water treatment plant and water storage capacity by constructing new and improving existing water treatment infrastructure. The City will obtain financing for this water quality improvement project from the Drinking Water State Revolving Fund (DWSRF). The DWSRF is administered by the State Water Resources Control Board and partially funded by a capitalization grant from the United States Environmental Protection Agency (EPA). Due to this federal nexus, issuing funds from the DWSRF constitutes a federal action, one that requires the EPA to determine whether the proposed action may affect federally protected resources. The proposed Project must therefore comply with requirements of the California Environmental Quality Act (CEQA) and certain federal environmental laws and regulations as well. This state and federal review process is known as CEQA-Plus.

Figure 1 – Project Vicinity Map



Figure 2 –Site Aerial



2.4 Project Description

The proposed Project includes three components:

1. Line raw water storage basins: This component would involve installing plastic lining to three existing raw water storage basins, totaling approximately seven acres.
2. Construct a new water storage basin: This component will involve constructing a new raw water storage basin on an adjacent 10-acre property. The new basin will be excavated seven feet deep, plastic lined and a new pipeline will be installed underground to connect the new water storage basin to the northernmost existing water basin.
3. Construct and operate new treatment facilities: This component will involve constructing new and improving existing infrastructure at the existing water treatment plant (see Figure 3). New construction will consist of the following:
 - Installing a mechanical screen at the intake pipe on the bank of the Friant-Kern Canal
 - New raw water pumps and plumbing
 - A new 3,300 square foot plant building
 - New filtered water transfer pumps
 - A new clearwell
 - New variable frequency drives on booster pumps
 - A new sludge dewatering box
 - New backwash pumps
 - A new concrete masonry unit wall and access gate
 - New effluent flow meters
 - Approximately 1,000 linear feet of new pipeline within in the water treatment plant.

Construction:

Construction will occur as plans and funding are in place and is expected to start in summer of 2019 and to finish by summer of 2020. All construction staging of equipment and materials will be within vacant or unused areas of the existing water treatment plant site and the new 10-acre basin site.

2.5 Objectives

The primary objectives of the proposed project are as follows:

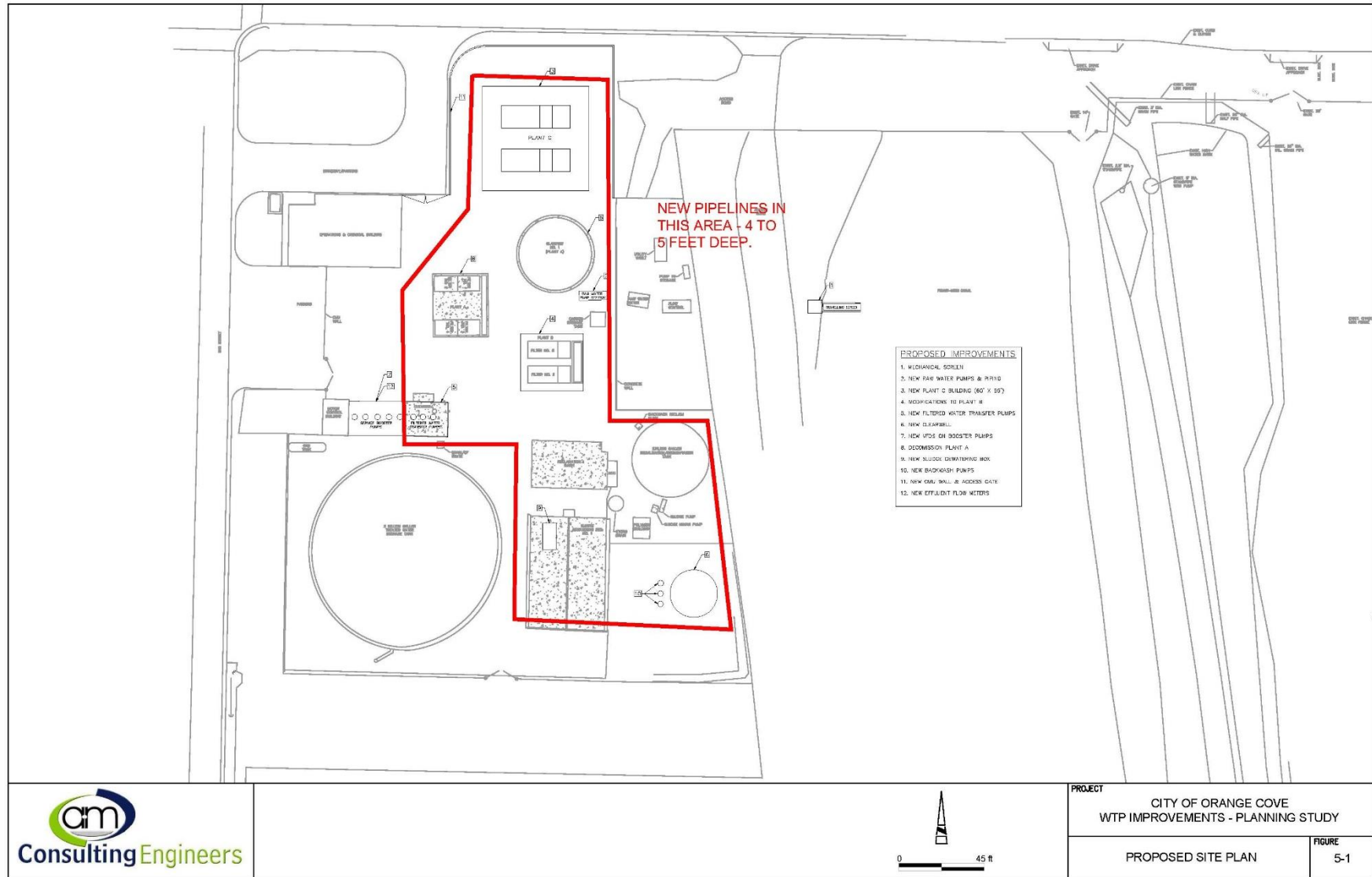
- The City's primary objective is to provide water treatment while maintaining existing levels of regulatory compliance for the protection of water quality and public health.
- The City seeks to operate the improved water treatment system with the most cost-effective methods available that meet the City's overall system performance and regulatory compliance requirements.

2.6 Other Required Approvals

The proposed Project will include, but not be limited to, the following regulatory requirements:

- The adoption of a Mitigated Negative Declaration by the City of Orange Cove.
- San Joaquin Valley Air Pollution Control District (dust control and other construction/operation permits)
- Regional Water Quality Control Board approval (SWPPP)
- CA Water Resources Control Board (CEQA-plus approval)

Figure 3 – New Treatment Facilities Plan



Chapter 3

IMPACT ANALYSIS

Initial Study Checklist

3.1 Environmental Checklist Form

Project title: Orange Cove Water Treatment Plant Improvement Project

Lead agency name and address:

City of Orange Cove
633 Sixth Street
Orange Cove, CA 93646

Contact person and phone number:

Alfonso Manrique, PE (City Contract Engineer)
City of Orange Cove
(559) 473-1371

Project location:

The City of Orange Cove (City) is in an agricultural area of Fresno County, approximately 28 miles southeast of the City of Fresno, about 22 miles east of State Route (SR) 99 and seven miles south of SR 180. The existing Water Treatment Plant (WTP) is within the eastern edge of the City and the water storage basins are adjacent to the City. The proposed Project is bisected by the Friant-Kern Canal and is immediately south of SR 63.

See Figure 1 (Project Vicinity Map) and Figure 2 (Site Aerial).

Project sponsor's name/address:

City of Orange Cove
633 Sixth Street
Orange Cove, CA 93646

General plan designation:

City of Orange Cove – Public Facility
Tulare County – Agriculture

Zoning:

City of Orange Cove – PF (Public Facility)

Tulare County – AE-20 (Exclusive Agriculture – 20 acre minimum)

Description of project:

The City intends to line existing raw water storage basins, construct and operate a series of facilities improvements, and construct a new 10-acre water storage basin. The proposed Project is more fully described in Chapter Two – Project Description.

Surrounding land uses/setting:

The proposed Project setting is fully described in Chapter Two – Project Description.

Other Required Approvals:

- The adoption of a Mitigated Negative Declaration by the City of Orange Cove.
- San Joaquin Valley Air Pollution Control District (dust control and other construction/operation permits)
- Regional Water Quality Control Board approval (SWPPP)
- CA Water Resources Control Board (CEQA-plus approval)

California Native American Tribal Consultation:

Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, has consultation begun or is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

In accordance with Assembly Bill (AB) 52, potentially affected Tribes were formally notified of this Project and were given the opportunity to request consultation on the Project. The City contacted the Native American Heritage Commission, requesting a contact list of applicable Native American Tribes, which was provided to the City. The City provided letters to the listed Tribes, notifying them of the Project and requesting consultation, if desired. The responses came from Dick Charley of the Dunlap Band of Mono Indians, Stan Alec of the Kings River Choinumni, Ron Goode with the North Fork Mono Tribe and Robert Pennell, Tribal Cultural Resources Director for Table Mountain Rancheria;

all of whom stated that the Project was either outside their area of interest and/or declined any further participation in this Project.

3.2 Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a “Potentially Significant Impact” as indicated by the checklist on the following pages.

- | | | |
|---|--|---|
| <input type="checkbox"/> Aesthetics | <input type="checkbox"/> Agriculture Resources
and Forest Resources | <input type="checkbox"/> Air Quality |
| <input type="checkbox"/> Biological Resources | <input type="checkbox"/> Cultural Resources | <input type="checkbox"/> Energy |
| <input type="checkbox"/> Geology / Soils | <input type="checkbox"/> Greenhouse Gas
Emissions | <input type="checkbox"/> Hazards &
Hazardous
Materials |
| <input type="checkbox"/> Hydrology / Water
Quality | <input type="checkbox"/> Land Use / Planning | <input type="checkbox"/> Mineral Resources |
| <input type="checkbox"/> Noise | <input type="checkbox"/> Population / Housing | <input type="checkbox"/> Public Services |
| <input type="checkbox"/> Recreation | <input type="checkbox"/> Transportation | <input type="checkbox"/> Tribal Cultural
Resources |
| <input type="checkbox"/> Utilities / Service
Systems | <input type="checkbox"/> Wildfire | <input type="checkbox"/> Mandatory
Findings of
Significance |

3.3 Determination

Based on this initial evaluation:

- ☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- ☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the

project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

- ☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- ☐ I find that the proposed project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Rudy Hernandez, Interim City Manager

Date

City of Orange Cove

I. AESTHETICS

Except as provided in Public Resources Code Section 21099, would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and regulations governing scenic quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

RESPONSES

- Have a substantial adverse effect on a scenic vista?
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No Impact. A scenic vista is defined as a viewpoint that provides expansive views of highly valued landscape for the benefit of the general public. The Sierra Nevada Mountains are the only natural and visual resource in the proposed Project area. Views of these distant mountains are afforded only during clear conditions due to poor air quality in the valley. Distant views of the Sierra Nevada Mountains would largely be unaffected by the development of the Project because of the nature of

the Project, distance and limited visibility of these features. The City of Orange Cove does not identify views of these features as required to be “protected.”

The nearest eligible scenic highway is a section of SR 168 which is located over 20 miles north east of the site. However, the Project is not visible to or from this eligible scenic highway due to intervening land uses.

Therefore, the Project has *no impact* on scenic vistas or designated scenic resources or highways.

Mitigation Measures: None are required.

- c. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and regulations governing scenic quality?

Less Than Significant Impact. The proposed Project involves improvements to the existing water treatment plant, installing a plastic liner on three existing water storage basins, and excavating a new 10-acre water storage basin on vacant land. The water treatment plant and existing water storage basins are currently enclosed by a chain link fence topped with razor wire.

Improvements to the water treatment plant and existing water storage basins will not be visible from the adjacent roadsides. The new water storage basin will be located adjacent to and have the same aesthetic as the existing water basins and as such, will not result in a substantial change to the existing visual nature.

Therefore, the Project would have *less than significant impacts* on the visual character of the area.

Mitigation Measures: None are required.

Less Than Significant Impact. Currently the sources of light in the project area are from street lights, the vehicles traveling along surrounding roads, and security lights at the existing water treatment plant. No lighting will be associated with the water storage basins. Water treatment plant improvements may include a minimal amount of additional security lighting; however, any additional lighting would not be expected to appreciably change any existing glare or lighting conditions because the visibility of the site from residential areas and public spaces and roadways is limited. This lighting will be directed downward and will not result in light “spillage” onto adjacent properties. Accordingly, the proposed Project would not create substantial new sources of light or glare. Potential impacts are *less than significant*.

Mitigation Measures: None are required.

II. AGRICULTURE AND FOREST RESOURCES

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

RESPONSES

- a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?
- b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?
- c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?
- d. Result in the loss of forest land or conversion of forest land to non-forest use?
- e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

No Impact. The existing WTP facilities and the existing water storage basins are located in an area of the City and County considered urban, build up land by the State Farmland Mapping and Monitoring Program.¹ The new water storage basin is located on land considered Farmland of Local Importance; however, the water storage basin would be a use consistent with the agricultural designation. As such, the proposed project would not convert prime farmland, conflict with an existing agricultural use, or result in the conversion of existing farmland. Additionally, no Williamson Act contracted lands would be impacted due to the project.²

The proposed project does not conflict with any forest land or Timberland Production or result in any loss of forest land. The proposed project does not include any changes which will affect the existing environment. There is *no impact*.

Mitigation Measures: None are required.

¹ California Department of Conservation. California Important Farmland Finder. <https://maps.conservation.ca.gov/DLRP/CIFE/>. Accessed February 2019.

² Tulare County Williamson Act and Agricultural Preserve Lands, 12/2014. <https://databasin.org/maps/new#datasets=ed5964cbafe54ffeb9f70a6bc6d38263>. Accessed February 2019.

III. AIR QUALITY

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Result in other emissions (such as those leading to odors or adversely affecting a substantial number of people)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Responses:

- Conflict with or obstruct implementation of the applicable air quality plan?
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?
- Expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact. The proposed Project lies within the San Joaquin Valley Air Basin (SJVAB). At the Federal level, the SJVAB is designated as extreme nonattainment for the 8-hour ozone standard, attainment for PM₁₀ and CO, and nonattainment for PM_{2.5}. At the State level, the SJVAB is designated as nonattainment for the 8-hour ozone, PM₁₀, and PM_{2.5} standards. Although the Federal 1-hour ozone standard was revoked in 2005, areas must still attain this standard, and the SJVAPCD recently requested an EPA finding that the SJVAB has attained the standard based on 2011-2013 data.³

³ San Joaquin Valley Air Pollution Control District. Guide to Assessing and Mitigating Air Quality Impacts. March 19, 2015. Page 28. http://www.valleyair.org/transportation/GAMAOL_3-19-15.pdf. Accessed February 2019.

To meet Federal Clean Air Act (CAA) requirements, the SJVAPCD has multiple air quality attainment plan (AQAP) documents, including:

- Extreme Ozone Attainment Demonstration Plan (EOADP) for attainment of the 1-hour ozone standard (2004);
- 2007 Ozone Plan for attainment of the 8-hour ozone standard;
- 2007 PM₁₀ Maintenance Plan and Request for Redesignation; and
- 2008 PM_{2.5} Plan.

Because of the region's non-attainment status for ozone, PM_{2.5}, and PM₁₀, if the project-generated emissions of either of the ozone precursor pollutants (ROG or NO_x), PM₁₀, or PM_{2.5} were to exceed the SJVAPCD's significance thresholds, then the project uses would be considered to conflict with the attainment plans. In addition, if the project uses were to result in a change in land use and corresponding increases in vehicle miles traveled, they may result in an increase in vehicle miles traveled that is unaccounted for in regional emissions inventories contained in regional air quality control plans.

The annual significance thresholds to be used for the Project emissions are as follows⁴:

Pollutant/ Precursor	Construction Emissions (tpy)	Operational Emissions (permitted) (tpy)	Operational Emissions (non- permitted) (tpy)
CO	100	100	100
NO_x	10	10	10
ROG	10	10	10
SO_x	27	27	27
PM₁₀	15	15	15
PM_{2.5}	15	15	15

The estimated annual construction and operational emissions are provided below. The California Emissions Estimator (CalEEMod), Version 2016.3.2, was used to estimate construction of the water treatment plants improvements and operational (vehicle trips) emissions. A conservative approach was utilized when modeling emissions. It was assumed that construction activities would take place across the entirety of the 2-acre water treatment plant, along with the seven acres of existing basins and 10 acres of new basin, for a total of 19 acres of construction activity. The improvements at the water treatment plant and the pumps regulating the water storage basins will run off electrical power so there will be no

⁴ San Joaquin Valley Air Pollution Control District. March 19, 2015. Guide for Assessing and Mitigating Air Quality Impacts. http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf. Page 80. Accessed February 2019.

on-site emissions generated by plant operations. Modeling results are provided in Table 1 and the CalEEMod and Road Construction Emissions Model output files are provided in Appendix A.

Table 1
Proposed Project Construction and Operation Emissions

Pollutant/ Precursor	Construction Emissions (tpy)	Threshold/ Exceed?	Operational Emissions (permitted) (tpy)	Threshold/ Exceed?
CO	3.79	100/ N	0.00	100/ N
NOx	3.96	10/ N	0.00	10/ N
ROG	0.68	10/ N	0.07	10/ N
SOx	0.01	27/ N	0.00	27/ N
PM₁₀	0.68	15/ N	0.00	15/ N
PM_{2.5}	0.28	15/ N	0.00	15/ N
CO₂	1,029.67	n/a	0.00	n/a

As demonstrated in Table 1, estimated construction and operational emissions would not exceed the SJVAPCD's significance thresholds for ROG, NOx, PM₁₀, and PM_{2.5}. As a result, the Project uses would not conflict with emissions inventories contained in regional air quality attainment plans and would not result in a significant contribution to the region's air quality non-attainment status.⁵

Localized high levels of CO are associated with traffic congestion and idling or slow-moving vehicles. The SJVAPCD provides screening criteria to determine when to quantify local CO concentrations based on impacts to the level of service (LOS) of roadways in the Project vicinity.

As further discussed in the Transportation/Traffic checklist evaluation, the Project would not generate substantial traffic (two additional trips per day) that would reduce the level of service on local roadways. Therefore, the Project would not significantly contribute to an exceedance that would exceed state or federal CO standards. Additionally, as the estimated construction and operational emissions are below SJVAPCD thresholds, any cumulative considerable increase in criteria pollutants would be less than significant.

As described above, the project will not occur at a scale or scope with potential to contribute substantially or cumulatively to existing or projected air quality violations, impacts, or increases of criteria pollutants for which the San Joaquin Valley region is under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors). The proposed Project will comply with all applicable air quality plans. Therefore, no violations of air quality standards will occur and no net increase of pollutants will occur. Any impacts would be *less than*

⁵ San Joaquin Valley Air Pollution Control District. Guide to Assessing and Mitigating Air Quality Impacts. March 19, 2015. Page 65. http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf. Accessed February 2019.

significant.

Mitigation Measures: None are required.

e. Result in other emissions (such as those leading to odors adversely affecting a substantial number of people?

Less Than Significant Impact. During construction, the various diesel powered vehicles and equipment in use on-site could create localized odors. These odors would be temporary and are not likely to be noticeable for extended periods of time beyond the Project site. In addition, once the Project is operational, there would be no source of odors from the Project. Therefore, the impact is *less than significant*.

Mitigation Measures: None are required.

IV. BIOLOGICAL RESOURCES

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IV. BIOLOGICAL RESOURCES

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Responses:

- a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Less Than Significant Impact With Mitigation. The proposed Project site consists of a 10-acre fallow field, three existing water storage basins totaling approximately seven acres, and developed areas (water treatment facilities). The existing water storage basins are surrounded by orchards, a fallow field, and a small solar energy generating facility. The 10-acre fallow field, where the new water storage basin will be constructed, currently supports ruderal, mostly nonnative vegetation, including English walnut (*Juglans regia*), wild oat (*Avena fatua*), ripgut brome (*Bromus diandrus*), and rose clover (*Trifolium hirtum*), and many California ground squirrel (*Otospermophilus beecheyi*) burrows. This field is surrounded by orchards, the existing water storage basins, and the Friant-Kern Canal. Two grass-lined irrigation ditches run along the eastern and western edges of the 10-acre fallow field. A culvert connects the western ditch to the Friant-Kern Canal.

A Biological Resource Evaluation (BRE) was prepared for the proposed Project in October 2018 by Colibri Ecological Consulting, LLC (see Appendix B). As part of the BRE, the California Natural Diversity Data Base (CNDDB), the California Native Plant Society's Inventory of Rare and Endangered Plants, and the USFWS special status species lists were queried for records of special-

status plant and animal species in the Project area. In addition, a field reconnaissance survey of the Project site was conducted in August of 2018.

The BRE concluded that two special-status species, Swainson's hawk and burrowing owl, could occur on or near the Project site. Swainson's hawk uses open areas such as grasslands and some agricultural fields for foraging and medium to large trees near open areas for nesting. The fallow field that will support the planned new water storage basin is suitable for foraging, and medium to large trees that could support nesting were within 0.5 miles of the Project site. Burrowing owl uses open, treeless areas with low, sparse vegetation that support high densities of small mammal burrows. The fallow field that will support the planned new water storage basin is suitable for foraging, nesting, and roosting by burrowing owl as it supports a high density of California ground squirrel burrows.

Construction disturbance during the breeding season for both the Swainson's hawk and burrowing owl could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. Loss of fertile eggs or nestlings, or any activities resulting in nest abandonment, would constitute a significant impact. Implementation of mitigation measures BIO-1 and BIO-2 will reduce any impacts to *less than significant*.

Mitigation Measures:

BIO – 1 Protect nesting Swainson's hawks

1. To the extent practicable, construction shall be scheduled to avoid the Swainson's hawk nesting season, which extends from March through August.
2. If it is not possible to schedule work between September and February, a qualified biologist shall conduct a survey for active Swainson's hawk nests within 0.25 miles of the Project site no more than 14 days prior to the start of construction. If an active nest is found within 0.25 miles, and the qualified biologist determines that Project activities would disrupt nesting, a construction-free buffer or limited operating period shall be implemented in consultation with the CDFW.

BIO – 2 Protect nesting burrowing owls

1. Conduct protocol surveys season to determine if burrowing owl is occupying the Project site. Surveys shall follow guidance set forth by the California Department of Fish and Game Staff Report on Burrowing Owl Mitigation (Appendix D of Appendix A). A qualified biologist shall conduct four surveys during the breeding; at least one survey visit must occur between 15 February and 15 April; a minimum of three survey visits must

occur between 15 April and 15 July, spaced at least three weeks apart, with at least one of those survey visits occurring after 15 June.

2. If a burrowing owl or the positive sign of burrowing owl use (i.e., feathers, scat, pellets) is detected on or within 150 feet of the Project site, then CDFW shall be contacted to determine if relocation efforts are warranted.
3. If burrowing owl is not detected during protocol surveys, a final pre-construction burrowing owl survey shall be conducted by a qualified biologist no more than 14 days prior to the start of construction to ensure that burrowing owls have not recently inhabited the Project site; this survey can be done in conjunction with Mitigation Measure BIO-3, below.

- b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?
- c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No Impact. No wetlands, riparian habitat, or other sensitive natural community were present in the proposed Project area and as such, there would be *no impacts* associated with the proposed improvements.

Mitigation Measures: None are required.

- d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Less Than Significant with Mitigation. The proposed Project has the potential to impede the use of nursery sites for native birds protected under the Migratory Bird Treaty Act and California Fish and Game Code. Migratory birds are expected to nest on and near the proposed Project site, including but limited to, mourning dove (*Zenaida macroura*), red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk, western kingbird (*Tyrannus verticalis*), American crow (*Corvus brachyrhynchos*), California scrubjays (*Aphelocoma californica*), and house finch (*Carpodacus mexicanus*).

Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. Disturbance that causes nest abandonment or loss of reproductive effort is considered take by the CDFW. Loss of fertile eggs or nestlings, or any activities resulting in nest abandonment, could constitute a significant impact if the species is particularly rare in the region. Construction activities such as trenching and grading that disturb a rare nesting bird on the site or immediately adjacent to the construction zone could constitute a significant impact. Implementation of BIO-3 would ensure any impacts remain *less than significant*.

Mitigation Measures:

BIO – 3 Protect Nesting Birds

1. To the extent practicable, construction shall be scheduled to avoid the nesting season, which extends from February through August.
 2. If it is not possible to schedule construction between September and January, preconstruction surveys for nesting birds shall be conducted by a qualified biologist to ensure that no active nests will be disturbed during Project implementation. A preconstruction survey shall be conducted no more than 14 days prior to the initiation of construction activities. During this survey, the qualified biologist shall inspect all potential nest substrates in and immediately adjacent to the impact areas for nests. If an active nest is found close enough to the construction area to be disturbed by these activities, the qualified biologist shall determine the extent of a construction-free buffer to be established around the nest. If work cannot proceed without disturbing the nesting birds, work may need to be halted or redirected to other areas until nesting and fledging are completed or the nest has otherwise failed for non-construction related reasons.
- e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?
- f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Impact. No trees or biologically sensitive areas will be impacted by the proposed Project. Additionally, there are no adopted local, regional, or state habitat conservation plans adopted for the area. As such, there is *no impact*.

Mitigation Measures: None are required.

V. CULTURAL RESOURCES

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

RESPONSES

- Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?
- Disturb any human remains, including those interred outside of formal cemeteries?

Less Than Significant Impact With Mitigation. A Historic Property Identification Report (Report) was prepared for the proposed Project in February 2019 by Applied EarthWorks, Inc. (see Appendix C). The Report included: (1) a records search at the Southern San Joaquin Valley Information Center (SSJVIC) of the California Historical Resources Information System to identify previously recorded cultural resources and prior studies in the APE and surrounding 0.5-mile radius of the APE; (2) a search of the Native American Heritage Commission's (NAHC) Sacred Lands File for known sacred resources and request for contact information for individuals and tribal representatives who may have information about the Project; (3) desktop archival research; (4) an archaeological and built environment pedestrian survey of the APE; (5) an National Register of Historic Places (NRHP) and California Register of Historical Resources (CRHR) eligibility evaluation of a historical archaeological site; and (6) a buried site sensitivity assessment.

The SSJVIC reported one previously recorded cultural resource within the APE (P-54-005009) and four cultural resources within a 0.5-mile radius of the APE. The search also revealed that three previous cultural resource studies have occurred within the APE and 10 others within a 0.5-mile radius around the APE. The entire eastern portion of the APE had been surveyed previously and a cultural resource, P-54-005009, was identified and first recorded in 2013.

The pedestrian survey yielded no new cultural resources; however, a careful inspection of the area immediately surrounding P-54-005009 resulted in the identification of additional features. Archival research revealed that archaeological features mark the remains of an early twentieth-century agricultural homestead once present in the northwest corner of the APE. The site boundary was expanded, and the site record was expanded with the archaeological findings and historical information and evaluated the eligibility of the site for listing in the NRHP and CRHR. It was concluded that the site does not lend any information or physical evidence to further the understanding of important themes in history, particularly early settlement and agricultural development prior to 1920 and the post-1920 agricultural boom in Fresno and Tulare counties. It is not significant under any of the four NRHP or CRHR criteria; thus, the site is not considered a historic property under the NHPA or a historical resource for the purposes of CEQA.

No other cultural resources were identified in the APE as a result of the NAHC Sacred Lands File search, archival research, or pedestrian survey. The geoarchaeological assessment of the vertical APE revealed that there is low probability of encountering well-preserved cultural deposits in primary context.

Although no cultural or archaeological resources, paleontological resources or human remains have been identified in the project area, the possibility exists that such resources or remains may be discovered during Project site preparation, excavation and/or grading activities. Mitigation Measures CUL – 1 and CUL – 2 will be implemented to ensure that Project will result in *less than significant impacts with mitigation*.

Mitigation Measures:

CUL – 1 Should evidence of prehistoric archeological resources be discovered during construction, the contractor shall halt all work within 25 feet of the find and the resource shall be evaluated by a qualified archaeologist. If evidence of any archaeological, cultural, and/or historical deposits is found, hand excavation and/or mechanical excavation shall proceed to evaluate the deposits for determination of significance as defined by the CEQA guidelines. The archaeologist shall submit reports, to the satisfaction of the City of Fresno, describing the testing program and subsequent results. These reports shall identify any

program mitigation that the project proponent shall complete in order to mitigate archaeological impacts (including resource recovery and/or avoidance testing and analysis, removal, reburial, and curation of archaeological resources).

- CUL – 2** In order to ensure that the proposed project does not impact buried human remains during project construction, the project proponent shall be responsible for on-going monitoring of project construction. Prior to the issuance of any grading permit, the project proponent shall provide the City of Fresno with documentation identifying construction personnel that will be responsible for on-site monitoring. If buried human remains are encountered during construction, further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains shall be halted until the Fresno coroner is contacted and the coroner has made the determinations and notifications required pursuant to Health and Safety Code Section 7050.5. If the coroner determines that Health and Safety Code Section 7050.5(c) require that he give notice to the Native American Heritage Commission, then such notice shall be given within 24 hours, as required by Health and Safety Code Section 7050.5(c). In that event, the NAHC will conduct the notifications required by Public Resources Code Section 5097.98. Until the consultations described below have been completed, the landowner shall further ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices where Native American human remains are located, is not disturbed by further development activity until the landowner has discussed and conferred with the Most Likely Descendants on all reasonable options regarding the descendants' preferences and treatments, as prescribed by Public Resources Code Section 5097.98(b). The NAHC will mediate any disputes regarding treatment of remains in accordance with Public Resources Code Section 5097.94(k). The landowner shall be entitled to exercise rights established by Public Resources Code Section 5097.98(e) if any of the circumstances established by that provision become applicable.

VI. ENERGY

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Responses:

- a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?
- b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Less Than Significant Impact. The proposed Project involves improvements to the existing water treatment plant, installing a plastic liner on three existing water storage basins, and excavating a new 10-acre water storage basin on vacant land.

During construction, the Project would consume energy in two general forms: (1) the fuel energy consumed by construction vehicles and equipment; and (2) bound energy in construction materials, such as asphalt, steel, concrete, pipes, and manufactured or processed materials such as lumber and glass. Title 24 Building Energy Efficiency Standards would provide guidance on construction techniques for the plant house to maximize energy conservation and it is expected that contractors and the City have a strong financial incentive to use recycled materials and products originating from nearby sources in order to reduce materials costs. As such, it is anticipated that materials used in construction and construction vehicle fuel energy would not involve the wasteful, inefficient, or unnecessary consumption of energy.

Operational Project energy consumption would occur for multiple purposes, including but not limited to the new components in the water treatment plant and various pumps used to get water to and from

the water storage basins. Operational energy would also be consumed during each vehicle trip associated with the proposed use.

As discussed in Impact XVII – Transportation/Traffic, the proposed Project would generate approximately two additional daily vehicle trips. The length of these trips and the individual vehicle fuel efficiencies are not known; therefore, the resulting energy consumption cannot be accurately calculated. Adopted federal vehicle fuel standards have continually improved since their original adoption in 1975 and assists in avoiding the inefficient, wasteful, and unnecessary use of energy by vehicles.

As discussed previously, the proposed Project would be required to implement and be consistent with existing energy design standards at the local and state level, such as Title 24. The Project would also be subject to energy conservation requirements in the California Energy Code and CALGreen for the new plant house. Adherence to state code requirements would ensure that the Project would not result in wasteful and inefficient use of non-renewable resources due to building operation.

Therefore, any impacts are *less than significant*.

Mitigation Measures: None are required.

VII. GEOLOGY AND SOILS

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii. Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii. Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv. Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Be located on expansive soil, as defined in Table 18-1-B of the most recently	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

VII. GEOLOGY AND SOILS

Would the project:

adopted Uniform Building Code
creating substantial direct or indirect
risks to life or property?

Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
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e. Have soils incapable of adequately
supporting the use of septic tanks or
alternative waste water disposal systems
where sewers are not available for the
disposal of waste water?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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f. Directly or indirectly destroy a unique
paleontological resource or site or
unique geologic feature?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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Responses:

- a-i. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.
- a-ii. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?
- a-iii. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?
- a-iv. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

No Impact. The proposed project site is not located in an earthquake fault zone as delineated by the 1972 Alquist-Priolo Earthquake Fault Zoning Map Act. The nearest known potentially active fault is the Clovis Fault, located about 15 miles northwest of the site.⁶ No active faults have been mapped within the project boundaries, so there is no potential for fault rupture. It is anticipated that the proposed Project site would be subject to some ground acceleration and ground shaking associated with seismic activity during its design life. The project site would be engineered and constructed in strict accordance with the earthquake resistant design requirements contained in the latest edition of the California Building Code (CBC) for seismic zone III, as well as Title 24 of the California Administrative Code, and therefore would avoid potential seismically induced hazards on planned structures. The impact of seismic hazards on the project would be *less than significant*.

Mitigation Measures: None are required.

b. Result in substantial soil erosion or the loss of topsoil?

Less Than Significant Impact With Mitigation. Construction activities associated with the Project involves excavation of soil for a new water storage basin and pipeline, and installation of various other water treatment facility components. These activities could expose barren soils to sources of wind or water, resulting in the potential for erosion and sedimentation on and off the Project site. During construction, nuisance flow caused by minor rain could flow off-site. The City and/or contractor would be required to employ appropriate sediment and erosion control BMPs as part of a Stormwater Pollution Prevention Plan (SWPPP) that would be required in the California National Pollution Discharge Elimination System (NPDES). In addition, soil erosion and loss of topsoil would be minimized through implementation of the SVJAPCD fugitive dust control measures (See Section III). Once construction is complete, the Project would not result in soil erosion or loss of topsoil. Mitigation Measure GEO – 1 will ensure that impacts remain *less than significant*.

Mitigation Measures:

GEO – 1 In order to reduce on-site erosion due to project construction and operation, an erosion control plan and Storm Water Pollution Prevention Plan (SWPPP) shall be prepared for the site preparation, construction, and post-construction periods by a registered civil engineer or certified professional. The erosion control plan shall incorporate best

⁶ California Department of Conservation. Fault Activity Map of California (2010). <http://maps.conservation.ca.gov/cgs/fam/>. Accessed February 2019.

management practices consistent with the requirements of the National Pollution Discharge Elimination System (NPDES). The erosion component of the plan must at least meet the requirements of the SWPPP required by the California State Water Resources Control Board.

- c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?
- d. Be located on expansive soil, as defined in Table 18-1-B of the most recently adopted Uniform Building Code creating substantial risks to life or property?

Less Than Significant Impact. See Section VIa. above. The site is not at significant risk from earthquakes, ground shaking, liquefaction, or landslide and is otherwise considered geologically stable. Expansive soils are soils that expand when water is added and shrink when they dry out. Soils in and around the WTP site include San Joaquin soil series, which is a sandy loam characterized as moderately well drained. These soils have no limitations for load supporting capacity and as such, would not be classified as expansive. Any impacts would be *less than significant*.

Mitigation Measures: None are required.

- e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

No Impact. The Project does not include the construction, replacement, or disturbance of septic tanks or alternative wastewater disposal systems. Therefore, there is *no impact*.

Mitigation Measures: None are required.

- f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less Than Significant Impact. As identified in the cultural studies performed for the project site, there are no known paleontological resources on or near the site. (See Section V. and Appendix C for more details). Mitigation measures have been added that will protect unknown (buried) resources during construction, including paleontological resources. In addition, the site is substantially disturbed and graded and there are no unique geological features on site or in the area. Therefore, there is a *less than significant impact*.

Mitigation Measures: None are required.

VIII. GREENHOUSE GAS EMISSIONS

Would the project:

a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
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<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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Responses:

a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less Than Significant Impact. The U.S. Environmental Protection Agency published a rule for the mandatory reporting of greenhouse gases from sources that in general emit 25,000 metric tons or more of carbon dioxide (CO₂) per year. As shown in the CalEEMod results (Appendix A), the Project will produce the following CO₂:

Construction (2019) 555.74 MT/yr

Construction (2020) 1,029.67 MT/yr

Operation (2020) 0 MT/yr

Combined: 1,585.41 MT/yr

To be conservative, the proposed project construction and operational CO₂ emissions are combined, and the Project is estimated to produce 1,585.41 tons per year of CO₂. This represents approximately six percent of the reporting threshold. The impact is therefore considered *less than significant*.

Additionally, emissions from construction are temporary in nature. The SJVAPCD has implemented a guidance policy for development projects within their jurisdiction. This policy, "Guidance for Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA," approved by the Board on December 17, 2009, does not address temporary GHG emissions

from construction, nor does this policy establish numeric thresholds for ongoing GHG emissions. Therefore, construction-generated GHGs are *less than significant*.

Mitigation Measures: None are required.

IX. HAZARDS AND HAZARDOUS MATERIALS

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Impair implementation of or physically interfere with an adopted emergency	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

IX. HAZARDS AND HAZARDOUS MATERIALS

Would the project:

response plan or emergency evacuation plan?

- g. Expose people or structures either directly or indirectly to a significant risk of loss, injury or death involving wildland fires?

Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
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☐
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Responses:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Less than Significant Impact. While grading and construction activities may involve the limited transport, storage, use or disposal of hazardous materials, such as the fueling/servicing of construction equipment onsite, the activities would be short-term or one-time in nature and would be subject to federal, state, and local health and safety regulations.

Long-term operation of the proposed Project would involve transport, storage, use or disposal of hazardous materials. Water treatment chemicals would be utilized at the water treatment site. Small quantities of petroleum products, thinners, and paints would also likely be used on-site.

There are several federal, state and local requirements and regulations that are designed to minimize risks from accidental releases of hazardous materials and the proposed Project will be in compliance with all applicable requirements and regulations. Hazardous material storage and use areas at the water treatment plant will be built and operated in compliance with the minimum requirements of the Uniform Fire Code and the California Fire Code. Some of the requirements are secondary containment for liquids, fire water sprinklers over inside storage/use areas, and non-combustible building construction. Additionally, the water treatment plant building will be constructed in compliance with the California Building Code, which requires design features to resist forces

generated by a major earthquake with limited architectural or structural damage and to provide adequate fire protection that precludes accidental releases of hazardous chemicals due to fire.

With implementation of the proposed Project, there are no reasonably foreseeable upset and accident conditions that would create a significant hazard to the public due to the release of hazardous materials. Impacts are considered *less than significant*.

Mitigation Measures: None are required.

- c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No Impact. No schools are located within 0.25 mile of the project site, as the nearest school is AL Conner Elementary School, approximately 0.3 miles north of the water treatment plant. *No impact* would occur.

Mitigation Measures: None are required.

- d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Less Than Significant Impact. A database search was conducted to identify recorded hazardous materials incidents in the project area. The search included recorded incidents on the National Priorities List (NPL), State Priority List (SPL), the Superfund Comprehensive Environmental Response Compensation and Liability Information System List (CERLIS), the EPA's emergency response notification system list (ERNS), and other federal, state, and local agency databases. The project site was not listed in any of the databases searched. There is *no impact*.

Mitigation Measures: None are required.

- e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

No Impact. The nearest public airport to Orange Cove is the Reedley Municipal Airport (eight miles northwest) while the nearest private airport to Orange Cove is Peg Field, also approximately eight miles to the northwest. The proposed Project is not located within any airport safety zone. The Project will have *no impact* to airport operations.

Mitigation Measures: None are required.

- f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less Than Significant Impact. The proposed Project involves improvements to the existing water treatment plant, installing a plastic liner on three existing water storage basins, and excavating a new 10-acre water storage basin on vacant land. Construction activities will take place within the existing water treatment plant and associated water storage basins. Construction of the new water storage basin will be temporary in nature and will not cause any road closures that could interfere with any adopted emergency response or evacuation plan. The construction contractor will be required to work with the City (public works, police/fire, etc.) if and when roadway diversions are required to ensure that adequate access is maintained for residents and emergency vehicles. As such, any impacts will be *less than significant*.

Mitigation Measures: None are required.

- g. Expose people or structures either directly or indirectly to a significant risk of loss, injury or death involving wildland fires?

No Impact. Implementation of the Project would not change the degree of exposure to wildfires because no new housing or businesses will be constructed and there are no wildlands in the Project vicinity, thus precluding the possibility of wildfires. Therefore, there is *no impact*.

Mitigation Measures: None are required.

X. HYDROLOGY AND WATER QUALITY

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
i. Result in substantial erosion or siltation on- or off- site;	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii. create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv. impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

X. HYDROLOGY AND WATER QUALITY

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Responses:

- a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less than Significant Impact. The proposed Project includes improvements to the existing water treatment plant to ensure water quality standards are being met. The State Water Resources Control Board will have ultimate review and approval of the upgraded system, thereby ensuring adequate water quality standards. Any impacts would be *less than significant*.

Mitigation Measures: None are required.

- b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Less Than Significant Impact. The proposed Project is intended to provide adequate water supplies to the City by improving the water storage capacities of the City and by improving water treatment facilities. The new liners will reduce the amount of water lost to seepage, thus improving the efficiency of storing water. Although this will decrease the amount of groundwater recharge, it will also reduce the amount of water that is needed to maintain adequate storage levels (because of the elimination of seepage).

The proposed project would not substantially deplete groundwater resources such that a significant environmental impact would occur. Therefore, the impact is *less than significant*.

Mitigation Measures: None are required.

- c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
 - i. result in substantial erosion or siltation on- or offsite;
 - ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;
 - iii. create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or
 - iv. impede or redirect flood flows?

Less Than Significant Impact. The proposed Project includes improvements to the existing water treatment plant, lining existing water storage basins, and constructing a new, 10-acre lined water storage basin. While the lining of the basins and construction of a new basin will create new impervious surfaces, the basins will be regulated by the water treatment plant to prevent the basins from overflowing in a storm event. During construction, the City would be required to obtain a Stormwater Pollution Prevention Plan to minimize erosion and potential site runoff. As such, any impacts resulting from drainage patterns would be *less than significant*.

Mitigation Measures: None are required.

- d. In flood hazard, tsunami or seiche zones, risk release of pollutants due to project inundation?
- e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

No Impact. The Project is not within a regulatory floodway or within a base floodplain (100 year) elevation. In addition, the Project does not include any housing or structures that would be subject to flooding either from a watercourse or from dam inundation. There are no bodies of water near the site that would create a potential risk of hazards from seiche, tsunami or mudflow. The project will not conflict with any water quality control plans or sustainable groundwater management plan. Therefore, there are *no impacts*.

Mitigation Measures: None are required.

XI. LAND USE AND PLANNING

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Responses:

- a. Physically divide an established community?
- b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

No Impact. Construction and operation of the proposed Project would not cause any land use changes in the surrounding vicinity nor would it introduce barriers that would divide and established community. The proposed Project involves improvements to the existing water treatment plant and does not conflict with any land use plans, policies or regulations. There are *no impacts*.

Mitigation Measures: None are required.

XI. MINERAL RESOURCES

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Responses:

- a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?
- b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

No Impact. There are no known mineral resources in the Project area and none are identified in the City's General Plan near the proposed Project site. Therefore, there is *no impact*.

Mitigation Measures: None are required.

XII. NOISE

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Responses:

- Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?
- Generation of excessive groundborne vibration or groundborne noise levels?

Less than Significant Impact. The nearest sensitive receptors to the water treatment plant are the residents in the apartment complex immediately south. The nearest sensitive receptor to the existing water storage basins is a residence 400 feet east and the nearest sensitive receptor to the new water storage basin is approximately 400 feet to the north. Once operational, neither the existing and new water storage basins or the water treatment plant improvements will generate noise above levels that currently exist.

Proposed Project construction related activities will involve temporary noise sources and are anticipated to begin in 2019 through 2020. Typical construction related equipment include graders, trenchers, small tractors and excavators. During the proposed Project construction, noise from construction related activities will contribute to the noise environment in the immediate vicinity. Activities involved in construction will generate maximum noise levels, as indicated in Table 2, ranging from 79 to 91 dBA at a distance of 50 feet, without feasible noise control (e.g., mufflers) and ranging from 75 to 80 dBA at a distance of 50 feet, with feasible noise controls.

Table 2
Typical Construction Noise Levels

Type of Equipment	dBA at 50 ft	
	Without Feasible Noise Control	With Feasible Noise Control
Dozer or Tractor	80	75
Excavator	88	80
Scraper	88	80
Front End Loader	79	75
Backhoe	85	75
Grader	85	75
Truck	91	75

The distinction between short-term construction noise impacts and long-term operational noise impacts is a typical one in both CEQA documents and local noise ordinances, which generally recognize the reality that short-term noise from construction is inevitable and cannot be mitigated beyond a certain level. Thus, local agencies frequently tolerate short-term noise at levels that they would not accept for permanent noise sources. A more severe approach would be impractical and might preclude the kind of construction activities that are to be expected from time to time. Most residents recognize this reality and expect to hear construction activities on occasion.

Typical outdoor sources of perceptible ground borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. Construction vibrations can be transient, random, or continuous. Construction associated with the proposed Project is earthmoving activities associated installing pipelines and installing equipment.

The approximate threshold of vibration perception is 65 VdB, while 85 VdB is the vibration acceptable only if there are an infrequent number of events per day.⁷ Table 3 describes the typical construction equipment vibration levels.

Table 3
Typical Construction Vibration Levels

Equipment	VdB at 25 ft
Small Bulldozer	58
Jackhammer	79

Vibration from construction activities will be temporary and not exceed the Federal Transit Authority threshold for the nearest sensitive receptors.

As such, any impacts resulting from an increase in noise levels or from groundborne noise levels is *less than significant*.

Mitigation Measures: None are required.

- e. For a project located within the vicinity of a private airstrip or an airport land use plan, or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

No Impact. As the nearest airport is approximately eight miles to the northwest, there is *no impact*.

Mitigation Measures: None are required.

⁷ Transit Noise and Vibration Impact Assessment. Final Report No. FTA-VA-90-1003 prepared for the U.S. Federal Transit Administration by Harris Miller Miller & Hanson Inc., May 2006. Page 7-5. http://www.rtd-fastracks.com/media/uploads/nm/14_Section_38_NoiseandVibration_Part3.pdf. Accessed February 2019.

XIV. POPULATION AND HOUSING

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Responses:

- Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?
- Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

Less Than Significant Impact. There are no new homes associated with the proposed Project, nor would Project implementation displace people or housing. The proposed Project is needed to improve existing water treatment facilities to meet statewide water quality standards. There is a *less than significant impact*.

Mitigation Measures: None are required.

XV. PUBLIC SERVICES

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
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- a. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Responses:

- a. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

Fire protection?

Police Protection?

Schools?

Parks?

Other public facilities?

Less Than Significant Impact. The proposed Project would improve the existing water treatment plant. The proposed Project would not directly or indirectly induce population growth and as such, will not increase demand for schools, parks, or other public facilities. The City of Orange Cove Fire Protection District and City of Orange Cove Police Department will continue to maintain site safety. Any impacts would be *less than significant*.

Mitigation Measures: None are required.

XVI. RECREATION

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Responses:

- a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?
- b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

No Impact. The proposed Project does not include the construction of residential uses or recreational facilities and would not directly or indirectly induce population growth. Therefore, the proposed Project would not cause physical deterioration of existing recreational facilities from increased usage or result in the need for new or expanded recreational facilities. The Project would have *no impact* to existing parks.

Mitigation Measures: None are required.

XVII. TRANSPORTATION/ TRAFFIC

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Responses:

- Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?
- Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?
- Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?
- Result in inadequate emergency access?

Less Than Significant Impact. The proposed Project includes the construction of additional components at the existing water treatment plant, lining approximately seven acres of water storage basins, and constructing a new 10-acre water storage basin. There are no components of the proposed Project that would increase hazards due to a geometric design feature. As traffic due to construction activities would be temporary in nature, the proposed Project would not cause a substantial increase in traffic or result in

inadequate emergency access. Once installed, the new water treatment facilities and the newly lined water basins would not generate significant additional traffic trips per day. The new water basin would require periodic maintenance, approximately two trips per day. The Project would not conflict with a program plan, ordinance, or policy addressing the circulation system and as such, impacts would be *less than significant*.

Mitigation Measures: None are required.

XVIII. TRIBAL CULTURAL RESOURCES

Would the project:

a. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or

ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
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Responses:

- a). Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:
- i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or
 - ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Less Than Significant Impact. In accordance with Assembly Bill (AB) 52, potentially affected Tribes were formally notified of this Project and were given the opportunity to request consultation on the Project. The City contacted the Native American Heritage Commission, requesting a contact list of applicable Native American Tribes, which was provided to the City. The City provided letters to the listed Tribes, notifying them of the Project and requesting consultation, if desired. The responses came from Dick Charley of the Dunlap Band of Mono Indians, Stan Alec of the Kings River Choinumni, Ron Goode with the North Fork Mono Tribe and Robert Pennell, Tribal Cultural Resources Director for Table Mountain Rancheria; all of whom stated that the Project was either outside their area of interest and/or declined any further participation in this Project. Therefore, there is a *less than significant impact*.

Mitigation Measures: None are required.

XIX. UTILITIES AND SERVICE SYSTEMS

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Responses:

- a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

Less Than Significant Impact with Mitigation. The Project includes improvements to the City's existing water treatment plant, the results of which would not require the construction of wastewater treatment or storm water drainage, electric power, natural gas, or telecommunication facilities. The Project itself is the construction of improvements to the water treatment plant and any environmental impacts resulting from the improvements are discussed within this document.

Mitigation Measures: The Project will require multiple mitigation measures as identified throughout this document.

- b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Less Than Significant Impact. The proposed Project includes improving the existing Orange Cove water treatment plant and storage capacity. No new water supplies would be required as a result of the Project. There is *no impact*.

Mitigation Measures: None are required.

- c. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Less Than Significant Impact. As the proposed Project includes improvements to the existing water treatment plant, no component of the proposed Project would generate wastewater. There is *no impact*.

Mitigation Measures: None are required.

- d. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?
- e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Less Than Significant Impact. Proposed Project construction and operation will generate minimal amounts of solid waste. The proposed new water storage basin will be an unmanned facility and

therefore won't generate waste on an on-going basis. The proposed Project will comply with all federal, state and local statutes and regulations related to solid waste. Any impacts will be *less than significant*.

Mitigation Measures: None are required.

XX. WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Substantially impair an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Responses:

- a. Substantially impair an adopted emergency response plan or emergency evacuation plan?
- b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

- c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?
- d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

Less Than Significant Impact. The proposed Project is located in the center of a highly disturbed area (roads, active agriculture, water conveyance facilities, ect.) which precludes the risk of wildfire. The area is flat in nature which would limit the risk of downslope flooding and landslides, and limit any wildfire spread.

To receive building permits, the proposed Project would be required to be in compliance with the adopted emergency response plan. As such, any wildfire risk to the project structures or people would be *less than significant*.

Mitigation Measures: None are required.

XXI. MANDATORY FINDINGS OF SIGNIFICANCE

Would the project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Responses:

- a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

Less than Significant Impact With Mitigation. The analyses of environmental issues contained in this Initial Study indicate that the proposed Project is not expected to have substantial impact on the environment or on any resources identified in the Initial Study. Mitigation measures have been incorporated in the Project to reduce all potentially significant impacts to *less than significant*.

- b. Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

Less than Significant Impact. CEQA Guidelines Section 15064(i) states that a Lead Agency shall consider whether the cumulative impact of a project is significant and whether the effects of the project are cumulatively considerable. The assessment of the significance of the cumulative effects of a project must, therefore, be conducted in connection with the effects of past projects, other current projects, and probable future projects. Due to the nature of the Project and consistency with environmental policies, incremental contributions to impacts are considered less than cumulatively considerable. The proposed Project would not contribute substantially to adverse cumulative conditions, or create any substantial indirect impacts (i.e., increase in population could lead to an increase need for housing, increase in traffic, air pollutants, etc.). The impact is *less than significant*.

- c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Less than Significant Impact With Mitigation. The analyses of environmental issues contained in this Initial Study indicate that the project is not expected to have substantial impact on human beings, either directly or indirectly. Mitigation measures have been incorporated in the Project to reduce all potentially significant impacts to *less than significant*.

Chapter 4

MITIGATION MONITORING & REPORTING PROGRAM

MITIGATION MONITORING AND REPORTING PROGRAM

This Mitigation Monitoring and Reporting Program (MMRP) has been formulated based upon the findings of the Initial Study/Mitigated Negative Declaration (IS/MND) for the Water Treatment / Water Storage project. The MMRP lists mitigation measures recommended in the IS/MND for the proposed Project and identifies monitoring and reporting requirements as well as conditions recommended by responsible agencies who commented on the project.

The first column of the Table identifies the mitigation measure. The second column, entitled “Party Responsible for Implementing Mitigation,” names the party responsible for carrying out the required action. The third column, “Implementation Timing,” identifies the time the mitigation measure should be initiated. The fourth column, “Party Responsible for Monitoring,” names the party ultimately responsible for ensuring that the mitigation measure is implemented. The last column will be used by the City to ensure that individual mitigation measures have been monitored.

Mitigation Measure	Party responsible for Implementing Mitigation	Implementation Timing	Party responsible for Monitoring	Verification (name/date)
Biology				
<p>BIO – 1 Protect nesting Swainson’s hawks</p> <ol style="list-style-type: none"> 1. To the extent practicable, construction shall be scheduled to avoid the Swainson’s hawk nesting season, which extends from March through August. 2. If it is not possible to schedule work between September and February, a qualified biologist shall conduct a survey for active Swainson’s hawk nests within 0.25 miles of the Project site no more than 14 days prior to the start of construction. If an active nest is found within 0.25 miles, and the qualified biologist determines that Project activities would disrupt nesting, a construction-free buffer or limited operating period shall be implemented in consultation with the CDFW. <p>BIO – 2 Protect nesting burrowing owls</p> <ol style="list-style-type: none"> 1. Conduct protocol surveys season to determine if burrowing owl is occupying the Project site. Surveys shall follow guidance set forth by the California Department of Fish and Game Staff Report 	City of Orange Cove	Prior to construction	City of Orange Cove	

Mitigation Measure	Party responsible for Implementing Mitigation	Implementation Timing	Party responsible for Monitoring	Verification (name/date)
<p>on Burrowing Owl Mitigation (Appendix D of Appendix A). A qualified biologist shall conduct four surveys during the breeding; at least one survey visit must occur between 15 February and 15 April; a minimum of three survey visits must occur between 15 April and 15 July, spaced at least three weeks apart, with at least one of those survey visits occurring after 15 June.</p> <ol style="list-style-type: none"> 2. If a burrowing owl or the positive sign of burrowing owl use (i.e., feathers, scat, pellets) is detected on or within 150 feet of the Project site, then CDFW shall be contacted to determine if relocation efforts are warranted. 3. If burrowing owl is not detected during protocol surveys, a final pre-construction burrowing owl survey shall be conducted by a qualified biologist no more than 14 days prior to the start of construction to ensure that burrowing owls have not recently inhabited the Project site; this survey can be done in conjunction with Mitigation Measure BIO-3, below. <p>BIO – 3 Protect Nesting Birds</p>				

Mitigation Measure	Party responsible for Implementing Mitigation	Implementation Timing	Party responsible for Monitoring	Verification (name/date)
<p>1. To the extent practicable, construction shall be scheduled to avoid the nesting season, which extends from February through August.</p> <p>If it is not possible to schedule construction between September and January, preconstruction surveys for nesting birds shall be conducted by a qualified biologist to ensure that no active nests will be disturbed during Project implementation. A pre-construction survey shall be conducted no more than 14 days prior to the initiation of construction activities. During this survey, the qualified biologist shall inspect all potential nest substrates in and immediately adjacent to the impact areas for nests. If an active nest is found close enough to the construction area to be disturbed by these activities, the qualified biologist shall determine the extent of a construction-free buffer to be established around the nest. If work cannot proceed without disturbing the nesting birds, work may need to be halted or redirected to other areas until nesting and fledging are</p>				

Mitigation Measure	Party responsible for Implementing Mitigation	Implementation Timing	Party responsible for Monitoring	Verification (name/date)
completed or the nest has otherwise failed for non-construction related reasons.				
Cultural				
CUL – 1 Should evidence of prehistoric archeological resources be discovered during construction, the contractor shall halt all work within 25 feet of the find and the resource shall be evaluated by a qualified archaeologist. If evidence of any archaeological, cultural, and/or historical deposits is found, hand excavation and/or mechanical excavation shall proceed to evaluate the deposits for determination of significance as defined by the CEQA guidelines. The archaeologist shall submit reports, to the satisfaction of the City of Fresno, describing the testing program and subsequent results. These reports shall identify any program mitigation that the project proponent shall complete in order to mitigate archaeological impacts (including resource recovery and/or avoidance testing and analysis, removal, reburial, and curation of archaeological	City of Orange Cove	Prior to and during construction	City of Orange Cove	

Mitigation Measure	Party responsible for Implementing Mitigation	Implementation Timing	Party responsible for Monitoring	Verification (name/date)
<p>resources).</p> <p>CUL – 2 In order to ensure that the proposed project does not impact buried human remains during project construction, the project proponent shall be responsible for on-going monitoring of project construction. Prior to the issuance of any grading permit, the project proponent shall provide the City of Fresno with documentation identifying construction personnel that will be responsible for on-site monitoring. If buried human remains are encountered during construction, further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains shall be halted until the Fresno coroner is contacted and the coroner has made the determinations and notifications required pursuant to Health and Safety Code Section 7050.5. If the coroner determines that Health and Safety Code Section 7050.5(c) require that he give notice to the Native American Heritage Commission, then such notice shall be given within 24 hours, as required by Health and Safety Code Section 7050.5(c).</p>				

Mitigation Measure	Party responsible for Implementing Mitigation	Implementation Timing	Party responsible for Monitoring	Verification (name/date)
<p>In that event, the NAHC will conduct the notifications required by Public Resources Code Section 5097.98. Until the consultations described below have been completed, the landowner shall further ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices where Native American human remains are located, is not disturbed by further development activity until the landowner has discussed and conferred with the Most Likely Descendants on all reasonable options regarding the descendants' preferences and treatments, as prescribed by Public Resources Code Section 5097.98(b). The NAHC will mediate any disputes regarding treatment of remains in accordance with Public Resources Code Section 5097.94(k). The landowner shall be entitled to exercise rights established by Public Resources Code Section 5097.98(e) if any of the circumstances established by that provision become applicable.</p>				

Chapter 5

PREPARERS

LIST OF PREPARERS

Crawford & Bowen Planning, Inc.

- Travis Crawford, AICP, Principal Environmental Planner
- Emily Bowen, LEED AP, Principal Environmental Planner

AM Consulting Engineers

- Alfonso Manrique, PE

Colibri Ecological Consulting, LLC.

- Jeff Davis

Applied EarthWorks, Inc.

- Randy L. Ottenhoff
- Annie McCausland

Appendices

Appendix A

CalEEMod Output Files

Orange Cove Water Treatment Plant Improvements - San Joaquin Valley Unified APCD Air District, Annual

Orange Cove Water Treatment Plant Improvements
San Joaquin Valley Unified APCD Air District, Annual**1.0 Project Characteristics**

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	19.00	Acre	19.00	827,640.00	0

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.7	Precipitation Freq (Days)	45
Climate Zone	3			Operational Year	2020
Utility Company					
CO2 Intensity (lb/MW hr)	0	CH4 Intensity (lb/MW hr)	0	N2O Intensity (lb/MW hr)	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase -

Table Name	Column Name	Default Value	New Value
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

2.0 Emissions Summary

Orange Cove Water Treatment Plant Improvements - San Joaquin Valley Unified APCD Air District, Annual

2.1 Overall Construction

Unmitigated Construction

	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
Year	tons/yr										MT/yr					
2019	0.3361	2.8915	2.3401	6.0900e-003	0.4618	0.1142	0.5760	0.1686	0.1065	0.2751	0.0000	553.7909	553.7909	0.0780	0.0000	555.7419
2020	0.6799	3.9603	3.7947	0.0113	0.5453	0.1366	0.6819	0.1469	0.1284	0.2753	0.0000	1,027.0016	1,027.0016	0.1067	0.0000	1,029.6684
Maximum	0.6799	3.9603	3.7947	0.0113	0.5453	0.1366	0.6819	0.1686	0.1284	0.2753	0.0000	1,027.0016	1,027.0016	0.1067	0.0000	1,029.6684

Mitigated Construction

	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
Year	tons/yr										MT/yr					
2019	0.3361	2.8915	2.3401	6.0900e-003	0.4618	0.1142	0.5760	0.1686	0.1065	0.2751	0.0000	553.7906	553.7906	0.0780	0.0000	555.7416
2020	0.6799	3.9603	3.7947	0.0113	0.5453	0.1366	0.6819	0.1469	0.1284	0.2753	0.0000	1,027.0013	1,027.0013	0.1067	0.0000	1,029.6681
Maximum	0.6799	3.9603	3.7947	0.0113	0.5453	0.1366	0.6819	0.1686	0.1284	0.2753	0.0000	1,027.0013	1,027.0013	0.1067	0.0000	1,029.6681

[illegible]

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Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	6-1-2019	8-31-2019	1.2719	1.2719
2	9-1-2019	11-30-2019	1.4787	1.4787
3	12-1-2019	2-29-2020	1.3950	1.3950
4	3-1-2020	5-31-2020	1.3544	1.3544
5	6-1-2020	8-31-2020	1.3497	1.3497
6	9-1-2020	9-30-2020	0.4401	0.4401
		Highest	1.4787	1.4787

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	0.0708	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.4000e-004	3.4000e-004	0.0000	0.0000	3.6000e-004
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
Total	0.0708	0.0000	1.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	3.4000e-004	3.4000e-004	0.0000	0.0000	3.6000e-004

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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	0.0708	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.4000e-004	3.4000e-004	0.0000	0.0000	3.6000e-004
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
Total	0.0708	0.0000	1.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	3.4000e-004	3.4000e-004	0.0000	0.0000	3.6000e-004

	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**

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Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/29/2019	7/12/2019	5	10	
2	Grading	Grading	7/13/2019	8/23/2019	5	30	
3	Building Construction	Building Construction	8/24/2019	10/16/2020	5	300	
4	Paving	Paving	10/17/2020	11/13/2020	5	20	
5	Architectural Coating	Architectural Coating	11/14/2020	12/11/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 19

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 49,658 (Architectural Coating – sqft)

OffRoad Equipment

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Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Grading	Excavators	2	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
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Welders	1	8.00	46	0.45

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
Site Preparation	7	18.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	348.00	136.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	70.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

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3.1 Mitigation Measures Construction**3.2 Site Preparation - 2019****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					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0217	0.2279	0.1103	1.9000e-004		0.0120	0.0120		0.0110	0.0110	0.0000	17.0843	17.0843	5.4100e-003	0.0000	17.2195
Total	0.0217	0.2279	0.1103	1.9000e-004	0.0903	0.0120	0.1023	0.0497	0.0110	0.0607	0.0000	17.0843	17.0843	5.4100e-003	0.0000	17.2195

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	5.8000e-004	4.4000e-004	4.2800e-003	1.0000e-005	1.1200e-003	1.0000e-005	1.1300e-003	3.0000e-004	1.0000e-005	3.0000e-004	0.0000	1.0266	1.0266	3.0000e-005	0.0000	1.0274
Total	5.8000e-004	4.4000e-004	4.2800e-003	1.0000e-005	1.1200e-003	1.0000e-005	1.1300e-003	3.0000e-004	1.0000e-005	3.0000e-004	0.0000	1.0266	1.0266	3.0000e-005	0.0000	1.0274

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3.2 Site Preparation - 2019**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					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0217	0.2279	0.1103	1.9000e-004		0.0120	0.0120		0.0110	0.0110	0.0000	17.0843	17.0843	5.4100e-003	0.0000	17.2195
Total	0.0217	0.2279	0.1103	1.9000e-004	0.0903	0.0120	0.1023	0.0497	0.0110	0.0607	0.0000	17.0843	17.0843	5.4100e-003	0.0000	17.2195

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	5.8000e-004	4.4000e-004	4.2800e-003	1.0000e-005	1.1200e-003	1.0000e-005	1.1300e-003	3.0000e-004	1.0000e-005	3.0000e-004	0.0000	1.0266	1.0266	3.0000e-005	0.0000	1.0274
Total	5.8000e-004	4.4000e-004	4.2800e-003	1.0000e-005	1.1200e-003	1.0000e-005	1.1300e-003	3.0000e-004	1.0000e-005	3.0000e-004	0.0000	1.0266	1.0266	3.0000e-005	0.0000	1.0274

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3.3 Grading - 2019**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					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0711	0.8178	0.5007	9.3000e-004		0.0357	0.0357		0.0329	0.0329	0.0000	83.5520	83.5520	0.0264	0.0000	84.2129
Total	0.0711	0.8178	0.5007	9.3000e-004	0.1301	0.0357	0.1658	0.0540	0.0329	0.0868	0.0000	83.5520	83.5520	0.0264	0.0000	84.2129

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	1.9400e-003	1.4500e-003	0.0143	4.0000e-005	3.7300e-003	3.0000e-005	3.7600e-003	9.9000e-004	2.0000e-005	1.0200e-003	0.0000	3.4220	3.4220	1.1000e-004	0.0000	3.4246
Total	1.9400e-003	1.4500e-003	0.0143	4.0000e-005	3.7300e-003	3.0000e-005	3.7600e-003	9.9000e-004	2.0000e-005	1.0200e-003	0.0000	3.4220	3.4220	1.1000e-004	0.0000	3.4246

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3.3 Grading - 2019**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					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0711	0.8178	0.5007	9.3000e-004		0.0357	0.0357		0.0329	0.0329	0.0000	83.5519	83.5519	0.0264	0.0000	84.2128
Total	0.0711	0.8178	0.5007	9.3000e-004	0.1301	0.0357	0.1658	0.0540	0.0329	0.0868	0.0000	83.5519	83.5519	0.0264	0.0000	84.2128

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	1.9400e-003	1.4500e-003	0.0143	4.0000e-005	3.7300e-003	3.0000e-005	3.7600e-003	9.9000e-004	2.0000e-005	1.0200e-003	0.0000	3.4220	3.4220	1.1000e-004	0.0000	3.4246
Total	1.9400e-003	1.4500e-003	0.0143	4.0000e-005	3.7300e-003	3.0000e-005	3.7600e-003	9.9000e-004	2.0000e-005	1.0200e-003	0.0000	3.4220	3.4220	1.1000e-004	0.0000	3.4246

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3.4 Building Construction - 2019**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	0.1086	0.9696	0.7895	1.2400e-003		0.0593	0.0593		0.0558	0.0558	0.0000	108.1479	108.1479	0.0264	0.0000	108.8066
Total	0.1086	0.9696	0.7895	1.2400e-003		0.0593	0.0593		0.0558	0.0558	0.0000	108.1479	108.1479	0.0264	0.0000	108.8066

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	0.0287	0.7968	0.1598	1.6600e-003	0.0375	5.7400e-003	0.0433	0.0108	5.4900e-003	0.0163	0.0000	157.9621	157.9621	0.0141	0.0000	158.3144
Worker	0.1036	0.0774	0.7613	2.0200e-003	0.1990	1.4000e-003	0.2004	0.0529	1.2900e-003	0.0542	0.0000	182.5960	182.5960	5.6300e-003	0.0000	182.7366
Total	0.1322	0.8743	0.9211	3.6800e-003	0.2365	7.1400e-003	0.2437	0.0637	6.7800e-003	0.0705	0.0000	340.5581	340.5581	0.0197	0.0000	341.0510

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3.4 Building Construction - 2019**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	0.1086	0.9696	0.7895	1.2400e-003		0.0593	0.0593		0.0558	0.0558	0.0000	108.1478	108.1478	0.0264	0.0000	108.8065
Total	0.1086	0.9696	0.7895	1.2400e-003		0.0593	0.0593		0.0558	0.0558	0.0000	108.1478	108.1478	0.0264	0.0000	108.8065

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	0.0287	0.7968	0.1598	1.6600e-003	0.0375	5.7400e-003	0.0433	0.0108	5.4900e-003	0.0163	0.0000	157.9621	157.9621	0.0141	0.0000	158.3144
Worker	0.1036	0.0774	0.7613	2.0200e-003	0.1990	1.4000e-003	0.2004	0.0529	1.2900e-003	0.0542	0.0000	182.5960	182.5960	5.6300e-003	0.0000	182.7366
Total	0.1322	0.8743	0.9211	3.6800e-003	0.2365	7.1400e-003	0.2437	0.0637	6.7800e-003	0.0705	0.0000	340.5581	340.5581	0.0197	0.0000	341.0510

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3.4 Building Construction - 2020**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	0.2205	1.9954	1.7522	2.8000e-003		0.1162	0.1162		0.1092	0.1092	0.0000	240.8744	240.8744	0.0588	0.0000	242.3435
Total	0.2205	1.9954	1.7522	2.8000e-003		0.1162	0.1162		0.1092	0.1092	0.0000	240.8744	240.8744	0.0588	0.0000	242.3435

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	0.0528	1.6498	0.3117	3.7300e-003	0.0848	8.6500e-003	0.0935	0.0245	8.2700e-003	0.0328	0.0000	354.1147	354.1147	0.0299	0.0000	354.8629
Worker	0.2131	0.1540	1.5300	4.4300e-003	0.4499	3.0700e-003	0.4530	0.1196	2.8300e-003	0.1224	0.0000	400.0358	400.0358	0.0111	0.0000	400.3120
Total	0.2658	1.8038	1.8417	8.1600e-003	0.5347	0.0117	0.5464	0.1441	0.0111	0.1552	0.0000	754.1506	754.1506	0.0410	0.0000	755.1749

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3.4 Building Construction - 2020**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	0.2205	1.9954	1.7522	2.8000e-003		0.1162	0.1162		0.1092	0.1092	0.0000	240.8741	240.8741	0.0588	0.0000	242.3432
Total	0.2205	1.9954	1.7522	2.8000e-003		0.1162	0.1162		0.1092	0.1092	0.0000	240.8741	240.8741	0.0588	0.0000	242.3432

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	0.0528	1.6498	0.3117	3.7300e-003	0.0848	8.6500e-003	0.0935	0.0245	8.2700e-003	0.0328	0.0000	354.1147	354.1147	0.0299	0.0000	354.8629
Worker	0.2131	0.1540	1.5300	4.4300e-003	0.4499	3.0700e-003	0.4530	0.1196	2.8300e-003	0.1224	0.0000	400.0358	400.0358	0.0111	0.0000	400.3120
Total	0.2658	1.8038	1.8417	8.1600e-003	0.5347	0.0117	0.5464	0.1441	0.0111	0.1552	0.0000	754.1506	754.1506	0.0410	0.0000	755.1749

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3.5 Paving - 2020**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	0.0136	0.1407	0.1465	2.3000e-004		7.5300e-003	7.5300e-003		6.9300e-003	6.9300e-003	0.0000	20.0282	20.0282	6.4800e-003	0.0000	20.1902
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0136	0.1407	0.1465	2.3000e-004		7.5300e-003	7.5300e-003		6.9300e-003	6.9300e-003	0.0000	20.0282	20.0282	6.4800e-003	0.0000	20.1902

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	8.8000e-004	6.4000e-004	6.3400e-003	2.0000e-005	1.8600e-003	1.0000e-005	1.8800e-003	5.0000e-004	1.0000e-005	5.1000e-004	0.0000	1.6580	1.6580	5.0000e-005	0.0000	1.6591
Total	8.8000e-004	6.4000e-004	6.3400e-003	2.0000e-005	1.8600e-003	1.0000e-005	1.8800e-003	5.0000e-004	1.0000e-005	5.1000e-004	0.0000	1.6580	1.6580	5.0000e-005	0.0000	1.6591

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3.5 Paving - 2020**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	0.0136	0.1407	0.1465	2.3000e-004		7.5300e-003	7.5300e-003		6.9300e-003	6.9300e-003	0.0000	20.0282	20.0282	6.4800e-003	0.0000	20.1901
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0136	0.1407	0.1465	2.3000e-004		7.5300e-003	7.5300e-003		6.9300e-003	6.9300e-003	0.0000	20.0282	20.0282	6.4800e-003	0.0000	20.1901

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	8.8000e-004	6.4000e-004	6.3400e-003	2.0000e-005	1.8600e-003	1.0000e-005	1.8800e-003	5.0000e-004	1.0000e-005	5.1000e-004	0.0000	1.6580	1.6580	5.0000e-005	0.0000	1.6591
Total	8.8000e-004	6.4000e-004	6.3400e-003	2.0000e-005	1.8600e-003	1.0000e-005	1.8800e-003	5.0000e-004	1.0000e-005	5.1000e-004	0.0000	1.6580	1.6580	5.0000e-005	0.0000	1.6591

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3.6 Architectural Coating - 2020**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					
Archit. Coating	0.1726					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	0.1750	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582

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	4.1200e-003	2.9800e-003	0.0296	9.0000e-005	8.7000e-003	6.0000e-005	8.7600e-003	2.3100e-003	5.0000e-005	2.3700e-003	0.0000	7.7372	7.7372	2.1000e-004	0.0000	7.7426
Total	4.1200e-003	2.9800e-003	0.0296	9.0000e-005	8.7000e-003	6.0000e-005	8.7600e-003	2.3100e-003	5.0000e-005	2.3700e-003	0.0000	7.7372	7.7372	2.1000e-004	0.0000	7.7426

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3.6 Architectural Coating - 2020**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					
Archit. Coating	0.1726					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.4200e-003	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582
Total	0.1750	0.0168	0.0183	3.0000e-005		1.1100e-003	1.1100e-003		1.1100e-003	1.1100e-003	0.0000	2.5533	2.5533	2.0000e-004	0.0000	2.5582

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	4.1200e-003	2.9800e-003	0.0296	9.0000e-005	8.7000e-003	6.0000e-005	8.7600e-003	2.3100e-003	5.0000e-005	2.3700e-003	0.0000	7.7372	7.7372	2.1000e-004	0.0000	7.7426
Total	4.1200e-003	2.9800e-003	0.0296	9.0000e-005	8.7000e-003	6.0000e-005	8.7600e-003	2.3100e-003	5.0000e-005	2.3700e-003	0.0000	7.7372	7.7372	2.1000e-004	0.0000	7.7426

4.0 Operational Detail - Mobile

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4.1 Mitigation Measures Mobile

	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	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
Unmitigated	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

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	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.499524	0.033454	0.168279	0.130431	0.021581	0.005690	0.021752	0.108566	0.001799	0.001690	0.005397	0.000987	0.000848

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5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

[illegible]

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5.2 Energy by Land Use - NaturalGas

Unmitigated

[illegible]

Mitigated

[illegible]

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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
Total		0.0000	0.0000	0.0000	0.0000

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
Total		0.0000	0.0000	0.0000	0.0000

6.0 Area Detail**6.1 Mitigation Measures Area**

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	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	0.0708	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.4000e-004	3.4000e-004	0.0000	0.0000	3.6000e-004
Unmitigated	0.0708	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.4000e-004	3.4000e-004	0.0000	0.0000	3.6000e-004

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	0.0173					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0535					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.4000e-004	3.4000e-004	0.0000	0.0000	3.6000e-004
Total	0.0708	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.4000e-004	3.4000e-004	0.0000	0.0000	3.6000e-004

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6.2 Area by SubCategory**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					
Architectural Coating	0.0173					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0535					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.4000e-004	3.4000e-004	0.0000	0.0000	3.6000e-004
Total	0.0708	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.4000e-004	3.4000e-004	0.0000	0.0000	3.6000e-004

7.0 Water Detail**7.1 Mitigation Measures Water**

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	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
Total		0.0000	0.0000	0.0000	0.0000

Orange Cove Water Treatment Plant Improvements - San Joaquin Valley Unified APCD Air District, Annual

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
Total		0.0000	0.0000	0.0000	0.0000

8.0 Waste Detail

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

Orange Cove Water Treatment Plant Improvements - San Joaquin Valley Unified APCD Air District, Annual

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
Total		0.0000	0.0000	0.0000	0.0000

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
Total		0.0000	0.0000	0.0000	0.0000

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	-----------	-------------	-------------	-----------

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10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
----------------	--------	-----------	------------	-------------	-------------	-----------

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

User Defined Equipment

Equipment Type	Number
----------------	--------

11.0 Vegetation

Appendix B

Biological Evaluation Report

Biological Resource Evaluation

Orange Cove Water Treatment Plant Improvement Project

Fresno and Tulare counties, California



PREPARED FOR:

The City of Orange Cove

633 Sixth Street

Orange Cove, CA 93646

PREPARED BY:

Colibri Ecological Consulting, LLC

9493 N Fort Washington Road, Suite 108

Fresno, CA 93730

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Executive Summary

The City of Orange Cove (City) proposes to improve its water treatment plant by constructing new and improving existing water treatment infrastructure (the Project). The Project will involve (1) lining three existing raw water storage basins with plastic, (2) constructing and operating a new raw water storage basin on an adjacent 10-acre property, and (3) constructing and operating new treatment facilities at the existing water treatment plant. The purpose of this Project is to improve water treatment facilities and capacities.

The City will obtain financing for the project from the Clean Water State Revolving Fund (CWSRF). The CWSRF is a state and federal partnership that provides communities a permanent, independent source of low-cost financing for water quality infrastructure projects. It is administered by the State of California and partially funded by the United States Environmental Protection Agency. Consequently, the Project must not only meet environmental documentation and review requirements under the California Environmental Quality Act (CEQA) but must meet such requirements with respect to certain federal laws and regulations as well. This state and federal review process is known as CEQA-Plus.

To evaluate whether the Project may affect biological resources under CEQA-Plus purview, we (1) obtained official lists from the United States Fish and Wildlife Service and the California Department of Fish and Wildlife (CDFW) of special-status species and designated and proposed critical habitat, (2) reviewed other relevant background information such as aerial images and topographic maps, and (3) conducted a field reconnaissance survey of the Project site.

This biological resource evaluation summarizes (1) existing biological conditions on the Project site, (2) the potential for special-status species and regulated habitats to occur on or near the Project site, (3) the potential impacts of the proposed Project on biological resources and regulated habitats, and (4) measures to reduce those potential impacts to a less-than-significant level under CEQA. We conclude the Project will not affect regulated habitats but could affect two special-status species, the state-listed as threatened Swainson's hawk (*Buteo swainsoni*) and burrowing owl (*Athene cunicularia*), which is designated a California Species of Special Concern by the CDFW. In addition, other nesting migratory birds could be affected, but effects to all species can be reduced to less-than-significant levels with mitigation.

Abbreviations

Abbreviation	Definition
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CNDDDB	California Natural Diversity Data Base
CNPS	California Native Plant Society
CWSRF	Clean Water State Revolving Fund
EFH	Essential Fish Habitat
EPA	Environmental Protection Agency
FE	Federally listed as Endangered
FESA	Federal Endangered Species Act
FP	Fully Protected
FT	Federally listed as Threatened
NMFS	National Marine Fisheries Service
SE	State-listed as Endangered
SSSC	State Species of Special Concern
USACE	United States Army Corps of Engineers
USC	United States Code
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

1.0 Introduction

1.1 Background

The City of Orange Cove (City) proposes to improve its water treatment plant by constructing new and improving existing water treatment infrastructure. The City will obtain financing for this water quality improvement project (Project) from the Clean Water State Revolving Fund (CWSRF). The CWSRF is administered by the State Water Resources Control Board and partially funded by a capitalization grant from the United States Environmental Protection Agency (EPA). Due to this federal nexus, issuing funds from the CWSRF constitutes a federal action, one that requires the EPA to determine whether the proposed action may affect federally protected resources. The Project must therefore comply with requirements of the California Environmental Quality Act (CEQA) and certain federal environmental laws and regulations as well. This state and federal review process is known as CEQA-Plus.

The purpose of this biological resource evaluation is to assess whether the Project will affect state- or federally protected resources pursuant to CEQA-Plus guidelines. Such resources include species of plants or animals listed or proposed for listing under the Federal Endangered Species Act (FESA) or the California Endangered Species Act (CESA), as well as those covered under the Migratory Bird Treaty Act (MBTA), the California Native Plant Protection Act, and various other sections of the California Fish and Game Code. Biological resources considered here also include designated or proposed critical habitat recognized under the FESA. This biological resource evaluation also addresses Project-related impacts to regulated habitats, which are those under the jurisdiction of the United States Army Corps of Engineers (USACE) or California Department of Fish and Wildlife (CDFW), as well as those addressed under the Wild and Scenic Rivers Act, Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), and Executive Order 11988 pertaining to floodplain management.

1.2 Project Description

The Project includes three components:

1. Line raw water storage basins. This component will involve installing plastic lining to three existing raw water storage basins.
2. Construct a new water storage basin. This component will involve constructing a new raw water storage basin on an adjacent 10-acre property. The new basin will be excavated six to seven feet deep, and a new pipeline (five to six feet deep) will be installed that will connect the new water storage basin to the northernmost existing water basin.
3. Construct and operate new treatment facilities. This component will involve constructing new and improving existing infrastructure at the existing water treatment plant. New

construction will consist of installing a mechanical screen at the intake pipe on the bank of the Friant-Kern Canal, new raw water pumps and plumbing, a new 60' x 55' plant building, new filtered water transfer pumps, a new clearwell, new variable frequency drives on booster pumps, a new sludge dewatering box, new backwash pumps, a new concrete masonry unit wall and access gate, and new effluent flow meters. New pipelines in the water treatment plant will be excavated four to five feet deep.

1.3 Project Location

The Project site is in the San Joaquin Valley within and near the eastern city limits of Orange Cove in Fresno and Tulare counties, California (Figure 1). The Project site is at an elevation of about 435 feet above mean sea level. The locations of the three components are as follows:

1. Line raw water storage basins. The existing water storage basins are on the south side of Highway 63, roughly 0.15 miles east of the intersection with Hills Valley Road in Tulare County (Figure 2). The existing basins are surrounded by orchards, a fallow field, and an approximately 8-acre solar farm.
2. Construct new water storage basin. This component is just west of the existing water storage basins in a fallow field on the southeast corner of the intersection of Highway 63 and Hills Valley Road in Tulare County (Figure 2). The site is surrounded by orchards, an approximately 8-acre solar farm, the existing water storage basins, and the Friant-Kern Canal.
3. Construct and operate new treatment facilities. The existing water treatment plant is at 602 2nd Street, in the city of Orange Cove in Fresno County (Figure 2). The site is surrounded by residential and municipal development and the Friant-Kern Canal.



Figure 1. Site vicinity map.

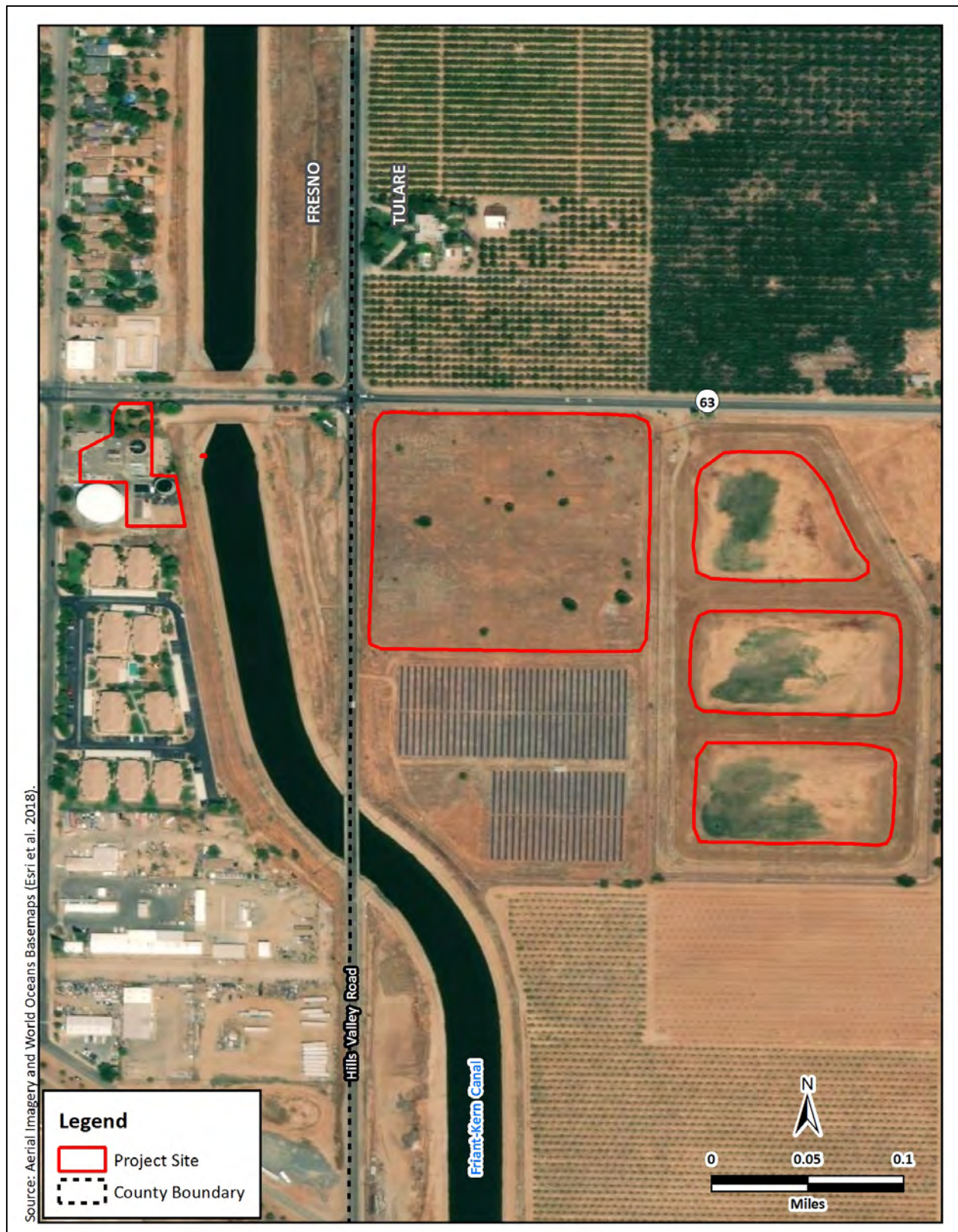


Figure 2. Orange Cove Water Treatment Plant Improvement Project site map.

1.4 Purpose and Need of Proposed Project

The purpose of the Project is to improve water treatment facilities and treatment capacities. The Project is needed to meet statewide water quality standards established by the State Water Resources Control Board.

1.5 Consultation History

Lists of all species listed or proposed for listing as threatened or endangered and all designated or proposed critical habitat under the FESA that could occur near the Project site were obtained by Colibri Staff Scientist Joe Medley from the United States Fish and Wildlife Service (USFWS) website (<https://ecos.fws.gov/ipac/>) on 23 August 2018 (Appendix A).

1.6 Regulatory Framework

The relevant federal and state regulatory requirements and policies that guide the impact analysis of the Project are summarized below.

1.6.1 Federal Requirements

Federal Endangered Species Act. The USFWS and the National Oceanographic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) enforce the provisions stipulated in the Federal Endangered Species Act of 1973 (FESA, 16 USC Section 1531 et seq.). Threatened and endangered species on the federal list (50 Code of Federal Regulations [CFR] 17.11 and 17.12) are protected from take unless a Section 10 permit is granted to an entity other than a federal agency or a Biological Opinion with incidental take provisions is rendered to a federal lead agency via a Section 7 consultation. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct. Pursuant to the requirements of the FESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed species may be present on the project site and determine whether the proposed project may affect such species. Under the FESA, habitat loss is an impact to a species. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species that is listed or proposed for listing under the FESA or result in the destruction or adverse modification of critical habitat proposed or designated for such species (16 USC §1536[3], [4]). Therefore, project-related impacts to these species or their habitats would be considered significant and would require mitigation.

Migratory Bird Treaty Act. The federal Migratory Bird Treaty Act (MBTA) (16 United States Code [USC] §703, Supp. I, 1989) prohibits killing, possessing, trading, or other forms of take of migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. "Take" is defined as the pursuing, hunting, shooting, capturing, collecting, or killing of birds, their nests, eggs, or young (16 USC §703 and §715n). This act encompasses whole birds, parts of birds,

and bird nests and eggs. The MBTA specifically protects migratory bird nests from possession, sale, purchase, barter transport, import, and export, and take. For nests, the definition of take per 50 CFR 10.12 is to collect. The MBTA does not include a definition of an “active nest.” However, the “Migratory Bird Permit Memorandum” issued by the USFWS in 2003 clarifies the MBTA in that regard and states that the removal of nests, without eggs or birds, is legal under the MBTA, provided no possession (which is interpreted as holding the nest with the intent of retaining it) occurs during the destruction (USFWS 2003).

United States Army Corps of Engineers Jurisdiction. Areas meeting the regulatory definition of “waters of the United States” (jurisdictional waters) are subject to the jurisdiction of the United States Army Corps of Engineers (USACE) under provisions of Section 404 of the Clean Water Act (1972) and Section 10 of the Rivers and Harbors Act (1899). These waters may include all waters used, or potentially used, for interstate commerce, including all waters subject to the ebb and flow of the tide, all interstate waters, all other waters (intrastate lakes, rivers, streams, mudflats, sandflats, playa lakes, natural ponds, etc.), all impoundments of waters otherwise defined as waters of the United States, tributaries of waters otherwise defined as waters of the United States, the territorial seas, and wetlands adjacent to waters of the United States (33 CFR part 328.3). Ditches and drainage canals where water flows intermittently or ephemerally are not regulated as waters of the United States. Wetlands on non-agricultural lands are identified using the *Corps of Engineers Wetlands Delineation Manual* and related Regional Supplement (USACE 1987 and 2008). Construction activities, including direct removal, filling, hydrologic disruption, or other means in jurisdictional waters are regulated by the USACE. The placement of dredged or fill material into such waters must comply with permit requirements of the USACE. No USACE permit will be effective in the absence of state water quality certification pursuant to Section 401 of the Clean Water Act. The State Water Resources Control Board is the state agency (together with the Regional Water Quality Control Boards) charged with implementing water quality certification in California.

Wild and Scenic Rivers Act. The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with significant natural, cultural, and recreational values in a free-flowing condition. The Act safeguards the special character of these rivers, while also recognizing the potential for their appropriate use and development.

Magnuson-Stevens Fishery Conservation and Management Act. The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) (Public law 94-265; Statutes at Large 90 Stat. 331; 16 U.S.C. ch. 38 § 1801 et seq.) establishes a management system for national marine and estuarine fishery resources. This legislation requires that all federal agencies consult the NMFS regarding all actions or proposed actions permitted, funded, or undertaken that may adversely affect “essential fish habitat (EFH).” EFH is defined as “waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” The Magnuson-Stevens Act states that migratory routes to and from anadromous fish spawning grounds are considered EFH. The phrase “adversely affect” refers to any impact that reduces the quality or quantity of EFH.

Federal activities that occur outside of EFH, but which may have an impact on EFH must also be considered. The Act applies to salmon species, groundfish species, highly migratory species such as tuna, and coastal pelagic species such as anchovies.

Executive Order 11988: Floodplain Management. Executive Order 11988 (42 Federal Register 26951, 3 CFR, 1977 Comp., p. 117) requires federal agencies to avoid to the extent possible the long-term and short-term adverse impacts associated with occupying and modifying flood plains and to avoid direct and indirect support of developing floodplains wherever there is a practicable alternative.

1.6.2 State Requirements

California Endangered Species Act. The California Endangered Species Act (CESA) of 1970 (Fish and Game Code Section 2050 et seq., and CCR Title 14, Subsection 670.2, 670.51) prohibits the take of species listed under CESA (14 CCR Subsection 670.2, 670.5). Take is defined as hunt, pursue, catch, capture, or kill or attempt to hunt, pursue, catch, capture, or kill. Under CESA, state agencies are required to consult with the California Department of Fish and Wildlife [CDFW, formerly California Department of Fish and Game (CDFG)] when preparing CEQA documents. Consultation ensures that proposed projects or actions do not have a negative effect on state-listed species. During consultation, CDFW determines whether take would occur and identifies “reasonable and prudent alternatives” for the project and conservation of special-status species. CDFW can authorize take of state-listed species under Sections 2080.1 and 2081(b) of Fish and Game Code in those cases where it is demonstrated that the impacts are minimized and mitigated. Take authorized under section 2081(b) must be minimized and fully mitigated. A CESA permit must be obtained if a project will result in take of listed species, either during construction or over the life of the project. Under CESA, CDFW is responsible for maintaining a list of threatened and endangered species designated under state law (Fish and Game Code 2070). CDFW also maintains lists of species of special concern, which serve as “watch lists.” Pursuant to the requirements of CESA, a state or local agency reviewing a proposed project within its jurisdiction must determine whether the proposed project will have a potentially significant impact upon such species. Project-related impacts to species on the CESA list would be considered significant and would require mitigation. Impacts to species of concern or fully protected species would be considered significant under certain circumstances.

California Environmental Quality Act. The California Environmental Quality Act (CEQA) of 1970 (Subsections 21000–21178) requires that CDFW be consulted during the CEQA review process regarding impacts of proposed projects on special-status species. Special-status species are defined under CEQA Guidelines subsection 15380(b) and (d) as those listed under FESA and CESA and species that are not currently protected by statute or regulation but would be considered rare, threatened, or endangered under these criteria or by the scientific community. Therefore, species considered rare or endangered are addressed in this biological resource evaluation regardless of whether they are afforded protection through any other statute or regulation. The California Native Plant Society (CNPS) inventories the native flora of California and ranks species

according to rarity (CNPS 2017). Plants with Rare Plant Ranks 1A, 1B, 2A, or 2B are considered special-status species under CEQA.

Although threatened and endangered species are protected by specific federal and state statutes, CEQA Guidelines Section 15380(d) provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if it can be shown to meet certain specified criteria. These criteria have been modeled after the definition in the FESA and the section of the California Fish and Game Code dealing with rare and endangered plants and animals. Section 15380(d) allows a public agency to undertake a review to determine if a significant effect on species that have not yet been listed by either the USFWS or CDFW (i.e., candidate species) would occur. Thus, CEQA provides an agency with the ability to protect a species from the potential impacts of a project until the respective government agency has an opportunity to designate the species as protected, if warranted.

California Native Plant Protection Act. The California Native Plant Protection Act of 1977 (California Fish and Game Code Section 1900–1913) requires all state agencies to use their authority to carry out programs to conserve endangered and otherwise rare species of native plants. Provisions of the act prohibit the taking of listed plants from the wild and require the project proponent to notify CDFW at least 10 days in advance of any change in land use, which allows CDFW to salvage listed plants that would otherwise be destroyed.

Nesting birds. California Fish and Game Code Subsections 3503, 3503.5, and 3800 prohibit the possession, incidental take, or needless destruction of birds, their nests, and eggs. California Fish and Game Code Section 3511 lists birds that are “Fully Protected” as those that may not be taken or possessed except under specific permit.

California Department of Fish and Wildlife Jurisdiction. The CDFW has regulatory jurisdiction over lakes and streams in California. Activities that divert or obstruct the natural flow of a stream; substantially change its bed, channel, or bank; or use any materials (including vegetation) from the streambed, may require that the project applicant enter into a Streambed Alteration Agreement with the CDFW in accordance with California Fish and Game Code Section 1602.

2.0 Methods

2.1 Desktop Review

As a framework for the evaluation and reconnaissance survey, we obtained an official USFWS species list for the Project (USFWS 2018b, Appendix A). In addition, we searched the California Natural Diversity Data Base (CNDDDB, CDFW 2018, Appendix B) and the California Native Plant Society's Inventory of Rare and Endangered Plants (CNPS 2018, Appendix C) for records of special-status plant and animal species in the Project area. Regional lists of special-status species were compiled using USFWS, CNDDDB, and CNPS database searches confined to the Orange Cove South 7.5-minute United States Geological Survey (USGS) topographic quad, which encompasses the Project site, and the eight surrounding quads (Wahtoke, Orange Cove North, Tucker Mountain, Reedley, Stokes Mountain, Traver, Monson, and Ivanhoe). Local lists of special-status species were compiled using CNDDDB records from within 5 miles of the Project site. Species for which the Project site does not provide suitable habitat were eliminated from further consideration. We also reviewed aerial imagery from Google Earth and other sources, USGS topographic maps, and relevant literature.

2.2 Reconnaissance Survey

Colibri staff scientist Joe Medley conducted a field reconnaissance survey of the Project site on 28 August 2018. The Project site and a 50-foot buffer surrounding the Project site were walked and thoroughly inspected to evaluate and document the potential for the site to support federally or state-protected resources. The survey area also included a 0.5-mile buffer around the Project site to evaluate the potential occurrence of nesting special-status raptors (Figure 3). All plants except those under cultivation in agricultural fields or planted in residential, municipal, or commercial areas and all animals (vertebrate wildlife species) observed within the survey area were identified and documented. The survey area was evaluated for the presence of regulated habitats, including lakes, streams, and other waters using methods described in the *Wetlands Delineation Manual* and regional supplement (USACE 1987, 2008).

2.3 Effects Analysis and Significance Criteria

2.3.1 Effects Analysis

Factors considered in evaluating the effects of the Project on special-status species included the (1) presence of designated or proposed critical habitat in the survey area, (2) potential for the survey area to support special-status species, (3) dependence of any such species on specific habitat components that would be removed or modified, (4) the degree of impact to habitat, (5) abundance and distribution of habitat in the region, (6) distribution and population levels of the

species, (7) cumulative effects of the Project and any future activities in the area, and (8) the potential to mitigate any adverse effects.

Factors considered in evaluating the effects of the Project on migratory birds included the potential for the Project to result in (1) mortality of migratory birds or (2) loss of migratory bird nests containing viable eggs or nestlings.

Factors considered in evaluating the effects of the Project on regulated habitats included the (1) presence of features comprising or potentially comprising waters of the United States, Wild and Scenic Rivers, essential fish habitat (EFH), floodplains, and lakes or streams within the survey area, and (2) potential for the Project to impact such habitats.

2.3.2 Significance Criteria

CEQA defines “significant effect on the environment” as “a substantial, or potentially substantial, adverse change in the environment.” (Pub. Res. Code, §21068). Under CEQA Guidelines Section 15065, a project's effects on biological resources are deemed significant where the project would do the following:

- Substantially reduce the habitat of a fish or wildlife species
- Cause a fish or wildlife population to drop below self-sustaining levels
- Threaten to eliminate a plant or animal community
- Substantially reduce the number or restrict the range of a rare or endangered plant or animal

In addition to the Section 15065 criteria, Appendix G within the CEQA Guidelines includes six additional impacts to consider when analyzing the effects of a project. Under Appendix G, a project's effects on biological resources are deemed significant where the project would do the following:

- a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.
- b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS.
- c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

- d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

These criteria were used to determine whether the potential effects of the Project on biological resources qualify as significant.

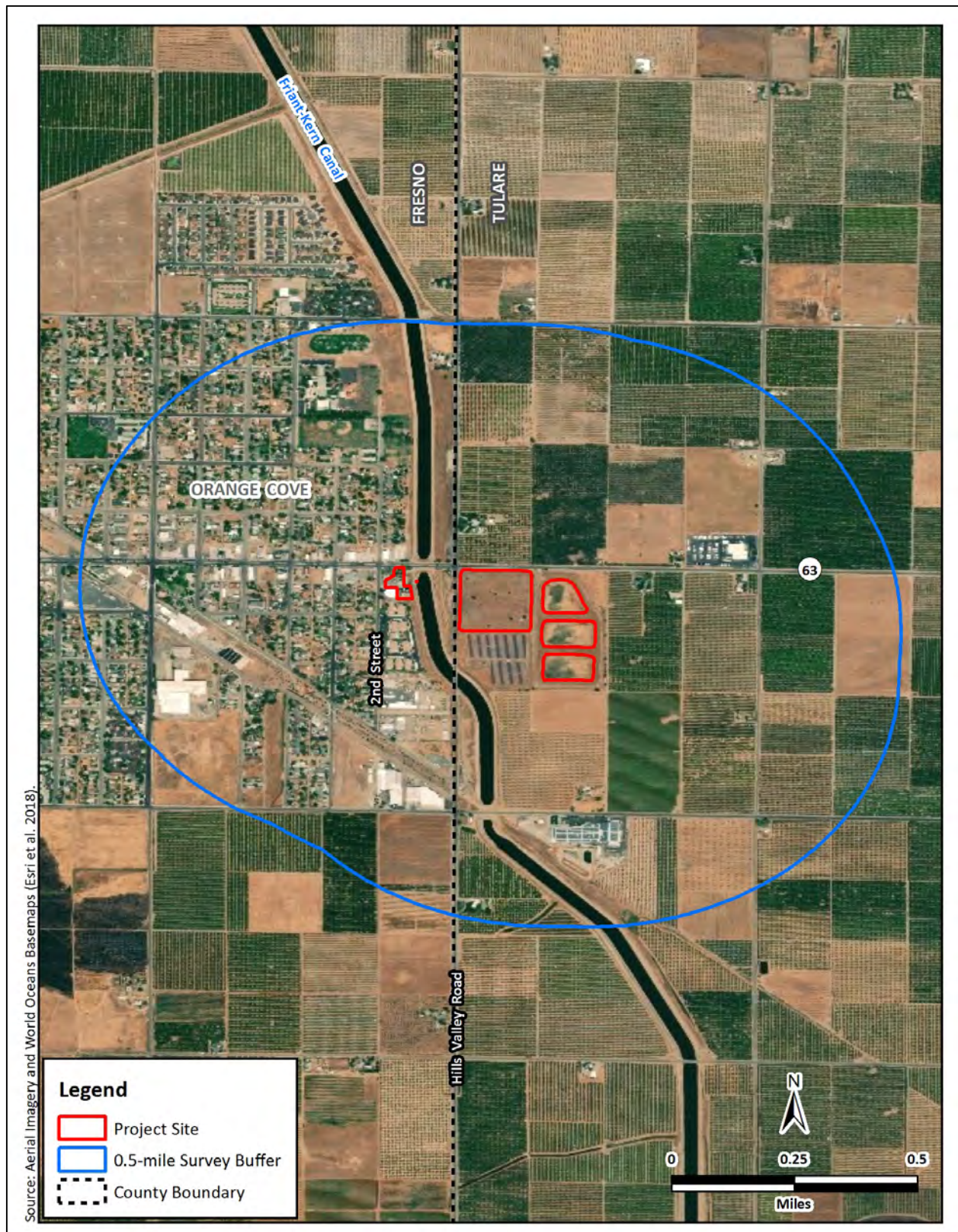


Figure 3. Reconnaissance survey area map.

3.0 Results

3.1 Desktop Review

The official species list for the Project site (USFWS 2018b, Table 1, Appendix A) included 10 species listed as threatened or endangered under the FESA. Those species include the threatened San Joaquin adobe sunburst (*Psuedobahia peirsonii*), the threatened San Joaquin orcutt grass (*Orcuttia inaequalis*), the threatened vernal pool fairy shrimp (*Branchinecta lynchi*), the endangered vernal pool tadpole shrimp (*Lepidurus packardii*), the threatened Delta smelt (*Hypomesus transpacificus*), the threatened California red-legged frog (*Rana draytonii*), the threatened California tiger salamander (*Ambystoma californiense*), the endangered blunt-nosed leopard lizard (*Gambelia sila*), the threatened giant garter snake (*Thamnophis gigas*), and the endangered San Joaquin kit fox (*Vulpes macrotis mutica*). As identified in the official species list (USFWS 2018b, Appendix A), the Project site does not occur in designated or proposed critical habitat.

Searching the CNDDDB (CDFW 2018) for records of special-status species from within the Orange Cove South 7.5-minute USGS topographic quad and the eight surrounding quads produced 87 records of 35 species (Table 1, Appendix B). Of those species, 13 are known from within 5 miles of the Project site (Table 1, Figure 4). Of those 13 species, only burrowing owl (*Athene cunicularia*) has the potential to occur on or near the Project site. While no records exist within five miles of the Project site, Swainson's hawk (*Buteo swainsoni*) also has the potential to occur. The Project site also provides suitable foraging habitat for both pallid bat and Western mastiff bat but lacks suitable roosting habitat for these species. All other special-status species are considered absent due to a lack of habitat (Table 1).

Searching the CNPS rare and endangered plant inventory (CNPS 2018) for records within the Orange Cove South 7.5-minute USGS topographic quad and the eight surrounding quads produced records of 19 species (Table 1, Appendix C). None of these species are expected on or near the Project site due to lack of habitat (Table 1).

Table 1. Special-status species, their listing status, habitats, and potential to occur on or near the Project site.

Species	Status ¹	Habitat	Potential to Occur ²
Federally and State-Listed Endangered or Threatened Species			
Hoover's spurge (<i>Euphorbia hooveri</i>)	FT, 1B.2	Vernal pools.	None. Habitat lacking; no vernal pools found in the survey area.
San Joaquin adobe sunburst (<i>Pseudobahia peirsonii</i>)	FT, SE, 1B.1	Cismontane woodland, valley and foothill grassland.	None. Habitat lacking; the site consists of developed and disturbed land cover, surrounded by agricultural, residential, and municipal development.
San Joaquin Valley Orcutt grass (<i>Orcuttia inaequalis</i>)	FT, SE, 1B.1	Vernal pools and wetlands.	None. Habitat lacking; no vernal pools or wetlands found in the survey area.
Vernal pool fairy shrimp (<i>Branchinecta lynchi</i>)	FT	Vernal pools; some artificial depressions, stock ponds, vernal swales, ephemeral drainages, and seasonal wetlands.	None. Habitat lacking; no vernal pools or other aquatic or wetland habitats found in the survey area.
Vernal pool tadpole shrimp (<i>Lepidurus packardii</i>)	FE	Vernal pools, clay flats, alkaline pools, ephemeral stock tanks.	None. Habitat lacking; no vernal pools or stock tanks found in the survey area.
Valley elderberry longhorn beetle (<i>Desmocerus californicus dimorphus</i>)	FT	Elderberry (<i>Sambucus</i> sp.) plants with stems > 1-inch diameter at ground level.	None. Habitat lacking; no elderberry plants found in the survey area. Project site is outside current known range.
Delta smelt (<i>Hypomesus transpacificus</i>)	FT, SE	River channels, tidally influenced sloughs.	None. Habitat lacking; no connectivity to estuarine habitats in the survey area.
Blunt-nosed leopard lizard (<i>Gambelia sila</i>)	FE, SE, FP	Upland scrub and sparsely vegetated grassland with small mammal burrows.	None. Habitat lacking, and Project site is outside current known range.
California red-legged frog (<i>Rana draytonii</i>)	FT, SSC	Creeks, ponds, and marshes for breeding;	None. Habitat lacking; burrows present but no

Species	Status ¹	Habitat	Potential to Occur ²
		burrows for upland refuge.	breeding habitat found in survey area.
California tiger salamander (<i>Ambystoma californiense</i>)	FT, ST	Vernal pools or other seasonal sources for breeding; underground refuges for non-breeding.	None. Habitat lacking; burrows present but no breeding habitat within the known dispersal distance of this species.
Foothill yellow-legged frog (<i>Rana boylei</i>)	SCT, SSSC	Rocky streams and rivers with rocky substrates; open, sunny banks in forests, chaparral, and woodlands.	None. Habitat lacking; no suitable breeding habitat found in survey area.
Giant garter snake (<i>Thamnophis gigas</i>)	FT, ST	Marshes, sloughs, ponds, or other permanent sources of water with emergent vegetation, and grassy banks or open areas during active season; uplands with underground refuges or crevices during inactive season.	None. Habitat lacking. The Friant-Kern Canal lacks emergent vegetation, and the Project site is outside current known range.
Swainson's hawk (<i>Buteo swainsoni</i>)	ST	Large trees for nesting with adjacent grasslands, alfalfa fields, or grain fields for foraging.	Low. Potential nest trees within 0.5-miles of the Project site; fallow field provides suitable foraging habitat. No records from within 5 miles.
Willow flycatcher (<i>Empidonax traillii</i>)	FE, SE	Dense riparian forest.	None. Habitat lacking; no riparian forest found in survey area. Outside current known range.
San Joaquin kit fox (<i>Vulpes macrotis mutica</i>)	FE, ST	Grassland and upland scrub.	None. Habitat lacking. Outside current known range.
State Species of Special Concern			
Northern leopard frog (<i>Lithobates pipiens</i>)	SSSC	Permanent ponds, swamps, marshes and slow-moving streams	None. Habitat lacking; no breeding habitat found in survey area.

Species	Status ¹	Habitat	Potential to Occur ²
		with abundant aquatic vegetation.	
Northwestern pond turtle (<i>Actinemys marmorata</i>)	SSSC	Ponds, rivers, marshes, streams, and irrigation ditches, usually with aquatic vegetation. Basking sites and suitable upland areas for egg laying.	None. Habitat lacking. Nearby Friant-Kern Canal lacks aquatic vegetation required by this species.
Western spadefoot (<i>Spea hammondi</i>)	SSSC	Rain pools, vernal pools, or ponds in mixed-species woodland, grassland, coastal sage scrub, and chaparral.	None. Dirt-lined raw water basins could provide breeding habitat. However, bullfrogs were detected in these basins, rendering the habitat unsuitable for this species.
Burrowing owl (<i>Athene cunicularia</i>)	SSSC	Grassland and upland scrub with friable soil; some agricultural or other developed and disturbed areas with ground squirrel burrows.	Moderate. Fallow field on Project site includes squirrel burrows suitable for this species. Neither species nor sign (whitewash, feathers, pellets, or prey remains) observed.
Loggerhead shrike (<i>Lanius ludovicianus</i>)	SSSC	Undeveloped open areas with short vegetation and well-spaced shrubs for nesting.	None. The Project site is surrounded by orchards and municipal and residential development and lacks shrubs suitable for nesting.
Pallid Bat (<i>Antrozous pallidus</i>)	SSSC	Arid or semi-arid locations in rocky mountainous areas and sparsely vegetated grassland near water.	Low. Fallow field on Project site provides foraging habitat; roosting habitat lacking.
Western mastiff bat (<i>Eumops perotis californicus</i>)	SSSC	Arid or semi-arid open areas. Roosts in rock crevices, cliff faces, tunnels, tall buildings.	Low. Fallow field on Project site provides foraging habitat; roosting habitat lacking.

Species	Status ¹	Habitat	Potential to Occur ²
Otherwise Rare or Imperiled Species			
Midvalley fairy shrimp (<i>Branchinecta mesovallensis</i>)	CNDDDB	Vernal pools and grass-bottomed swales.	None. Habitat lacking; no breeding habitat found in survey area.
Moestan blister beetle (<i>Lytta moesta</i>)	CNDDDB	Central Valley grassland.	None. Habitat lacking; the site consists of developed and disturbed land cover surrounded by agricultural, residential, and municipal development.
Moody's gnaphosid spider (<i>Talanites moodyae</i>)	CNDDDB	Mountainous areas of Fresno County.	None. Habitat lacking; the Project site is situated in the San Joaquin Valley.
Morrison bumble bee (<i>Bombus morrisoni</i>)	CNDDDB	Open dry scrub.	None. Habitat lacking; the Project site consists of developed and disturbed land cover surrounded by agricultural, residential, and municipal development.
Cooper's hawk (<i>Accipiter cooperii</i>)	CNDDDB	Mature forest, open woodlands, riparian corridors, and suburban areas with large old-growth trees.	None. Habitat lacking; the Project site consists of developed and disturbed land cover surrounded by agricultural, residential, and municipal development.
Hoary bat (<i>Lasiurus cinereus</i>)	CNDDDB	Foliage of medium and large trees for roosting; open areas for foraging.	Low. Although medium-sized trees were found in the survey area, the surrounding land cover is unsuitable, and foraging habitat is limited to the fallow field on the Project site.
California Rare Plants			

Species	Status ¹	Habitat	Potential to Occur ²
Adobe navarretia (<i>Navarretia nigelliformis</i> ssp. <i>nigelliformis</i>)	4.2	Vernal pools and clay depressions.	None. Habitat lacking; no vernal pools found in the survey area.
American manna grass (<i>Glyceria grandis</i>)	2B.3	Riparian streambanks, lake margins, and meadows.	None. Habitat lacking; no streams, lakes, or meadows in the survey area.
Brattlescale (<i>Atriplex depressa</i>)	1B.2	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland, and vernal pools.	None. Habitat lacking; the Project site consists of developed and disturbed land cover surrounded by agricultural, residential, and municipal development.
California alkali grass (<i>Puccinellia simplex</i>)	1B.2	Scrub, meadows, seeps, grassland, and vernal pools.	None. Habitat lacking.
California satintail (<i>Imperata brevifolia</i>)	2B.1	Wet springs, meadows, streambanks, and floodplains.	None. Habitat lacking.
Earlimart orache (<i>Atriplex cordulata</i> var. <i>erecticaulis</i>)	1B.2	Valley and foothill grassland with saline or alkaline soil.	None. Habitat lacking.
Ewan's larkspur (<i>Delphinium hansenii</i> var. <i>ewanianum</i>)	4.2	Cismontane woodland and valley and foothill grassland.	None. Habitat lacking.
Kings River buckwheat (<i>Eriogonum nudum</i> var. <i>regirivum</i>)	1B.2	Gravelly soils in foothill woodlands.	None. Habitat lacking.
Kings River monkeyflower (<i>Erythranthe acutidens</i>)	3	Cismontane woodland, Lower montane coniferous forest	None. Habitat lacking.
Lesser saltscare (<i>Atriplex minuscula</i>)	1B.1	Chenopod scrub, playa, and grassland communities with sandy, alkaline soil.	None. Habitat lacking.

Species	Status ¹	Habitat	Potential to Occur ²
Recurved larkspur (<i>Delphinium recurvatum</i>)	1B.2	Chenopod scrub, cismontane woodland, and valley and foothill grassland.	None. Habitat lacking.
Sanford's arrowhead (<i>Sagittaria sanfordii</i>)	1B.2	Freshwater marsh and swamp.	None. Habitat lacking.
Sierra Nevada monkey flower (<i>Erythranthe sierrae</i>)	4.2	Openings in cismontane woodland, lower montane conifer forest, and dry Meadows and seeps.	None. Habitat lacking.
Small-flowered morning glory (<i>Convolvulus simulans</i>)	4.2	Chaparral openings, coastal scrub, and valley and foothill grassland.	None. Habitat lacking.
Spiny-sepaled button-celery (<i>Eryngium spinosepalum</i>)	1B.2	Valley and foothill grassland and vernal pools.	None. Habitat lacking.
Vernal barley (<i>Hordeum intercedens</i>)	3.2	Vernal pools, coastal dunes, coastal scrub, and saline flats and depressions in valley and foothill grassland.	None. Habitat lacking.
Vernal pool smallscale (<i>Atriplex persistens</i>)	1B.2	Alkaline vernal pools.	None. Habitat lacking.
Winter's sunflower (<i>Helianthus winteri</i>)	1B.2	Cismontane woodland and valley and foothill grassland.	None. Habitat lacking.

CDFW (2018), CNPS (2018), USFWS (2018b).

Status ¹	Potential to Occur ²
CNDDDB = Recognized by the CNDDDB as rare or of uncertain status.	None: Neither species nor sign observed; conditions unsuitable for occurrence.
FC = Federal Candidate for listing	Low: Neither species nor sign observed; conditions marginal for occurrence.
FE = Federally listed Endangered	Moderate: Neither species nor sign observed, but conditions suitable for occurrence.
FT = Federally listed Threatened	
FP = Fully Protected	
SE = State-listed Endangered	
ST = State-listed Threatened	
SSSC = State Species of Special Concern	
SCT = State Candidate Threatened	

CNPS California Rare Plant Rank:	Threat Ranks:
1A – plants presumed extirpated in California and either rare or extinct elsewhere.	0.1 – seriously threatened in California (> 80% of occurrences).
1B – plants rare, threatened, or endangered in California and elsewhere.	0.2 – moderately threatened in California (20-80% of occurrences).
2B – plants rare, threatened or endangered in California but common elsewhere.	0.3 – not very threatened in California (<20% of occurrences).
3 – plants about which more information is needed.	
4 – plants have limited distribution in California.	

3.2 Reconnaissance Survey

3.2.1 Land Use and Habitats

The Project site consists of a 10-acre fallow field, three existing raw water storage basins, and developed areas (water treatment facilities). The existing raw water storage basins are surrounded by orchards, a fallow field, and a small solar farm (Figure 5). The 10-acre fallow field, where the new water storage basin will be constructed, currently supports ruderal, mostly nonnative vegetation, including English walnut (*Juglans regia*), wild oat (*Avena fatua*), ripgut brome (*Bromus diandrus*), and rose clover (*Trifolium hirtum*), and many California ground squirrel (*Otospermophilus beecheyi*) burrows. This field is surrounded by orchards, the existing raw-water storage basins, and the Friant-Kern Canal (Figure 6). The existing water treatment facilities are surrounded by residential and municipal development and the Friant-Kern Canal (Figure 7). Two grass-lined irrigation ditches run along the eastern and western edges of the 10-acre fallow field (Figures 8 and 9, respectively). A culvert connects the western ditch to the Friant-Kern Canal (Figure 8).



Figure 5. Photograph showing one of three existing water storage basins.



Figure 6. Photograph showing the 10-acre fallow field where a new water storage basin will be constructed.



Figure 7. Photograph of the existing water treatment facilities.



Figure 8. Photograph showing a grass-lined irrigation ditch on the western edge of the fallow field.



Figure 9. Photograph showing a grass-lined irrigation ditch on the eastern edge of the fallow field.

3.2.2 Plant and Animal Species Observed

A total of 32 plant species (18 native and 14 nonnative), one amphibian species, one reptile species, 12 bird species, and one mammal species were found during the survey (Table 2).

Table 2. Plant and animal species observed during the reconnaissance survey.

Common Name	Scientific Name	Status
Plants		
Family Apocynaceae		
Narrow leaf milkweed	<i>Asclepias fascicularis</i>	Native
Family Arecaceae		
Mexican fan palm	<i>Washingtonia robusta</i>	Nonnative
Family Asteraceae		
Canada horseweed	<i>Erigeron canadensis</i>	Native
Common yarrow	<i>Achillea millefolium</i>	Native
Common spikeweed	<i>Centromadia pungens</i>	Native
Common sunflower	<i>Helianthus annuus</i>	Native
Heermann's tarweed	<i>Holocarpha heermannii</i>	Native

Milk thistle	<i>Silybum marianum</i>	Nonnative
Prickly lettuce	<i>Lactuca serriola</i>	Nonnative
Family Boraginaceae		
Common fiddleneck	<i>Amsinckia intermedia</i>	Native
Family Chenopodiaceae		
Lamb's quarters	<i>Chenopodium album</i>	Nonnative
Family Cyperaceae		
Tall flatsedge	<i>Cyperus eragrostis</i>	Native
Family Euphorbiaceae		
Turkey-mullein	<i>Croton setiger</i>	Native
Family Fabaceae		
American bird's foot trefoil	<i>Acmispon americanus</i>	Native
Rose clover	<i>Trifolium hirtum</i>	Nonnative
Family Juglandaceae		
English walnut	<i>Juglans regia</i>	Nonnative
Family Lamiaceae		
Vinegarweed	<i>Trichostema lanceolatum</i>	Native
Family Lythraceae		
Grand ammania	<i>Ammania robusta</i>	Native
Family Onagraceae		
Annual fireweed	<i>Epilobium brachycarpum</i>	Native
Family Poaceae		
Johnsongrass	<i>Sorghum halepense</i>	Nonnative
Mexican sprangletop	<i>Leptochloa fusca</i> ssp. <i>uninervia</i>	Native
Ripgut brome	<i>Bromus diandrus</i>	Nonnative
Shiver grass	<i>Aira caryophylla</i>	Nonnative
Soft chess	<i>Bromus hordeaceus</i>	Nonnative
Sorghum	<i>Sorghum bicolor</i>	Nonnative
Wild oat	<i>Avena fatua</i>	Nonnative
Family Polygonaceae		
Curly dock	<i>Rumex crispus</i>	Nonnative
Family Rhamnaceae		
Hoary coffeeberry	<i>Frangula californica</i> ssp. <i>tomentella</i>	Native

Family Salicaceae		
Sandbar willow	<i>Salix exigua</i>	Native
Family Solanaceae		
Jimsonweed	<i>Datura wrightii</i>	Native
Family Typhaceae		
Broadleaf cattail	<i>Typha latifolia</i>	Native
Family Zygophyllaceae		
Puncture vine	<i>Tribulus terrestris</i>	Nonnative
Amphibians and Reptiles		
Family Phrynosomatidae		
Common side-blotched lizard	<i>Uta stansburiana</i>	None
Family Ranidae		
Bullfrog	<i>Lithobates catesbeianus</i>	Nonnative
Birds		
Family Accipitridae		
Red-tailed hawk	<i>Buteo jamaicensis</i>	MBTA
Family Columbidae		
Eurasian collared-dove	<i>Streptopelia decaocto</i>	None
Mourning dove	<i>Zenaida macroura</i>	MBTA
Rock pigeon	<i>Columba livia</i>	None
Family Corvidae		
California scrub-jay	<i>Aphelocoma californica</i>	MBTA
American crow	<i>Corvus brachyrhynchos</i>	MBTA
Family Falconidae		
American kestrel	<i>Falco sparverius</i>	MBTA
Family Fringillidae		
House finch	<i>Haemorhous mexicanus</i>	MBTA
Lesser goldfinch	<i>Spinus psaltria</i>	MBTA
Family Mimidae		
Northern mockingbird	<i>Mimus polyglottos</i>	MBTA
Family Tyrannidae		
Black phoebe	<i>Sayornis nigricans</i>	MBTA
Mammals		
California ground squirrel	<i>Otospermophilus beecheyi</i>	None

MTBA: Covered under the Migratory Bird Treaty Act.

3.2.3 Special-Status Species

Two special-status species, Swainson's hawk and burrowing owl, could occur on or near the Project site. Swainson's hawk uses open areas such as grasslands and some agricultural fields for foraging and medium to large trees near open areas for nesting. The fallow field that will support the planned new raw water storage basin is suitable for foraging, and medium to large trees that could support nesting were within 0.5 miles of the Project site. Burrowing owl uses open, treeless areas with low, sparse vegetation that support high densities of small mammal burrows. The fallow field that will support the planned new raw water storage basin is suitable for foraging, nesting, and roosting by burrowing owl as it supports a high density of California ground squirrel burrows.

3.2.4 Nesting Birds and the Migratory Bird Treaty Act

Migratory birds could nest on or near the Project site. Such species include, but are not limited to, mourning dove (*Zenaida macroura*), red-tailed hawk (*Buteo jamaicensis*), Swainson's hawk, western kingbird (*Tyrannus verticalis*), American crow (*Corvus brachyrhynchos*), California scrub-jay (*Aphelocoma californica*), and house finch (*Carpodacus mexicanus*).

3.2.5 Regulated Habitats

The Friant-Kern Canal and two earthen, grass-lined irrigation ditches were found within 50 feet of the Project site. One of the ditches appeared to be connected to the Friant-Kern Canal (Figure 8). No impacts to these features are anticipated, although a screen device will likely need to be installed on an existing intake pipe on the canal bank.

The nearest river, the Kings River, is about 12.25 miles northwest of the Project site. According to the Wild and Scenic Rivers Act, the designated wild and scenic reach of the Kings River begins in Kings Canyon National Park and the John Muir Wilderness and ends below the confluence of the South and Middle Forks in the Sequoia National Forest, approximately 25.5 miles northeast of the Project site. Therefore, the portion of the Kings River northwest of the Project site is not included in the wild and scenic classification (USFWS 2018a).

No marine or estuarine fishery resources or migratory routes to and from anadromous fish spawning grounds were present in the survey area. In addition, no EFH, defined by the Magnuson-Stevens Act as those resources necessary for fish spawning, breeding, feeding, or growth to maturity, were present in the survey area.

The Project site is within flood plain zone AE (Federal Emergency Management Agency 2018). Flood plain zone AE indicates the Project area is subject to inundation by the 1-percent-annual-chance flood event.

4.0 Environmental Impacts

4.1 Effects Determinations

4.1.1 Critical Habitat

We conclude the Project will have **no effect** on critical habitat as no critical habitat has been designated or proposed in the survey area.

4.1.2 Special-Status Species

We conclude the Project **may affect but is not likely to adversely affect** the state-listed as threatened Swainson's hawk and the California Species of Special Concern burrowing owl. The Project is not expected to affect any other special-status species due to the lack of habitat for those species in the survey area.

4.1.3 Migratory Birds

We conclude the Project **may affect but is not likely to adversely affect** nesting migratory birds.

4.1.4 Regulated Habitats

We conclude the Project will have **no effect** on regulated habitats as impacts to regulated habitats in the survey area are not anticipated.

4.2 Significance Determinations

This Project will not: (1) have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS as no riparian habitat or other sensitive natural community was present in the survey area (criterion b); (2) have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means (criterion c) as no wetlands were present in the survey area; (3) conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (criterion e) as no trees or biologically sensitive areas will be impacted; or (4) conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or state habitat conservation plan (criterion f) as no such plan has been adopted. Thus, these significance criteria are not analyzed further.

The remaining statutorily defined criteria provided the framework for criteria BIO1 and BIO2 below. These criteria are used to assess the impacts to biological resources stemming from the Project and provide the basis for determinations of significance:

- Criterion BIO1: Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.
- Criterion BIO2: Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

4.2.1 Direct and Indirect Impacts

4.2.1.1 Potential Impact #1: Have a Substantial Effect on any Special-Status Species (Criterion BIO1)

The Project has the potential to substantially impact the state-listed as threatened Swainson's hawk and the California Species of Special Concern burrowing owl, which could nest near or on the Project site, respectively. Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. Loss of fertile eggs or nestlings, or any activities resulting in nest abandonment, would constitute a significant impact. We recommend that the mitigation measure B1 (below) be included in the conditions of approval to reduce the potential impact to a less-than-significant level.

Mitigation Measure B1. Protect nesting Swainson's hawks.

1. To the extent practicable, construction shall be scheduled to avoid the Swainson's hawk nesting season, which extends from March through August.
2. If it is not possible to schedule work between September and February, a qualified biologist shall conduct a survey for active Swainson's hawk nests within 0.25 miles of the Project site no more than 14 days prior to the start of construction. If an active nest is found within 0.25 miles, and the qualified biologist determines that Project activities would disrupt nesting, a construction-free buffer or limited operating period shall be implemented in consultation with the CDFW.

Mitigation Measure B2. Protect nesting burrowing owls.

1. Conduct protocol surveys season to determine if burrowing owl is occupying the Project site. Surveys shall follow guidance set forth by the California Department of Fish and Game Staff Report on Burrowing Owl Mitigation (2012; Appendix D). A qualified biologist shall conduct four surveys during the breeding; at least one survey visit must occur between 15 February and 15 April; a minimum of three

survey visits must occur between 15 April and 15 July, spaced at least three weeks apart, with at least one of those survey visits occurring after 15 June.

2. If a burrowing owl or the positive sign of burrowing owl use (i.e., feathers, scat, pellets) is detected on or within 150 feet of the Project site, then CDFW shall be contacted to determine if relocation efforts are warranted.
3. If burrowing owl is not detected during protocol surveys, a final pre-construction burrowing owl survey shall be conducted by a qualified biologist no more than 14 days prior to the start of construction to ensure that burrowing owls have not recently inhabited the Project site; this survey can be done in conjunction with Mitigation Measure B3, below.

4.2.1.2 Potential Impact #2: Interfere Substantially with Native Wildlife Movements, Corridors, or Nursery Sites (Criterion BIO2)

The Project has the potential to impede the use of nursery sites for native birds protected under the Migratory Bird Treaty Act and California Fish and Game Code. Migratory birds are expected to nest on and near the Project site. Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. Disturbance that causes nest abandonment or loss of reproductive effort is considered take by the CDFW. Loss of fertile eggs or nestlings, or any activities resulting in nest abandonment, could constitute a significant impact if the species is particularly rare in the region. Construction activities such as trenching and grading that disturb a rare nesting bird on the site or immediately adjacent to the construction zone could constitute a significant impact. We recommend that the mitigation measure B3 (below) be included in the conditions of approval to reduce the potential impact to a less-than-significant level.

Mitigation Measure B3. Protect nesting birds.

1. To the extent practicable, construction shall be scheduled to avoid the nesting season, which extends from February through August.
2. If it is not possible to schedule construction between September and January, pre-construction surveys for nesting birds shall be conducted by a qualified biologist to ensure that no active nests will be disturbed during Project implementation. A pre-construction survey shall be conducted no more than 14 days prior to the initiation of construction activities. During this survey, the qualified biologist shall inspect all potential nest substrates in and immediately adjacent to the impact areas for nests. If an active nest is found close enough to the construction area to be disturbed by these activities, the qualified biologist shall determine the extent of a construction-free buffer to be established around the nest. If work cannot proceed without disturbing the nesting birds, work may need to be halted or redirected to other areas until nesting and fledging are completed or the nest has otherwise failed for non-construction related reasons.

4.2.2 Cumulative Impacts

The Project involves installing water treatment infrastructure adjacent to existing infrastructure that is surrounded by agricultural, residential, and municipal development. Although the land cover is developed and disturbed, the Project site could provide foraging habitat for the state-listed as threatened Swainson's hawk and foraging and nesting habitat for the California Species of Special Concern burrowing owl. Although the potential for these work areas to support special-status species is limited as discussed above, Mitigation Measures B1 through B3 would reduce any contribution to cumulative impacts on biological resources to a less-than-significant level. No other development projects are known or planned for the immediate area because of this Project.

4.2.3 Unavoidable Significant Adverse Impacts

No unavoidable significant adverse impacts on biological resources would occur from implementing the Project.

5.0 Literature Cited

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Appendix A. Official lists of threatened and endangered species and critical habitats.



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish And Wildlife Office

Federal Building

2800 Cottage Way, Room W-2605

Sacramento, CA 95825-1846

Phone: (916) 414-6600 Fax: (916) 414-6713



In Reply Refer To:

August 23, 2018

Consultation Code: 08ESMF00-2018-SLI-3043

Event Code: 08ESMF00-2018-E-09088

Project Name: Orange Cove Water Treatment Improvements Project

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>; <http://www.towerkill.com>; and <http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html>.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office

Federal Building

2800 Cottage Way, Room W-2605

Sacramento, CA 95825-1846

(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2018-SLI-3043

Event Code: 08ESMF00-2018-E-09088

Project Name: Orange Cove Water Treatment Improvements Project

Project Type: WATER QUALITY MODIFICATION

Project Description: The proposed project will involve (1) lining three existing raw water storage basins with plastic, (2) constructing and operating a new raw water storage basin on an adjacent 10-acre property, and (3) constructing and operating new treatment facilities at the existing water treatment plant.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/36.622407938967754N119.30306589300005W>



Counties: Fresno, CA | Tulare, CA

Endangered Species Act Species

There is a total of 10 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries¹, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

-
1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
San Joaquin Kit Fox <i>Vulpes macrotis mutica</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2873	Endangered

Reptiles

NAME	STATUS
Blunt-nosed Leopard Lizard <i>Gambelia silus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/625	Endangered
Giant Garter Snake <i>Thamnophis gigas</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog <i>Rana draytonii</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander <i>Ambystoma californiense</i> Population: U.S.A. (Central CA DPS) There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt <i>Hypomesus transpacificus</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp <i>Lepidurus packardii</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
San Joaquin Adobe Sunburst <i>Pseudobahia peirsonii</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2931	Threatened
San Joaquin Orcutt Grass <i>Orcuttia inaequalis</i> There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5506	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Appendix B. CNDDDB occurrence records.



Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: Quad< IS (Orange Cove South (3611953) OR Wahtoke (3611964) OR Orange Cove North (3611963) OR Tucker Mtn. (3611962) OR Reedley (3611954) OR Stokes Mtn. (3611952) OR Traver (3611944) OR Monson (3611943) OR Ivanhoe (3611942))

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Accipiter cooperii</i> Cooper's hawk	G5 S4	None None	CDFW_WL-Watch List IUCN_LC-Least Concern	2,300 2,300	115 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Ambystoma californiense</i> California tiger salamander	G2G3 S2S3	Threatened Threatened	CDFW_WL-Watch List IUCN_VU-Vulnerable	314 1,700	1177 S:16	1	2	1	2	5	5	12	4	11	3	2
<i>Antrozous pallidus</i> pallid bat	G5 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive WBWG_H-High Priority	300 300	415 S:1	0	1	0	0	0	0	0	1	1	0	0
<i>Athene cunicularia</i> burrowing owl	G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	268 475	1971 S:12	5	3	1	0	0	3	2	10	12	0	0
<i>Atriplex cordulata var. erecticaulis</i> Earlimart orache	G3T1 S1	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	285 335	21 S:2	1	0	1	0	0	0	0	2	2	0	0
<i>Atriplex depressa</i> brittlescale	G2 S2	None None	Rare Plant Rank - 1B.2		61 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Atriplex minuscula</i> lesser saltscale	G2 S2	None None	Rare Plant Rank - 1B.1	285 335	37 S:3	0	2	1	0	0	0	0	3	3	0	0
<i>Atriplex persistens</i> vernal pool smallscale	G2 S2	None None	Rare Plant Rank - 1B.2	345 355	41 S:2	2	0	0	0	0	0	0	2	2	0	0
<i>Bombus morrisoni</i> Morrison bumble bee	G4G5 S1S2	None None	IUCN_VU-Vulnerable	350 350	85 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Branchinecta lynchi</i> vernal pool fairy shrimp	G3 S3	Threatened None	IUCN_VU-Vulnerable	264 500	766 S:21	4	2	2	0	0	13	5	16	21	0	0



Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database



Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Branchinecta meso Vallensis</i> midvalley fairy shrimp	G2 S2S3	None None		490 490	128 S:1	1	0	0	0	0	0	0	1	1	0	0
<i>Buteo swainsoni</i> Swainson's hawk	G5 S3	None Threatened	BLM_S-Sensitive IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	270 290	2460 S:4	0	2	2	0	0	0	0	4	4	0	0
<i>Delphinium recurvatum</i> recurved larkspur	G2? S2?	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	320 340	100 S:3	0	0	0	0	0	3	1	2	3	0	0
<i>Desmocerus californicus dimorphus</i> valley elderberry longhorn beetle	G3T2 S2	Threatened None		340 400	271 S:7	0	1	1	0	0	5	4	3	7	0	0
<i>Empidonax traillii</i> willow flycatcher	G5 S1S2	None Endangered	IUCN_LC-Least Concern USFS_S-Sensitive USFWS_BCC-Birds of Conservation Concern	570 570	90 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Emys marmorata</i> western pond turtle	G3G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable USFS_S-Sensitive	500 2,000	1343 S:2	0	0	0	0	0	2	2	0	2	0	0
<i>Eriogonum nudum var. regirivum</i> Kings River buckwheat	G5T2 S2	None None	Rare Plant Rank - 1B.2 USFS_S-Sensitive	2,000 2,000	5 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Eryngium spinosepalum</i> spiny-sepaed button-celery	G2 S2	None None	Rare Plant Rank - 1B.2	320 1,550	90 S:12	2	4	1	0	1	4	7	5	11	0	1
<i>Eumops perotis californicus</i> western mastiff bat	G5T4 S3S4	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern WBWG_H-High Priority		294 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Euphorbia hooveri</i> Hoover's spurge	G1 S1	Threatened None	Rare Plant Rank - 1B.2	315 345	29 S:5	0	1	3	0	1	0	1	4	4	0	1
<i>Glyceria grandis</i> American manna grass	G5 S3	None None	Rare Plant Rank - 2B.3	5,000 5,000	10 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Great Valley Mixed Riparian Forest</i> Great Valley Mixed Riparian Forest	G2 S2.2	None None		380 380	68 S:2	0	0	0	0	0	2	2	0	2	0	0



Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database



Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Helianthus winteri</i> Winter's sunflower	G2? S2?	None None	Rare Plant Rank - 1B.2	400 1,900	55 S:48	10	31	4	1	0	2	0	48	48	0	0
<i>Imperata brevifolia</i> California satintail	G4 S3	None None	Rare Plant Rank - 2B.1 SB_SBBG-Santa Barbara Botanic Garden USFS_S-Sensitive	300 400	32 S:2	0	0	0	0	0	2	2	0	2	0	0
<i>Lanius ludovicianus</i> loggerhead shrike	G4 S4	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	285 285	109 S:1	0	1	0	0	0	0	1	0	1	0	0
<i>Lasiurus cinereus</i> hoary bat	G5 S4	None None	IUCN_LC-Least Concern WBWG_M-Medium Priority		236 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Lepidurus packardii</i> vernal pool tadpole shrimp	G4 S3S4	Endangered None	IUCN_EN-Endangered	263 420	324 S:10	1	5	3	0	0	1	3	7	10	0	0
<i>Lithobates pipiens</i> northern leopard frog	G5 S2	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	330 345	22 S:3	0	0	0	0	0	3	3	0	3	0	0
<i>Lytta molesta</i> molestan blister beetle	G2 S2	None None		425 425	17 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Northern Claypan Vernal Pool</i> Northern Claypan Vernal Pool	G1 S1.1	None None		270 270	21 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Northern Hardpan Vernal Pool</i> Northern Hardpan Vernal Pool	G3 S3.1	None None		315 345	126 S:3	0	0	0	0	0	3	3	0	3	0	0
<i>Orcuttia inaequalis</i> San Joaquin Valley Orcutt grass	G1 S1	Threatened Endangered	Rare Plant Rank - 1B.1	315 515	48 S:3	0	0	1	0	2	0	2	1	1	0	2
<i>Pseudobahia peirsonii</i> San Joaquin adobe sunburst	G1 S1	Threatened Endangered	Rare Plant Rank - 1B.1 SB_RSABG-Rancho Santa Ana Botanic Garden	440 1,420	51 S:4	0	0	1	1	1	1	3	1	3	0	1
<i>Puccinellia simplex</i> California alkali grass	G3 S2	None None	Rare Plant Rank - 1B.2	320 320	71 S:1	0	0	0	0	0	1	1	0	1	0	0



Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database



Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Rana boylei</i> foothill yellow-legged frog	G3 S3	None Candidate Threatened	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_NT-Near Threatened USFS_S-Sensitive	400 2,000	2054 S:4	0	0	0	0	4	0	4	0	0	0	4
<i>Sagittaria sanfordii</i> Sanford's arrowhead	G3 S3	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	330 417	126 S:20	1	4	10	3	0	2	0	20	20	0	0
<i>Spea hammondi</i> western spadefoot	G3 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_NT-Near Threatened	268 442	463 S:19	5	12	0	0	0	2	1	18	19	0	0
<i>Talanites moodyae</i> Moody's gnaphosid spider	G1G2 S1S2	None None		400 900	6 S:5	0	0	0	0	0	5	5	0	5	0	0
<i>Valley Sacaton Grassland</i> Valley Sacaton Grassland	G1 S1.1	None None		260 260	9 S:1	0	0	0	1	0	0	1	0	1	0	0
<i>Vulpes macrotis mutica</i> San Joaquin kit fox	G4T2 S2	Endangered Threatened		260 370	1017 S:6	0	0	1	0	0	5	5	1	6	0	0

Appendix C. CNPS plant list.

Plant List

19 matches found. [Click on scientific name for details](#)

Search Criteria

Found in Quads [3611964](#), [3611963](#), [3611962](#), [3611954](#), [3611953](#), [3611952](#), [3611944](#) [3611943](#) and [3611942](#);

[Modify Search Criteria](#)

[Export to Excel](#)

[Modify Columns](#)

[Modify Sort](#)

[Display Photos](#)

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Atriplex cordulata var. erecticaulis	Earlilmart orache	Chenopodiaceae	annual herb	Aug-Sep(Nov)	1B.2	S1	G3T1
Atriplex depressa	brittlescale	Chenopodiaceae	annual herb	Apr-Oct	1B.2	S2	G2
Atriplex minuscula	lesser saltscale	Chenopodiaceae	annual herb	May-Oct	1B.1	S2	G2
Atriplex persistens	vernal pool smallscale	Chenopodiaceae	annual herb	Jun,Aug,Sep,Oct	1B.2	S2	G2
Convolvulus simulans	small-flowered morning-glory	Convolvulaceae	annual herb	Mar-Jul	4.2	S4	G4
Delphinium hansenii ssp. ewanianum	Ewan's larkspur	Ranunculaceae	perennial herb	Mar-May	4.2	S3	G4T3
Delphinium recurvatum	recurved larkspur	Ranunculaceae	perennial herb	Mar-Jun	1B.2	S2?	G2?
Eryngium spinosepalum	spiny-sealed button-celery	Apiaceae	annual / perennial herb	Apr-Jun	1B.2	S2	G2
Erythranthe acubens	Kings River monkeyflower	Phrymaceae	annual herb	Apr-Jul	3	S2?	G2?Q
Erythranthe sierrae	Sierra Nevada monkeyflower	Phrymaceae	annual herb	Mar-Jul	4.2	S2	G2
Euphorbia hooveri	Hoover's spurge	Euphorbiaceae	annual herb	Jul-Sep(Oct)	1B.2	S1	G1
Helianthus winteri	Winter's sunflower	Asteraceae	perennial shrub	Jan-Dec	1B.2	S1S2	G1G2
Hordeum intercedens	vernal barley	Poaceae	annual herb	Mar-Jun	3.2	S3S4	G3G4
Imperata brevifolia	California satintail	Poaceae	perennial rhizomatous herb	Sep-May	2B.1	S3	G4
Navarretia nigeliformis ssp. nigeliformis	adobe navarretia	Polemoniaceae	annual herb	Apr-Jun	4.2	S3	G4T3
Orcuttia inaequalis	San Joaquin Valley Orcutt grass	Poaceae	annual herb	Apr-Sep	1B.1	S1	G1
Pseudobahia peirsonii	San Joaquin adobe sunburst	Asteraceae	annual herb	Feb-Apr	1B.1	S1	G1
Puccinellia simplex	California alkali grass	Poaceae	annual herb	Mar-May	1B.2	S2	G3
Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb (emergent)	May-Oct(Nov)	1B.2	S3	G3

Suggested Citation

California Native Plant Society. Rare Plant Program. 2018. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website <http://www.rareplants.cnps.org> [accessed 23 August 2018].

Appendix D. Staff report on burrowing owl mitigation.

Staff Report on Burrowing Owl Mitigation

State of California

Natural Resources Agency

Department of Fish and Game

March 7, 2012¹

¹ This document replaces the Department of Fish and Game 1995 Staff Report On Burrowing Owl Mitigation.

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INTRODUCTION AND PURPOSE

Maintaining California's rich biological diversity is dependent on the conservation of species and their habitats. The California Department of Fish and Game (Department) has designated certain species as "species of special concern" when their population viability and survival is adversely affected by risk factors such as precipitous declines or other vulnerability factors (Shuford and Gardali 2008). Preliminary analyses of regional patterns for breeding populations of burrowing owls (*Athene cunicularia*) have detected declines both locally in their central and southern coastal breeding areas, and statewide where the species has experienced modest breeding range retraction (Gervais et al. 2008). In California, threat factors affecting burrowing owl populations include habitat loss, degradation and modification, and eradication of ground squirrels resulting in a loss of suitable burrows required by burrowing owls for nesting, protection from predators, and shelter (See Appendix A).

The Department recognized the need for a comprehensive conservation and mitigation strategy for burrowing owls, and in 1995 directed staff to prepare a report describing mitigation and survey recommendations. This report, "1995 Staff Report on Burrowing Owl Mitigation," (Staff Report) (CDFG 1995), contained Department-recommended burrowing owl and burrow survey techniques and mitigation measures intended to offset the loss of habitat and slow or reverse further decline of this species. Notwithstanding these measures, over the past 15+ years, burrowing owls have continued to decline in portions of their range (DeSante et al. 2007, Wilkerson and Siegel, 2010). The Department has determined that reversing declining population and range trends for burrowing owls will require implementation of more effective conservation actions, and evaluating the efficacy of the Department's existing recommended avoidance, minimization and mitigation approaches for burrowing owls.

The Department has identified three main actions that together will facilitate a more viable, coordinated, and concerted approach to conservation and mitigation for burrowing owls in California. These include:

1. Incorporating burrowing owl comprehensive conservation strategies into landscape-based planning efforts such as Natural Community Conservation Plans (NCCPs) and multi-species Habitat Conservation Plans (HCPs) that specifically address burrowing owls.
2. Developing and implementing a statewide conservation strategy (Burkett and Johnson, 2007) and local or regional conservation strategies for burrowing owls, including the development and implementation of a statewide burrowing owl survey and monitoring plan.
3. Developing more rigorous burrowing owl survey methods, working to improve the adequacy of impacts assessments; developing clear and effective avoidance and minimization measures; and developing mitigation measures to ensure impacts to the species are effectively addressed at the project, local, and/or regional level (the focus of this document).

This Report sets forth the Department's recommendations for implementing the third approach identified above by revising the 1995 Staff Report, drawing from the most relevant and current knowledge and expertise, and incorporating the best scientific information

available pertaining to the species. It is designed to provide a compilation of the best available science for Department staff, biologists, planners, land managers, California Environmental Quality Act (CEQA) lead agencies, and the public to consider when assessing impacts of projects or other activities on burrowing owls.

This revised Staff Report takes into account the California Burrowing Owl Consortium's Survey Protocol and Mitigation Guidelines (CBOC 1993, 1997) and supersedes the survey, avoidance, minimization and mitigation recommendations in the 1995 Staff Report. Based on experiences gained from implementing the 1995 Staff Report, the Department believes revising that report is warranted. This document also includes general conservation goals and principles for developing mitigation measures for burrowing owls.

DEPARTMENT ROLE AND LEGAL AUTHORITIES

The mission of the Department is to manage California's diverse fish, wildlife and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public. The Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitats necessary to maintain biologically sustainable populations of those species (Fish and Game Code (FGC) §1802). The Department, as trustee agency pursuant to CEQA (See CEQA Guidelines, §15386), has jurisdiction by law over natural resources, including fish and wildlife, affected by a project, as that term is defined in Section 21065 of the Public Resources Code. The Department exercises this authority by reviewing and commenting on environmental documents and making recommendations to avoid, minimize, and mitigate potential negative impacts to those resources held in trust for the people of California.

Field surveys designed to detect the presence of a particular species, habitat element, or natural community are one of the tools that can assist biologists in determining whether a species or habitat may be significantly impacted by land use changes or disturbance. The Department reviews field survey data as well as site-specific and regional information to evaluate whether a project's impacts may be significant. This document compiles the best available science for conducting habitat assessments and surveys, and includes considerations for developing measures to avoid impacts or mitigate unavoidable impacts.

CEQA

CEQA requires public agencies in California to analyze and disclose potential environmental impacts associated with a project that the agency will carry out, fund, or approve. Any potentially significant impact must be mitigated to the extent feasible. Project-specific CEQA mitigation is important for burrowing owls because most populations exist on privately owned parcels that, when proposed for development or other types of modification, may be subject to the environmental review requirements of CEQA.

Take

Take of individual burrowing owls and their nests is defined by FGC section 86, and prohibited by sections 3503, 3503.5 and 3513. Take is defined in FGC Section 86 as "hunt, pursue, catch, capture or kill, or attempt to hunt, pursue, catch, capture or kill."

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements various treaties and conventions between the United States and Canada, Japan, Mexico, and Russia for the protection of migratory birds, including the burrowing owl (50 C.F.R. § 10). The MBTA protects migratory bird nests from possession, sale, purchase, barter, transport, import and export, and collection. The other prohibitions of the MBTA - capture, pursue, hunt, and kill - are inapplicable to nests. The regulatory definition of take, as defined in Title 50 C.F.R. part 10.12, means to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to hunt, shoot, wound, kill, trap, capture, or collect. Only the verb "collect" applies to nests. It is illegal to collect, possess, and by any means transfer possession of any migratory bird nest. The MBTA prohibits the destruction of a nest when it contains birds or eggs, and no possession shall occur during the destruction (see Fish and Wildlife Service, Migratory Bird Permit Memorandum, April 15, 2003). Certain exceptions to this prohibition are included in 50 C.F.R. section 21. Pursuant to Fish & Game Code section 3513, the Department enforces the Migratory Bird Treaty Act consistent with rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Treaty Act.

Regional Conservation Plans

Regional multiple species conservation plans offer long-term assurances for conservation of covered species at a landscape scale, in exchange for biologically appropriate levels of incidental take and/or habitat loss as defined in the approved plan. California's NCCP Act (FGC §2800 et seq.) governs such plans at the state level, and was designed to conserve species, natural communities, ecosystems, and ecological processes across a jurisdiction or a collection of jurisdictions. Complementary federal HCPs are governed by the Endangered Species Act (7 U.S.C. § 136, 16 U.S.C. § 1531 et seq.) (ESA). Regional conservation plans (and certain other landscape-level conservation and management plans), may provide conservation for unlisted as well as listed species. Because the geographic scope of NCCPs and HCPs may span many hundreds of thousands of acres, these planning tools have the potential to play a significant role in conservation of burrowing owls, and grasslands and other habitats.

Fish and Game Commission Policies

There are a number of Fish and Game Commission policies (see FGC §2008) that can be applied to burrowing owl conservation. These include policies on: Raptors, Cooperation, Endangered and Threatened Species, Land Use Planning, Management and Utilization of Fish and Wildlife on Federal Lands, Management and Utilization of Fish and Wildlife on Private Lands, and Research.

GUIDING PRINCIPLES FOR CONSERVATION

Unless otherwise provided in a statewide, local, or regional conservation strategy, surveying and evaluating impacts to burrowing owls, as well as developing and implementing avoidance, minimization, and mitigation and conservation measures incorporate the following principles. These principles are a summary of Department staff expert opinion and were used to guide the preparation of this document.

1. Use the Precautionary Principle (Noss et al.1997), by which the alternative of increased conservation is deliberately chosen in order to buffer against incomplete knowledge of burrowing owl ecology and uncertainty about the consequences to burrowing owls of potential impacts, including those that are cumulative.
2. Employ basic conservation biology tenets and population-level approaches when determining what constitutes appropriate avoidance, minimization, and mitigation for impacts. Include mitigation effectiveness monitoring and reporting, and use an adaptive management loop to modify measures based on results.
3. Protect and conserve owls in wild, semi-natural, and agricultural habitats (conserve is defined at FGC §1802).
4. Protect and conserve natural nest burrows (or burrow surrogates) previously used by burrowing owls and sufficient foraging habitat and protect auxiliary “satellite” burrows that contribute to burrowing owl survivorship and natural behavior of owls.

CONSERVATION GOALS FOR THE BURROWING OWL IN CALIFORNIA

It is Department staff expert opinion that the following goals guide and contribute to the short and long-term conservation of burrowing owls in California:

1. Maintain size and distribution of extant burrowing owl populations (allowing for natural population fluctuations).
2. Increase geographic distribution of burrowing owls into formerly occupied historical range where burrowing owl habitat still exists, or where it can be created or enhanced, and where the reason for its local disappearance is no longer of concern.
3. Increase size of existing populations where possible and appropriate (for example, considering basic ecological principles such as carrying capacity, predator-prey relationships, and inter-specific relationships with other species at risk).
4. Protect and restore self-sustaining ecosystems or natural communities which can support burrowing owls at a landscape scale, and which will require minimal long-term management.
5. Minimize or prevent unnatural causes of burrowing owl population declines (e.g., nest burrow destruction, chemical control of rodent hosts and prey).
6. Augment/restore natural dynamics of burrowing owl populations including movement and genetic exchange among populations, such that the species does not require future listing and protection under the California Endangered Species Act (CESA) and/or the federal Endangered Species Act (ESA).
7. Engage stakeholders, including ranchers; farmers; military; tribes; local, state, and federal agencies; non-governmental organizations; and scientific research and education communities involved in burrowing owl protection and habitat management.

ACTIVITIES WITH THE POTENTIAL TO TAKE OR IMPACT BURROWING OWLS

The following activities are examples of activities that have the potential to take burrowing owls, their nests or eggs, or destroy or degrade burrowing owl habitat: grading, disking, cultivation, earthmoving, burrow blockage, heavy equipment compacting and crushing burrow tunnels, levee maintenance, flooding, burning and mowing (if burrows are impacted), and operating wind turbine collisions (collectively hereafter referred to as “projects” or “activities”

whether carried out pursuant to CEQA or not). In addition, the following activities may have impacts to burrowing owl populations: eradication of host burrowers; changes in vegetation management (i.e. grazing); use of pesticides and rodenticides; destruction, conversion or degradation of nesting, foraging, over-wintering or other habitats; destruction of natural burrows and burrow surrogates; and disturbance which may result in harassment of owls at occupied burrows.

PROJECT IMPACT EVALUATIONS

The following three progressive steps are effective in evaluating whether projects will result in impacts to burrowing owls. The information gained from these steps will inform any subsequent avoidance, minimization and mitigation measures. The steps for project impact evaluations are: 1) habitat assessment, 2) surveys, and 3) impact assessment. Habitat assessments are conducted to evaluate the likelihood that a site supports burrowing owl. Burrowing owl surveys provide information needed to determine the potential effects of proposed projects and activities on burrowing owls, and to avoid take in accordance with FGC sections 86, 3503, and 3503.5. Impact assessments evaluate the extent to which burrowing owls and their habitat may be impacted, directly or indirectly, on and within a reasonable distance of a proposed CEQA project activity or non-CEQA project. These three site evaluation steps are discussed in detail below.

Biologist Qualifications

The current scientific literature indicates that only individuals meeting the following minimum qualifications should perform burrowing owl habitat assessments, surveys, and impact assessments:

1. Familiarity with the species and its local ecology;
2. Experience conducting habitat assessments and non-breeding and breeding season surveys, or experience with these surveys conducted under the direction of an experienced surveyor;
3. Familiarity with the appropriate state and federal statutes related to burrowing owls, scientific research, and conservation;
4. Experience with analyzing impacts of development on burrowing owls and their habitat.

Habitat Assessment Data Collection and Reporting

A habitat assessment is the first step in the evaluation process and will assist investigators in determining whether or not occupancy surveys are needed. Refer to Appendix B for a definition of burrowing owl habitat. Compile the detailed information described in Appendix C when conducting project scoping, conducting a habitat assessment site visit and preparing a habitat assessment report.

Surveys

Burrowing owl surveys are the second step of the evaluation process and the best available scientific literature recommends that they be conducted whenever burrowing owl habitat or sign (see Appendix B) is encountered on or adjacent to (within 150 meters) a project site

(Thomsen 1971, Martin 1973). Occupancy of burrowing owl habitat is confirmed at a site when at least one burrowing owl, or its sign at or near a burrow entrance, is observed within the last three years (Rich 1984). Burrowing owls are more detectable during the breeding season with detection probabilities being highest during the nestling stage (Conway et al. 2008). In California, the burrowing owl breeding season extends from 1 February to 31 August (Haug et al. 1993, Thompson 1971) with some variances by geographic location and climatic conditions. Several researchers suggest three or more survey visits during daylight hours (Haug and Diduik 1993, CBOC 1997, Conway and Simon 2003) and recommend each visit occur at least three weeks apart during the peak of the breeding season, commonly accepted in California as between 15 April and 15 July (CBOC 1997). Conway and Simon (2003) and Conway et al. (2008) recommended conducting surveys during the day when most burrowing owls in a local area are in the laying and incubation period (so as not to miss early breeding attempts), during the nesting period, and in the late nestling period when most owls are spending time above ground.

Non-breeding season (1 September to 31 January) surveys may provide information on burrowing owl occupancy, but do not substitute for breeding season surveys because results are typically inconclusive. Burrowing owls are more difficult to detect during the non-breeding season and their seasonal residency status is difficult to ascertain. Burrowing owls detected during non-breeding season surveys may be year-round residents, young from the previous breeding season, pre-breeding territorial adults, winter residents, dispersing juveniles, migrants, transients or new colonizers. In addition, the numbers of owls and their pattern of distribution may differ during winter and breeding seasons. However, on rare occasions, non-breeding season surveys may be warranted (i.e., if the site is believed to be a wintering site only based on negative breeding season results). Refer to Appendix D for information on breeding season and non-breeding season survey methodologies.

Survey Reports

Adequate information about burrowing owls present in and adjacent to an area that will be disturbed by a project or activity will enable the Department, reviewing agencies and the public to effectively assess potential impacts and will guide the development of avoidance, minimization, and mitigation measures. The survey report includes but is not limited to a description of the proposed project or proposed activity, including the proposed project start and end dates, as well as a description of disturbances or other activities occurring on-site or nearby. Refer to Appendix D for details included in a survey report.

Impact Assessment

The third step in the evaluation process is the impact assessment. When surveys confirm occupied burrowing owl habitat in or adjoining the project area, there are a number of ways to assess a project's potential significant impacts to burrowing owls and their habitat. Richardson and Miller (1997) recommended monitoring raptor behavior prior to developing management recommendations and buffers to determine the extent to which individuals have been sensitized to human disturbance. Monitoring results will also provide detail necessary for developing site-specific measures. Postovit and Postovit (1987) recommended an analytical approach to mitigation planning: define the problem (impact), set goals (to guide mitigation development), evaluate and select mitigation methods, and monitor the results.

Define the problem. The impact assessment evaluates all factors that could affect burrowing owls. Postovit and Postovit (1987) recommend evaluating the following in assessing impacts to raptors and planning mitigation: type and extent of disturbance, duration and timing of disturbance, visibility of disturbance, sensitivity and ability to habituate, and influence of environmental factors. They suggest identifying and addressing all potential direct and indirect impacts to burrowing owls, regardless of whether or not the impacts will occur during the breeding season. Several examples are given for each impact category below; however, examples are not intended to be used exclusively.

Type and extent of the disturbance. The impact assessment describes the nature (source) and extent (scale) of potential project impacts on occupied, satellite and unoccupied burrows including acreage to be lost (temporary or permanent), fragmentation/edge being created, increased distance to other nesting and foraging habitat, and habitat degradation. Discuss any project activities that impact either breeding and/or non-breeding habitat which could affect owl home range size and spatial configuration, negatively affect onsite and offsite burrowing owl presence, increase energetic costs, lower reproductive success, increase vulnerability to predation, and/or decrease the chance of procuring a mate.

Duration and timing of the impact. The impact assessment describes the amount of time the burrowing owl habitat will be unavailable to burrowing owls (temporary or permanent) on the site and the effect of that loss on essential behaviors or life history requirements of burrowing owls, the overlap of project activities with breeding and/or non-breeding seasons (timing of nesting and/or non-breeding activities may vary with latitude and climatic conditions, which should be considered with the timeline of the project or activity), and any variance of the project activities in intensity, scale and proximity relative to burrowing owl occurrences.

Visibility and sensitivity. Some individual burrowing owls or pairs are more sensitive than others to specific stimuli and may habituate to ongoing visual or audible disturbance. Site-specific monitoring may provide clues to the burrowing owl's sensitivities. This type of assessment addresses the sensitivity of burrowing owls within their nesting area to humans on foot, and vehicular traffic. Other variables are whether the site is primarily in a rural versus urban setting, and whether any prior disturbance (e.g., human development or recreation) is known at the site.

Environmental factors. The impact assessment discusses any environmental factors that could be influenced or changed by the proposed activities including nest site availability, predators, prey availability, burrowing mammal presence and abundance, and threats from other extrinsic factors such as human disturbance, urban interface, feral animals, invasive species, disease or pesticides.

Significance of impacts. The impact assessment evaluates the potential loss of nesting burrows, satellite burrows, foraging habitat, dispersal and migration habitat, wintering habitat, and habitat linkages, including habitat supporting prey and host burrowers and other essential habitat attributes. This assessment determines if impacts to the species will result in significant impacts to the species locally, regionally and range-wide per CEQA Guidelines §15382 and Appendix G. The significance of the impact to habitat depends on the extent of habitat disturbed and length of time the habitat is unavailable (for example: minor – several days, medium – several weeks to months, high - breeding season affecting juvenile survival,

or over winter affecting adult survival).

Cumulative effects. The cumulative effects assessment evaluates two consequences: 1) the project's proportional share of reasonably foreseeable impacts on burrowing owls and habitat caused by the project or in combination with other projects and local influences having impacts on burrowing owls and habitat, and 2) the effects on the regional owl population resulting from the project's impacts to burrowing owls and habitat.

Mitigation goals. Establishing goals will assist in planning mitigation and selecting measures that function at a desired level. Goals also provide a standard by which to measure mitigation success. Unless specifically provided for through other FGC Sections or through specific regulations, take, possession or destruction of individual burrowing owls, their nests and eggs is prohibited under FGC sections 3503, 3503.5 and 3513. Therefore, a required goal for all project activities is to avoid take of burrowing owls. Under CEQA, goals would consist of measures that would avoid, minimize and mitigate impacts to a less than significant level. For individual projects, mitigation must be roughly proportional to the level of impacts, including cumulative impacts, in accordance with the provisions of CEQA (CEQA Guidelines, §§ 15126.4(a)(4)(B), 15064, 15065, and 16355). In order for mitigation measures to be effective, they must be specific, enforceable, and feasible actions that will improve environmental conditions. As set forth in more detail in Appendix A, the current scientific literature supports the conclusion that mitigation for permanent habitat loss necessitates replacement with an equivalent or greater habitat area for breeding, foraging, wintering, dispersal, presence of burrows, burrow surrogates, presence of fossorial mammal dens, well drained soils, and abundant and available prey within close proximity to the burrow.

MITIGATION METHODS

The current scientific literature indicates that any site-specific avoidance or mitigation measures developed should incorporate the best practices presented below or other practices confirmed by experts and the Department. The Department is available to assist in the development of site-specific avoidance and mitigation measures.

Avoiding. A primary goal is to design and implement projects to seasonally and spatially avoid negative impacts and disturbances that could result in take of burrowing owls, nests, or eggs. Other avoidance measures may include but not be limited to:

- Avoid disturbing occupied burrows during the nesting period, from 1 February through 31 August.
- Avoid impacting burrows occupied during the non-breeding season by migratory or non-migratory resident burrowing owls.
- Avoid direct destruction of burrows through chaining (dragging a heavy chain over an area to remove shrubs), disking, cultivation, and urban, industrial, or agricultural development.
- Develop and implement a worker awareness program to increase the on-site worker's recognition of and commitment to burrowing owl protection.
- Place visible markers near burrows to ensure that farm equipment and other machinery does not collapse burrows.
- Do not fumigate, use treated bait or other means of poisoning nuisance animals in areas where burrowing owls are known or suspected to occur (e.g., sites observed with nesting

owls, designated use areas).

- Restrict the use of treated grain to poison mammals to the months of January and February.

Take avoidance (pre-construction) surveys. Take avoidance surveys are intended to detect the presence of burrowing owls on a project site at a fixed period in time and inform necessary take avoidance actions. Take avoidance surveys may detect changes in owl presence such as colonizing owls that have recently moved onto the site, migrating owls, resident burrowing owls changing burrow use, or young of the year that are still present and have not dispersed. Refer to Appendix D for take avoidance survey methodology.

Site surveillance. Burrowing owls may attempt to colonize or re-colonize an area that will be impacted; thus, the current scientific literature indicates a need for ongoing surveillance at the project site during project activities is recommended. The surveillance frequency/effort should be sufficient to detect burrowing owls if they return. Subsequent to their new occupancy or return to the site, take avoidance measures should assure with a high degree of certainty that take of owls will not occur.

Minimizing. If burrowing owls and their habitat can be protected in place on or adjacent to a project site, the use of buffer zones, visual screens or other measures while project activities are occurring can minimize disturbance impacts. Conduct site-specific monitoring to inform development of buffers (see Visibility and sensitivity above). The following general guidelines for implementing buffers should be adjusted to address site-specific conditions using the impact assessment approach described above. The CEQA lead agency and/or project proponent is encouraged to consult with the Department and other burrowing owl experts for assistance in developing site-specific buffer zones and visual screens.

Buffers. Holroyd et al. (2001) identified a need to standardize management and disturbance mitigation guidelines. For instance, guidelines for mitigating impacts by petroleum industries on burrowing owls and other prairie species (Scobie and Faminow, 2000) may be used as a template for future mitigation guidelines (Holroyd et al. 2001). Scobie and Faminow (2000) developed guidelines for activities around occupied burrowing owl nests recommending buffers around low, medium, and high disturbance activities, respectively (see below).

Recommended restricted activity dates and setback distances by level of disturbance for burrowing owls (Scobie and Faminow 2000).

Location	Time of Year	Level of Disturbance		
		Low	Med	High
Nesting sites	April 1-Aug 15	200 m*	500 m	500 m
Nesting sites	Aug 16-Oct 15	200 m	200 m	500 m
Nesting sites	Oct 16-Mar 31	50 m	100 m	500 m

* meters (m)

Based on existing vegetation, human development, and land uses in an area, resource managers may decide to allow human development or resource extraction closer to these area/sites than recommended above. However, if it is decided to allow activities closer than

the setback distances recommended, a broad-scale, long-term, scientifically-rigorous monitoring program ensures that burrowing owls are not detrimentally affected by alternative approaches.

Other minimization measures include eliminating actions that reduce burrowing owl forage and burrowing surrogates (e.g. ground squirrel), or introduce/facilitate burrowing owl predators. Actions that could influence these factors include reducing livestock grazing rates and/or changing the timing or duration of grazing or vegetation management that could result in less suitable habitat.

Burrow exclusion and closure. Burrow exclusion is a technique of installing one-way doors in burrow openings during the non-breeding season to temporarily exclude burrowing owls, or permanently exclude burrowing owls and close burrows after verifying burrows are empty by site monitoring and scoping. Exclusion in and of itself is not a take avoidance, minimization or mitigation method. Eviction of burrowing owls is a potentially significant impact under CEQA.

The long-term demographic consequences of these techniques have not been thoroughly evaluated, and the fate of evicted or excluded burrowing owls has not been systematically studied. Because burrowing owls are dependent on burrows at all times of the year for survival and/or reproduction, evicting them from nesting, roosting, and satellite burrows may lead to indirect impacts or take. Temporary or permanent closure of burrows may result in significant loss of burrows and habitat for reproduction and other life history requirements. Depending on the proximity and availability of alternate habitat, loss of access to burrows will likely result in varying levels of increased stress on burrowing owls and could depress reproduction, increase predation, increase energetic costs, and introduce risks posed by having to find and compete for available burrows. Therefore, exclusion and burrow closure are not recommended where they can be avoided. The current scientific literature indicates consideration of all possible avoidance and minimization measures before temporary or permanent exclusion and closure of burrows is implemented, in order to avoid take.

The results of a study by Trulio (1995) in California showed that burrowing owls passively displaced from their burrows were quickly attracted to adjacent artificial burrows at five of six passive relocation sites. The successful sites were all within 75 meters (m) of the destroyed burrow, a distance generally within a pair's territory. This researcher discouraged using passive relocation to artificial burrows as a mitigation measure for lost burrows without protection of adjacent foraging habitat. The study results indicated artificial burrows were used by evicted burrowing owls when they were approximately 50-100 m from the natural burrow (Thomsen 1971, Haug and Oliphant 1990). Locating artificial or natural burrows more than 100 m from the eviction burrow may greatly reduce the chances that new burrows will be used. Ideally, exclusion and burrow closure is employed only where there are adjacent natural burrows and non-impacted, sufficient habitat for burrowing owls to occupy with permanent protection mechanisms in place. Any new burrowing owl colonizing the project site after the CEQA document has been adopted may constitute changed circumstances that should be addressed in a re-circulated CEQA document.

The current scientific literature indicates that burrow exclusion should only be conducted by qualified biologists (meeting the Biologist's Qualifications above) during the non-breeding

season, before breeding behavior is exhibited and after the burrow is confirmed empty by site surveillance and/or scoping. The literature also indicates that when temporary or permanent burrow exclusion and/or burrow closure is implemented, burrowing owls should not be excluded from burrows unless or until:

- A Burrowing Owl Exclusion Plan (see Appendix E) is developed and approved by the applicable local DFG office;
- Permanent loss of occupied burrow(s) and habitat is mitigated in accordance with the Mitigating Impacts sections below. Temporary exclusion is mitigated in accordance with the item #1 under Mitigating Impacts below.
- Site monitoring is conducted prior to, during, and after exclusion of burrowing owls from their burrows sufficient to ensure take is avoided. Conduct daily monitoring for one week to confirm young of the year have fledged if the exclusion will occur immediately after the end of the breeding season.
- Excluded burrowing owls are documented using artificial or natural burrows on an adjoining mitigation site (if able to confirm by band re-sight).

Translocation (Active relocation offsite >100 meters). At this time, there is little published information regarding the efficacy of translocating burrowing owls, and additional research is needed to determine subsequent survival and breeding success (Klute et al. 2003, Holroyd et al. 2001). Study results for translocation in Florida implied that hatching success may be decreased for populations of burrowing owls that undergo translocation (Nixon 2006). At this time, the Department is unable to authorize the capture and relocation of burrowing owls except within the context of scientific research (FGC §1002) or a NCCP conservation strategy.

Mitigating impacts. Habitat loss and degradation from rapid urbanization of farmland in the core areas of the Central and Imperial valleys is the greatest of many threats to burrowing owls in California (Shuford and Gardali, 2008). At a minimum, if burrowing owls have been documented to occupy burrows (see Definitions, Appendix B) at the project site in recent years, the current scientific literature supports the conclusion that the site should be considered occupied and mitigation should be required by the CEQA lead agency to address project-specific significant and cumulative impacts. Other site-specific and regionally significant and cumulative impacts may warrant mitigation. The current scientific literature indicates the following to be best practices. If these best practices cannot be implemented, the lead agency or lead investigator may consult with the Department to develop effective mitigation alternatives. The Department is also available to assist in the identification of suitable mitigation lands.

1. Where habitat will be temporarily disturbed, restore the disturbed area to pre-project condition including decompacting soil and revegetating. Permanent habitat protection may be warranted if there is the potential that the temporary impacts may render a nesting site (nesting burrow and satellite burrows) unsustainable or unavailable depending on the time frame, resulting in reduced survival or abandonment. For the latter potential impact, see the permanent impact measures below.
2. Mitigate for permanent impacts to nesting, occupied and satellite burrows and/or burrowing owl habitat such that the habitat acreage, number of burrows and burrowing owls impacted are replaced based on the information provided in Appendix A. Note: A

minimum habitat replacement recommendation is not provided here as it has been shown to serve as a default, replacing any site-specific analysis and discounting the wide variation in natal area, home range, foraging area, and other factors influencing burrowing owls and burrowing owl population persistence in a particular area.

3. Mitigate for permanent impacts to nesting, occupied and satellite burrows and burrowing owl habitat with (a) permanent conservation of similar vegetation communities (grassland, scrublands, desert, urban, and agriculture) to provide for burrowing owl nesting, foraging, wintering, and dispersal (i.e., during breeding and non-breeding seasons) comparable to or better than that of the impact area, and (b) sufficiently large acreage, and presence of fossorial mammals. The mitigation lands may require habitat enhancements including enhancement or expansion of burrows for breeding, shelter and dispersal opportunity, and removal or control of population stressors. If the mitigation lands are located adjacent to the impacted burrow site, ensure the nearest neighbor artificial or natural burrow clusters are at least within 210 meters (Fisher et al. 2007).
4. Permanently protect mitigation land through a conservation easement deeded to a non-profit conservation organization or public agency with a conservation mission, for the purpose of conserving burrowing owl habitat and prohibiting activities incompatible with burrowing owl use. If the project is located within the service area of a Department-approved burrowing owl conservation bank, the project proponent may purchase available burrowing owl conservation bank credits.
5. Develop and implement a mitigation land management plan to address long-term ecological sustainability and maintenance of the site for burrowing owls (see Management Plan and Artificial Burrow sections below, if applicable).
6. Fund the maintenance and management of mitigation land through the establishment of a long-term funding mechanism such as an endowment.
7. Habitat should not be altered or destroyed, and burrowing owls should not be excluded from burrows, until mitigation lands have been legally secured, are managed for the benefit of burrowing owls according to Department-approved management, monitoring and reporting plans, and the endowment or other long-term funding mechanism is in place or security is provided until these measures are completed.
8. Mitigation lands should be on, adjacent or proximate to the impact site where possible and where habitat is sufficient to support burrowing owls present.
9. Where there is insufficient habitat on, adjacent to, or near project sites where burrowing owls will be excluded, acquire mitigation lands with burrowing owl habitat away from the project site. The selection of mitigation lands should then focus on consolidating and enlarging conservation areas located outside of urban and planned growth areas, within foraging distance of other conserved lands. If mitigation lands are not available adjacent to other conserved lands, increase the mitigation land acreage requirement to ensure a selected site is of sufficient size. Offsite mitigation may not adequately offset the biological and habitat values impacted on a one to one basis. Consult with the Department when determining offsite mitigation acreages.
10. Evaluate and select suitable mitigation lands based on a comparison of the habitat attributes of the impacted and conserved lands, including but not limited to: type and structure of habitat being impacted or conserved; density of burrowing owls in impacted and conserved habitat; and significance of impacted or conserved habitat to the species range-wide. Mitigate for the highest quality burrowing owl habitat impacted first and foremost when identifying mitigation lands, even if a mitigation site is located outside of

a lead agency's jurisdictional boundary, particularly if the lead agency is a city or special district.

11. Select mitigation lands taking into account the potential human and wildlife conflicts or incompatibility, including but not limited to, human foot and vehicle traffic, and predation by cats, loose dogs and urban-adapted wildlife, and incompatible species management (i.e., snowy plover).
12. Where a burrowing owl population appears to be highly adapted to heavily altered habitats such as golf courses, airports, athletic fields, and business complexes, permanently protecting the land, augmenting the site with artificial burrows, and enhancing and maintaining those areas may enhance sustainability of the burrowing owl population onsite. Maintenance includes keeping lands grazed or mowed with weed-eaters or push mowers, free from trees and shrubs, and preventing excessive human and human-related disturbance (e.g., walking, jogging, off-road activity, dog-walking) and loose and feral pets (chasing and, presumably, preying upon owls) that make the environment uninhabitable for burrowing owls (Wesemann and Rowe 1985, Millsap and Bear 2000, Lincer and Bloom 2007). Items 4, 5 and 6 also still apply to this mitigation approach.
13. If there are no other feasible mitigation options available and a lead agency is willing to establish and oversee a Burrowing Owl Mitigation and Conservation Fund that funds on a competitive basis acquisition and permanent habitat conservation, the project proponent may participate in the lead agency's program.

Artificial burrows. Artificial burrows have been used to replace natural burrows either temporarily or long-term and their long-term success is unclear. Artificial burrows may be an effective addition to in-perpetuity habitat mitigation if they are augmenting natural burrows, the burrows are regularly maintained (i.e., no less than annual, with biennial maintenance recommended), and surrounding habitat patches are carefully maintained. There may be some circumstances, for example at airports, where squirrels will not be allowed to persist and create a dynamic burrow system, where artificial burrows may provide some support to an owl population.

Many variables may contribute to the successful use of artificial burrows by burrowing owls, including pre-existence of burrowing owls in the area, availability of food, predators, surrounding vegetation and proximity, number of natural burrows in proximity, type of materials used to build the burrow, size of the burrow and entrance, direction in which the burrow entrance is facing, slope of the entrance, number of burrow entrances per burrow, depth of the burrow, type and height of perches, and annual maintenance needs (Belthoff and King 2002, Smith et al. 2005, Barclay et al. 2011). Refer to Barclay (2008) and (2011) and to Johnson et al. 2010 (unpublished report) for guidance on installing artificial burrows including recommendations for placement, installation and maintenance.

Any long-term reliance on artificial burrows as natural burrow replacements must include semi-annual to annual cleaning and maintenance and/or replacement (Barclay et al. 2011, Smith and Conway 2005, Alexander et al. 2005) as an ongoing management practice. Alexander et al. (2005), in a study of the use of artificial burrows found that all of 20 artificial burrows needed some annual cleaning and maintenance. Burrows were either excavated by predators, blocked by soil or vegetation, or experienced substrate erosion forming a space beneath the tubing that prevented nestlings from re-entering the burrow.

Mitigation lands management plan. Develop a Mitigation Lands Management Plan for projects that require off-site or on-site mitigation habitat protection to ensure compliance with and effectiveness of identified management actions for the mitigation lands. A suggested outline and related vegetation management goals and monitoring success criteria can be found in Appendix E.

Mitigation Monitoring and Reporting

Verify the compliance with required mitigation measures, the accuracy of predictions, and ensure the effectiveness of all mitigation measures for burrowing owls by conducting follow-up monitoring, and implementing midcourse corrections, if necessary, to protect burrowing owls. Refer to CEQA Guidelines Section 15097 and the CEQA Guidelines for additional guidance on mitigation, monitoring and reporting. Monitoring is qualitatively different from site surveillance; monitoring normally has a specific purpose and its outputs and outcomes will usually allow a comparison with some baseline condition of the site before the mitigation (including avoidance and minimization) was undertaken. Ideally, monitoring should be based on the Before-After Control-Impact (BACI) principle (McDonald et al. 2000) that requires knowledge of the pre-mitigation state to provide a reference point for the state and change in state after the project and mitigation have been implemented.

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Appendix A. Burrowing Owl Natural History and Threats

Diet

Burrowing owl diet includes arthropods, small rodents, birds, amphibians, reptiles, and carrion (Haug et al. 1993).

Breeding

In California, the breeding season for the burrowing owl typically occurs between 1 February and 31 August although breeding in December has been documented (Thompson 1971, Gervais et al. 2008); breeding behavior includes nest site selection by the male, pair formation, copulation, egg laying, hatching, fledging, and post-fledging care of young by the parents. The peak of the breeding season occurs between 15 April and 15 July and is the period when most burrowing owls have active nests (eggs or young). The incubation period lasts 29 days (Coulombe 1971) and young fledge after 44 days (Haug et al. 1993). Note that the timing of nesting activities may vary with latitude and climatic conditions. Burrowing owls may change burrows several times during the breeding season, starting when nestlings are about three weeks old (Haug et al. 1993).

Dispersal

The following discussion is an excerpt from Gervais et al (2008):

“The burrowing owl is often considered a sedentary species (e.g., Thomsen 1971). A large proportion of adults show strong fidelity to their nest site from year to year, especially where resident, as in Florida (74% for females, 83% for males; Millsap and Bear 1997). In California, nest-site fidelity rates were 32%–50% in a large grassland and 57% in an agricultural environment (Ronan 2002, Catlin 2004, Catlin et al. 2005). Differences in these rates among sites may reflect differences in nest predation rates (Catlin 2004, Catlin et al. 2005). Despite the high nest fidelity rates, dispersal distances may be considerable for both juveniles (natal dispersal) and adults (postbreeding dispersal), but this also varied with location (Catlin 2004, Rosier et al. 2006). Distances of 53 km to roughly 150 km have been observed in California for adult and natal dispersal, respectively (D. K. Rosenberg and J. A. Gervais, unpublished data), despite the difficulty in detecting movements beyond the immediate study area (Koenig et al. 1996).”

Habitat

The burrowing owl is a small, long-legged, ground-dwelling bird species, well-adapted to open, relatively flat expanses. In California, preferred habitat is generally typified by short, sparse vegetation with few shrubs, level to gentle topography and well-drained soils (Haug et al. 1993). Grassland, shrub steppe, and desert are naturally occurring habitat types used by the species. In addition, burrowing owls may occur in some agricultural areas, ruderal grassy fields, vacant lots and pastures if the vegetation structure is suitable and there are useable burrows and foraging habitat in proximity (Gervais et al 2008). Unique amongst North

American raptors, the burrowing owl requires underground burrows or other cavities for nesting during the breeding season and for roosting and cover, year round. Burrows used by the owls are usually dug by other species termed host burrowers. In California, California ground squirrel (*Spermophilus beecheyi*) and round-tailed ground squirrel (*Citellus tereticaudus*) burrows are frequently used by burrowing owls but they may use dens or holes dug by other fossorial species including badger (*Taxidea taxus*), coyote (*Canis latrans*), and fox (e.g., San Joaquin kit fox, *Vulpes macrotis mutica*; Ronan 2002). In some instances, owls have been known to excavate their own burrows (Thompson 1971, Barclay 2007). Natural rock cavities, debris piles, culverts, and pipes also are used for nesting and roosting (Rosenberg et al. 1998). Burrowing owls have been documented using artificial burrows for nesting and cover (Smith and Belthoff, 2003).

Foraging habitat. Foraging habitat is essential to burrowing owls. The following discussion is an excerpt from Gervais et al. (2008):

“Useful as a rough guide to evaluating project impacts and appropriate mitigation for burrowing owls, adult male burrowing owls home ranges have been documented (calculated by minimum convex polygon) to comprise anywhere from 280 acres in intensively irrigated agroecosystems in Imperial Valley (Rosenberg and Haley 2004) to 450 acres in mixed agricultural lands at Lemoore Naval Air Station, CA (Gervais et al. 2003), to 600 acres in pasture in Saskatchewan, Canada (Haug and Oliphant 1990). But owl home ranges may be much larger, perhaps by an order of magnitude, in non-irrigated grasslands such as at Carrizo Plain, California (Gervais et al. 2008), based on telemetry studies and distribution of nests. Foraging occurs primarily within 600 m of their nests (within approximately 300 acres, based on a circle with a 600 m radius) during the breeding season.”

Importance of burrows and adjacent habitat. Burrows and the associated surrounding habitat are essential ecological requisites for burrowing owls throughout the year and especially during the breeding season. During the non-breeding season, burrowing owls remain closely associated with burrows, as they continue to use them as refuge from predators, shelter from weather and roost sites. Resident populations will remain near the previous season's nest burrow at least some of the time (Coulombe 1971, Thomsen 1971, Botelho 1996, LaFever et al. 2008).

In a study by Lutz and Plumpton (1999) adult males and females nested in formerly used sites at similar rates (75% and 63%, respectively) (Lutz and Plumpton 1999). Burrow fidelity has been reported in some areas; however, more frequently, burrowing owls reuse traditional nesting areas without necessarily using the same burrow (Haug et al. 1993, Dechant et al. 1999). Burrow and nest sites are re-used at a higher rate if the burrowing owl has reproduced successfully during the previous year (Haug et al. 1993) and if the number of burrows isn't limiting nesting opportunity.

Burrowing owls may use “satellite” or non-nesting burrows, moving young at 10-14 days, presumably to reduce risk of predation (Desmond and Savidge 1998) and possibly to avoid nest parasites (Dechant et al. 1999). Successful nests in Nebraska had more active satellite burrows within 75 m of the nest burrow than unsuccessful nests (Desmond and Savidge

1999). Several studies have documented the number of satellite burrows used by young and adult burrowing owls during the breeding season as between one and 11 burrows with an average use of approximately five burrows (Thompson 1984, Haug 1985, Haug and Oliphant 1990). Supporting the notion of selecting for nest sites near potential satellite burrows, Ronan (2002) found burrowing owl families would move away from a nest site if their satellite burrows were experimentally removed through blocking their entrance.

Habitat adjacent to burrows has been documented to be important to burrowing owls. Gervais et al. (2003) found that home range sizes of male burrowing owls during the nesting season were highly variable within but not between years. Their results also suggested that owls concentrate foraging efforts within 600 meters of the nest burrow, as was observed in Canada (Haug and Oliphant 1990) and southern California (Rosenberg and Haley 2004). James et al. (1997), reported habitat modification factors causing local burrowing owl declines included habitat fragmentation and loss of connectivity.

In conclusion, the best available science indicates that essential habitat for the burrowing owl in California must include suitable year-round habitat, primarily for breeding, foraging, wintering and dispersal habitat consisting of short or sparse vegetation (at least at some time of year), presence of burrows, burrow surrogates or presence of fossorial mammal dens, well-drained soils, and abundant and available prey within close proximity to the burrow.

Threats to Burrowing Owls in California

Habitat loss. Habitat loss, degradation, and fragmentation are the greatest threats to burrowing owls in California. According to DeSante et al. (2007), “the vast majority of burrowing owls [now] occur in the wide, flat lowland valleys and basins of the Imperial Valley and Great Central Valley [where] for the most part,...the highest rates of residential and commercial development in California are occurring.” Habitat loss from the State’s long history of urbanization in coastal counties has already resulted in either extirpation or drastic reduction of burrowing owl populations there (Gervais et al. 2008). Further, loss of agricultural and other open lands (such as grazed landscapes) also negatively affect owl populations. Because of their need for open habitat with low vegetation, burrowing owls are unlikely to persist in agricultural lands dominated by vineyards and orchards (Gervais et al. 2008).

Control of burrowing rodents. According to Klute et al. (2003), the elimination of burrowing rodents through control programs is a primary factor in the recent and historical decline of burrowing owl populations nationwide. In California, ground squirrel burrows are most often used by burrowing owls for nesting and cover; thus, ground squirrel control programs may affect owl numbers in local areas by eliminating a necessary resource.

Direct mortality. Burrowing owls suffer direct losses from a number of sources. Vehicle collisions are a significant source of mortality especially in the urban interface and where owls nest alongside roads (Haug et al. 1993, Gervais et al. 2008). Road and ditch maintenance, modification of water conveyance structures (Imperial Valley) and discing to control weeds in fallow fields may destroy burrows (Rosenberg and Haley 2004, Catlin and Rosenberg 2006) which may trap or crush owls. Wind turbines at Altamont Pass Wind Resource Area are known to cause direct burrowing owl mortality (Thelander et al. 2003). Exposure to

pesticides may pose a threat to the species but is poorly understood (Klute et al. 2003, Gervais et al. 2008).

Appendix B. Definitions

Some key terms that appear in this document are defined below.

Adjacent habitat means burrowing owl habitat that abuts the area where habitat and burrows will be impacted and rendered non-suitable for occupancy.

Breeding (nesting) season begins as early as 1 February and continues through 31 August (Thomsen 1971, Zarn 1974). The timing of breeding activities may vary with latitude and climatic conditions. The breeding season includes pairing, egg-laying and incubation, and nestling and fledging stages.

Burrow exclusion is a technique of installing one-way doors in burrow openings during the non-breeding season to temporarily exclude burrowing owls or permanently exclude burrowing owls and excavate and close burrows after confirming burrows are empty.

Burrowing owl habitat generally includes, but is not limited to, short or sparse vegetation (at least at some time of year), presence of burrows, burrow surrogates or presence of fossorial mammal dens, well-drained soils, and abundant and available prey.

Burrow surrogates include culverts, piles of concrete rubble, piles of soil, burrows created along soft banks of ditches and canals, pipes, and similar structures.

Civil twilight - Morning civil twilight begins when the geometric center of the sun is 6 degrees below the horizon (civil dawn) and ends at sunrise. Evening civil twilight begins at sunset and ends when the geometric center of the sun reaches 6 degrees below the horizon (civil dusk). During this period there is enough light from the sun that artificial sources of light may not be needed to carry on outdoor activities. This concept is sometimes enshrined in laws, for example, when drivers of automobiles must turn on their headlights (called lighting-up time in the UK); when pilots may exercise the rights to fly aircraft. Civil twilight can also be described as the limit at which twilight illumination is sufficient, under clear weather conditions, for terrestrial objects to be clearly distinguished; at the beginning of morning civil twilight, or end of evening civil twilight, the horizon is clearly defined and the brightest stars are visible under clear atmospheric conditions.

Conservation for burrowing owls may include but may not be limited to protecting remaining breeding pairs or providing for population expansion, protecting and enhancing breeding and essential habitat, and amending or augmenting land use plans to stabilize populations and other specific actions to avoid the need to list the species pursuant to California or federal Endangered Species Acts.

Contiguous means connected together so as to form an uninterrupted expanse in space.

Essential habitat includes nesting, foraging, wintering, and dispersal habitat.

Foraging habitat is habitat within the estimated home range of an occupied burrow, supports suitable prey base, and allows for effective hunting.

Host burrowers include ground squirrels, badgers, foxes, coyotes, gophers etc.

Locally significant species is a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region (CEQA §15125 (c)) or is so designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G). Examples include a species at the outer limits of its known range or occurring in a unique habitat type.

Non-breeding season is the period of time when nesting activity is not occurring, generally September 1 through January 31, but may vary with latitude and climatic conditions.

Occupied site or occupancy means a site that is assumed occupied if at least one burrowing owl has been observed occupying a burrow within the last three years (Rich 1984). Occupancy of suitable burrowing owl habitat may also be indicated by owl sign including its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance or perch site.

Other impacting activities may include but may not be limited to agricultural practices, vegetation management and fire control, pest management, conversion of habitat from rangeland or natural lands to more intensive agricultural uses that could result in “take”. These impacting activities may not meet the definition of a project under CEQA.

Passive relocation is a technique of installing one-way doors in burrow openings to temporarily or permanently evict burrowing owls and prevent burrow re-occupation.

Peak of the breeding season is between 15 April and 15 July.

Sign includes its tracks, molted feathers, cast pellets (defined as 1-2” long brown to black regurgitated pellets consisting of non-digestible portions of the owls’ diet, such as fur, bones, claws, beetle elytra, or feathers), prey remains, egg shell fragments, owl white wash, nest burrow decoration materials (e.g., paper, foil, plastic items, livestock or other animal manure, etc.), possible owl perches, or other items.

Appendix C. Habitat Assessment and Reporting Details

Habitat Assessment Data Collection and Reporting

Current scientific literature indicates that it would be most effective to gather the data in the manner described below when conducting project scoping, conducting a habitat assessment site visit and preparing a habitat assessment report:

1. Conduct at least one visit covering the entire potential project/activity area including areas that will be directly or indirectly impacted by the project. Survey adjoining areas within 150 m (Thomsen 1971, Martin 1973), or more where direct or indirect effects could potentially extend offsite. If lawful access cannot be achieved to adjacent areas, surveys can be performed with a spotting scope or other methods.
2. Prior to the site visit, compile relevant biological information for the site and surrounding area to provide a local and regional context.
3. Check all available sources for burrowing owl occurrence information regionally prior to a field inspection. The CNDDDB and BIOS (see References cited) may be consulted for known occurrences of burrowing owls. Other sources of information include, but are not limited to, the Proceedings of the California Burrowing Owl Symposium (Barclay et al. 2007), county bird atlas projects, Breeding Bird Survey records, eBIRD (<http://ebird.org>), Gervais et al. (2008), local reports or experts, museum records, and other site-specific relevant information.
4. Identify vegetation and habitat types potentially supporting burrowing owls in the project area and vicinity.
5. Record and report on the following information:
 - a. A full description of the proposed project, including but not limited to, expected work periods, daily work schedules, equipment used, activities performed (such as drilling, construction, excavation, etc.) and whether the expected activities will vary in location or intensity over the project's timeline;
 - b. A regional setting map, showing the general project location relative to major roads and other recognizable features;
 - c. A detailed map (preferably a USGS topo 7.5' quad base map) of the site and proposed project, including the footprint of proposed land and/or vegetation-altering activities, base map source, identifying topography, landscape features, a north arrow, bar scale, and legend;
 - d. A written description of the biological setting, including location (Section, Township, Range, baseline and meridian), acreage, topography, soils, geographic and hydrologic characteristics, land use and management history on and adjoining the site (i.e., whether it is urban, semi-urban or rural; whether there is any evidence of past or current livestock grazing, mowing, disking, or other vegetation management activities);
 - e. An analysis of any relevant, historical information concerning burrowing owl use or occupancy (breeding, foraging, over-wintering) on site or in the assessment area;
 - f. Vegetation type and structure (using Sawyer et al. 2009), vegetation height, habitat types and features in the surrounding area plus a reasonably sized (as supported with logical justification) assessment area; (Note: use caution in discounting habitat based on grass height as it can be a temporary condition variable by season and conditions (such as current grazing regime) or may be distributed as a mosaic).

- g. The presence of burrowing owl individuals or pairs or sign (see Appendix B);
- h. The presence of suitable burrows and/or burrow surrogates (>11 cm in diameter (height and width) and >150 cm in depth) (Johnson et al. 2010), regardless of a lack of any burrowing owl sign and/or burrow surrogates; and burrowing owls and/or their sign that have recently or historically (within the last 3 years) been identified on or adjacent to the site.

Appendix D. Breeding and Non-breeding Season Surveys and Reports

Current scientific literature indicates that it is most effective to conduct breeding and non-breeding season surveys and report in the manner that follows:

Breeding Season Surveys

Number of visits and timing. Conduct 4 survey visits: 1) at least one site visit between 15 February and 15 April, and 2) a minimum of three survey visits, at least three weeks apart, between 15 April and 15 July, with at least one visit after 15 June. Note: many burrowing owl migrants are still present in southwestern California during mid-March, therefore, exercise caution in assuming breeding occupancy early in the breeding season.

Survey method. Rosenberg et al. (2007) confirmed walking line transects were most effective in smaller habitat patches. Conduct surveys in all portions of the project site that were identified in the Habitat Assessment and fit the description of habitat in Appendix A. Conduct surveys by walking straight-line transects spaced 7 m to 20 m apart, adjusting for vegetation height and density (Rosenberg et al. 2007). At the start of each transect and, at least, every 100 m, scan the entire visible project area for burrowing owls using binoculars. During walking surveys, record all potential burrows used by burrowing owls as determined by the presence of one or more burrowing owls, pellets, prey remains, whitewash, or decoration. Some burrowing owls may be detected by their calls, so observers should also listen for burrowing owls while conducting the survey.

Care should be taken to minimize disturbance near occupied burrows during all seasons and not to “flush” burrowing owls especially if predators are present to reduce any potential for needless energy expenditure or burrowing owl mortality. Burrowing owls may flush if approached by pedestrians within 50 m (Conway et al. 2003). If raptors or other predators are present that may suppress burrowing owl activity, return at another time or later date for a follow-up survey.

Check all burrowing owls detected for bands and/or color bands and report band combinations to the Bird Banding Laboratory (BBL). Some site-specific variations to survey methods discussed below may be developed in coordination with species experts and Department staff.

Weather conditions. Poor weather may affect the surveyor’s ability to detect burrowing owls, therefore, avoid conducting surveys when wind speed is >20 km/hr, and there is precipitation or dense fog. Surveys have greater detection probability if conducted when ambient temperatures are >20° C, <12 km/hr winds, and cloud cover is <75% (Conway et al. 2008).

Time of day. Daily timing of surveys varies according to the literature, latitude, and survey method. However, surveys between morning civil twilight and 10:00 AM and two hours before sunset until evening civil twilight provide the highest detection probabilities (Barclay pers. comm. 2012, Conway et al. 2008).

Alternate methods. If the project site is large enough to warrant an alternate method, consult current literature for generally accepted survey methods and consult with the Department on the proposed survey approach.

Additional breeding season site visits. Additional breeding season site visits may be necessary, especially if non-breeding season exclusion methods are contemplated. Detailed information, such as approximate home ranges of each individual or of family units, as well as foraging areas as related to the proposed project, will be important to document for evaluating impacts, planning avoidance measure implementation and for mitigation measure performance monitoring.

Adverse conditions may prevent investigators from determining presence or occupancy. Disease, predation, drought, high rainfall or site disturbance may preclude presence of burrowing owls in any given year. Any such conditions should be identified and discussed in the survey report. Visits to the site in more than one year may increase the likelihood of detection. Also, visits to adjacent known occupied habitat may help determine appropriate survey timing.

Given the high site fidelity shown by burrowing owls (see Appendix A, Importance of burrows), conducting surveys over several years may be necessary when project activities are ongoing, occur annually, or start and stop seasonally. (See Negative surveys).

Non-breeding Season Surveys

If conducting non-breeding season surveys, follow the methods described above for breeding season surveys, but conduct at least four (4) visits, spread evenly, throughout the non-breeding season. Burrowing owl experts and local Department staff are available to assist with interpreting results.

Negative Surveys

Adverse conditions may prevent investigators from documenting presence or occupancy. Disease, predation, drought, high rainfall or site disturbance may preclude presence of burrowing owl in any given year. Discuss such conditions in the Survey Report. Visits to the site in more than one year increase the likelihood of detection and failure to locate burrowing owls during one field season does not constitute evidence that the site is no longer occupied, particularly if adverse conditions influenced the survey results. Visits to other nearby known occupied sites can affirm whether the survey timing is appropriate.

Take Avoidance Surveys

Field experience from 1995 to present supports the conclusion that it would be effective to complete an initial take avoidance survey no less than 14 days prior to initiating ground disturbance activities using the recommended methods described in the Detection Surveys section above. Implementation of avoidance and minimization measures would be triggered by positive owl presence on the site where project activities will occur. The development of avoidance and minimization approaches would be informed by monitoring the burrowing owls.

Burrowing owls may re-colonize a site after only a few days. Time lapses between project activities trigger subsequent take avoidance surveys including but not limited to a final survey conducted within 24 hours prior to ground disturbance.

Survey Reports

Report on the survey methods used and results including the information described in the Summary Report and include the reports within the CEQA documentation:

1. Date, start and end time of surveys including weather conditions (ambient temperature, wind speed, percent cloud cover, precipitation and visibility);
2. Name(s) of surveyor(s) and qualifications;
3. A discussion of how the timing of the survey affected the comprehensiveness and detection probability;
4. A description of survey methods used including transect spacing, point count dispersal and duration, and any calls used;
5. A description and justification of the area surveyed relative to the project area;
6. A description that includes: number of owls or nesting pairs at each location (by nestlings, juveniles, adults, and those of an unknown age), number of burrows being used by owls, and burrowing owl sign at burrows. Include a description of individual markers, such as bands (numbers and colors), transmitters, or unique natural identifying features. If any owls are banded, request documentation from the BBL and bander to report on the details regarding the known history of the banded burrowing owl(s) (age, sex, origins, whether it was previously relocated) and provide with the report if available;
7. A description of the behavior of burrowing owls during the surveys, including feeding, resting, courtship, alarm, territorial defense, and those indicative of parents or juveniles;
8. A list of possible burrowing owl predators present and documentation of any evidence of predation of owls;
9. A detailed map (1:24,000 or closer to show details) showing locations of all burrowing owls, potential burrows, occupied burrows, areas of concentrated burrows, and burrowing owl sign. Locations documented by use of global positioning system (GPS) coordinates must include the datum in which they were collected. The map should include a title, north arrow, bar scale and legend;
10. Signed field forms, photos, etc., as appendices to the field survey report;
11. Recent color photographs of the proposed project or activity site; and
12. Original CNDDDB Field Survey Forms should be sent directly to the Department's CNDDDB office, and copies should be included in the environmental document as an appendix. (<http://www.dfg.ca.gov/bdb/html/cnddb.html>).

Appendix E. Example Components for Burrowing Owl Artificial Burrow and Exclusion Plans

Whereas the Department does not recommend exclusion and burrow closure, current scientific literature and experience from 1995 to present, indicate that the following example components for burrowing owl artificial burrow and exclusion plans, combined with consultation with the Department to further develop these plans, would be effective.

Artificial Burrow Location

If a burrow is confirmed occupied on-site, artificial burrow locations should be appropriately located and their use should be documented taking into consideration:

1. A brief description of the project and project site pre-construction;
2. The mitigation measures that will be implemented;
3. Potential conflicting site uses or encumbrances;
4. A comparison of the occupied burrow site(s) and the artificial burrow site(s) (e.g., vegetation, habitat types, fossorial species use in the area, and other features);
5. Artificial burrow(s) proximity to the project activities, roads and drainages;
6. Artificial burrow(s) proximity to other burrows and entrance exposure;
7. Photographs of the site of the occupied burrow(s) and the artificial burrows;
8. Map of the project area that identifies the burrow(s) to be excluded as well as the proposed sites for the artificial burrows;
9. A brief description of the artificial burrow design;
10. Description of the monitoring that will take place during and after project implementation including information that will be provided in a monitoring report.
11. A description of the frequency and type of burrow maintenance.

Exclusion Plan

An Exclusion Plan addresses the following including but not limited to:

1. Confirm by site surveillance that the burrow(s) is empty of burrowing owls and other species preceding burrow scoping;
2. Type of scope and appropriate timing of scoping to avoid impacts;
3. Occupancy factors to look for and what will guide determination of vacancy and excavation timing (one-way doors should be left in place 48 hours to ensure burrowing owls have left the burrow before excavation, visited twice daily and monitored for evidence that owls are inside and can't escape i.e., look for sign immediately inside the door).
4. How the burrow(s) will be excavated. Excavation using hand tools with refilling to prevent reoccupation is preferable whenever possible (may include using piping to stabilize the burrow to prevent collapsing until the entire burrow has been excavated and it can be determined that no owls reside inside the burrow);
5. Removal of other potential owl burrow surrogates or refugia on site;
6. Photographing the excavation and closure of the burrow to demonstrate success and sufficiency;

7. Monitoring of the site to evaluate success and, if needed, to implement remedial measures to prevent subsequent owl use to avoid take;
8. How the impacted site will continually be made inhospitable to burrowing owls and fossorial mammals (e.g., by allowing vegetation to grow tall, heavy disking, or immediate and continuous grading) until development is complete.

Appendix F. Mitigation Management Plan and Vegetation Management Goals

Mitigation Management Plan

A mitigation site management plan will help ensure the appropriate implementation and maintenance for the mitigation site and persistence of the burrowing owls on the site. For an example to review, refer to Rosenberg et al. (2009). The current scientific literature and field experience from 1995 to present indicate that an effective management plan includes the following:

1. Mitigation objectives;
2. Site selection factors (including a comparison of the attributes of the impacted and conserved lands) and baseline assessment;
3. Enhancement of the conserved lands (enhancement of reproductive capacity, enhancement of breeding areas and dispersal opportunities, and removal or control of population stressors);
4. Site protection method and prohibited uses;
5. Site manager roles and responsibilities;
6. Habitat management goals and objectives:
 - a. Vegetation management goals,
 - i. Vegetation management tools:
 1. Grazing
 2. Mowing
 3. Burning
 4. Other
 - b. Management of ground squirrels and other fossorial mammals,
 - c. Semi-annual and annual artificial burrow cleaning and maintenance,
 - d. Non-natives control – weeds and wildlife,
 - e. Trash removal;
7. Financial assurances:
 - a. Property analysis record or other financial analysis to determine long-term management funding,
 - b. Funding schedule;
8. Performance standards and success criteria;
9. Monitoring, surveys and adaptive management;
10. Maps;
11. Annual reports.

Vegetation Management Goals

- Manage vegetation height and density (especially in immediate proximity to burrows). Suitable vegetation structure varies across sites and vegetation types, but should generally be at the average effective vegetation height of 4.7 cm (Green and Anthony 1989) and <13 cm average effective vegetation height (MacCracken et al. 1985a).
- Employ experimental prescribed fires (controlled, at a small scale) to manage vegetation structure;

- Vegetation reduction or ground disturbance timing, extent, and configuration should avoid take. While local ordinances may require fire prevention through vegetation management, activities like disking, mowing, and grading during the breeding season can result in take of burrowing owls and collapse of burrows, causing nest destruction. Consult the take avoidance surveys section above for pre-management avoidance survey recommendations;
- Promote natural prey distribution and abundance, especially in proximity to occupied burrows; and
- Promote self-sustaining populations of host burrowers by limiting or prohibiting lethal rodent control measures and by ensuring food availability for host burrowers through vegetation management.

Refer to Rosenberg et al. (2009) for a good discussion of managing grasslands for burrowing owls.

Mitigation Site Success Criteria

In order to evaluate the success of mitigation and management strategies for burrowing owls, monitoring is required that is specific to the burrowing owl management plan. Given limited resources, Barclay et al. (2011) suggests managers focus on accurately estimating annual adult owl populations rather than devoting time to estimating reproduction, which shows high annual variation and is difficult to accurately estimate. Therefore, the key objective will be to determine accurately the number of adult burrowing owls and pairs, and if the numbers are maintained. A frequency of 5-10 years for surveys to estimate population size may suffice if there are no changes in the management of the nesting and foraging habitat of the owls.

Effective monitoring and evaluation of off-site and on-site mitigation management success for burrowing owls includes (Barclay, pers. comm.):

- Site tenacity;
- Number of adult owls present and reproducing;
- Colonization by burrowing owls from elsewhere (by band re-sight);
- Evidence and causes of mortality;
- Changes in distribution; and
- Trends in stressors.

Appendix C

Cultural Resources Report

Historic Property Identification Report for the City of Orange Cove Water Treatment Improvement Project, Fresno and Tulare Counties, California

Randy L. Ottenhoff and Annie McCausland

Prepared By



Applied EarthWorks, Inc.
1391 W. Shaw Ave., Suite C
Fresno, CA 93711

Prepared For

Crawford & Bowen Planning Inc.
113 N. Church Street, Suite 302
Visalia, CA 93291

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MANAGEMENT SUMMARY

Applied EarthWorks, Inc. (Æ) performed a historic properties inventory for the City of Orange Cove Water Treatment Plan Improvement Project (Project) to assist the City of Orange Cove (City) with its compliance efforts. The Project consists of two components in discontinuous areas separated by the Fresno-Tulare County line and the Friant-Kern Canal. The two parts include: (1) lining of existing basins and construction of a new basin in the eastern portion of the water treatment plant and (2) an expansion of the existing western portion of the water treatment plant, including the construction of new treatment facilities and a new clear well.

The City is seeking funding for the Project from the California State Water Resources Control Boards through the Clean Water State Revolving Fund, a joint federal-state program. The Project thus must comply with both Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and the California Environmental Quality Act (CEQA).

To meet state and federal standards, Æ conducted a cultural resource study under contract to Crawford & Bowen Planning, Inc. to determine whether cultural resources are present within the Area of Potential Effects (APE). The investigation included: (1) a records search at the Southern San Joaquin Valley Information Center (SSJVIC) of the California Historical Resources Information System to identify previously recorded cultural resources and prior studies in the APE and surrounding 0.5-mile radius of the APE; (2) a search of the Native American Heritage Commission's (NAHC) Sacred Lands File for known sacred resources and request for contact information for individuals and tribal representatives who may have information about the Project; (3) desktop archival research; (4) an archaeological and built environment pedestrian survey of the APE; (5) an National Register of Historic Places (NRHP) and California Register of Historical Resources (CRHR) eligibility evaluation of a historical archaeological site; and (6) a buried site sensitivity assessment.

The SSJVIC reported one previously recorded cultural resource within the APE, a poured concrete footing with an associated concrete pad and steel well casing (P-54-005009), and four cultural resources within a 0.5 mile radius of the APE. The search also revealed that three previous cultural resource studies have occurred within the APE and 10 others have occurred within a 0.5 mile radius around the APE. The entire eastern portion of the APE was surveyed previously—once in 1993 for an earlier City water improvement project and more recently in 2013 for a proposed solar farm. The concrete pad and well casing (P-54-005009) was discovered and recorded during the proposed solar farm survey in 2013.

A search of the NAHC's Sacred Lands File and outreach to local tribal representatives did not result in the identification of sacred or important tribal cultural sites within the APE. Æ's pedestrian survey yielded no new cultural resources; however, the previously recorded concrete pad and well casing was identified. A careful inspection of the area immediately surrounding the concrete pad resulted in the identification of additional features. This expanded archaeological site is the remains of an early-twentieth-century agricultural homestead once present in the northeast corner of the APE. The nonextant homestead, known as the Peet Ranch, originated as two separate lots, purchased by self-employed citrus growers who constructed homes on their

properties between 1912 and 1920. In 1938, the lots were joined as a single property and continued to function as a citrus operation until the 1990s. Æ evaluated the NRHP/CRHR eligibility of the archaeological site and found that it does not lend any information or physical evidence to further our understanding of important themes in history, particularly early settlement and agricultural development prior to 1920 and during the later agricultural boom in Fresno County. It is not significant under any of the four NRHP or CRHR criteria, and thus is not eligible for either register.

No other cultural resources were identified during Æ's pedestrian survey of the APE, and the buried site sensitivity analysis revealed low probability of encountering intact cultural deposits in primary context.

Consistent with state and federal statutes, Æ advises that in the event archaeological remains are encountered during Project development or ground-moving activities in any portion of the APE, all work in the vicinity of the find should be halted until a qualified archaeologist can identify the discovery and assess its significance. In addition, if human remains are uncovered during construction, the Fresno or Tulare County Coroner (depending on the county in which the remains were found) is to be notified to arrange their proper treatment and disposition. If the remains are identified on the basis of archaeological context, age, cultural associations, or biological traits to be those of a Native American, California Health and Safety Code 7050.5 requires that the county coroner notify the NAHC within 24 hours of discovery. The NAHC will then identify the Most Likely Descendent, who will be afforded the opportunity to recommend means for treatment of the human remains following protocols in California Public Resources Code 5097.98.

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1

INTRODUCTION

Applied EarthWorks, Inc. (Æ) performed a historic properties inventory for the City of Orange Cove Water Treatment Plant Improvement Project (Project) in Orange Cove, California (Figure 1-1). The Project contains two components in discontinuous areas separated by the Fresno-Tulare County line and the Friant-Kern Canal. The two parts include: (1) lining of existing basins and construction of a new basin in the eastern portion of the existing water treatment plant (WTP) and (2) an expansion of the western portion of the existing plant, including construction of new treatment facilities and a new clear well. The proposed new basin occurs just west of the existing basins in Tulare County in Section 18 of Township 15 South, Range 25 East as depicted on the U.S. Geological Survey (USGS) Orange Cove South 7.5-minute topographic quadrangle. The existing WTP and expansion area lie in Fresno County in Section 13 of Township 15 South, Range 24 East of the USGS Orange Cove South 7.5-minute topographic quadrangle (Figure 1-2).

1.1 REGULATORY CONTEXT

The City of Orange Cove (City) is seeking funding for the Project from the California State Water Resources Control Boards through the Clean Water State Revolving Fund, a joint federal-state program. The Project thus must comply with both Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and the California Environmental Quality Act (CEQA). Both the NHPA (Chapter 36, Code of Federal Regulations [CFR], Part 800.1[a]) and CEQA (Public Resources Code [PRC] 21000[g]) mandate that government agencies consider the impacts of their actions on the environment, including cultural resources.

For the purposes of this Project, a cultural resource is defined as a prehistoric or historical archaeological site or a historical building, structure, or object; consistent with 36 CFR 60.4, the term “historical” applies to archaeological artifacts and features as well as buildings, structures, or objects that are 50 years old or older. The importance or significance of a cultural resource depends on whether it qualifies at the federal level for inclusion in the National Register of Historic Places (NRHP) or at the state or local level for inclusion in the California Register of Historical Resources (CRHR). Cultural resources determined eligible for the NRHP are termed “historic properties,” while those eligible for the CRHR are called “historical resources” (36 CFR 800.16[1]; California Code of Regulations [CCR] 15064.5). Under both federal and state law, the determination of eligibility is in part based on a set of significance criteria defined in 36 CFR 60.4 and 14 CCR 15064.5(a)(3), respectively.

1.2 PROJECT DESCRIPTION

To assist the City with its compliance efforts, and under subcontract to Crawford & Bowen Planning, Inc., Æ conducted a cultural resource inventory to identify potential historic properties and historical resources within the Project’s Area of Potential Effects (APE). The APE is a three-dimensional geographic area within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, should they exist.

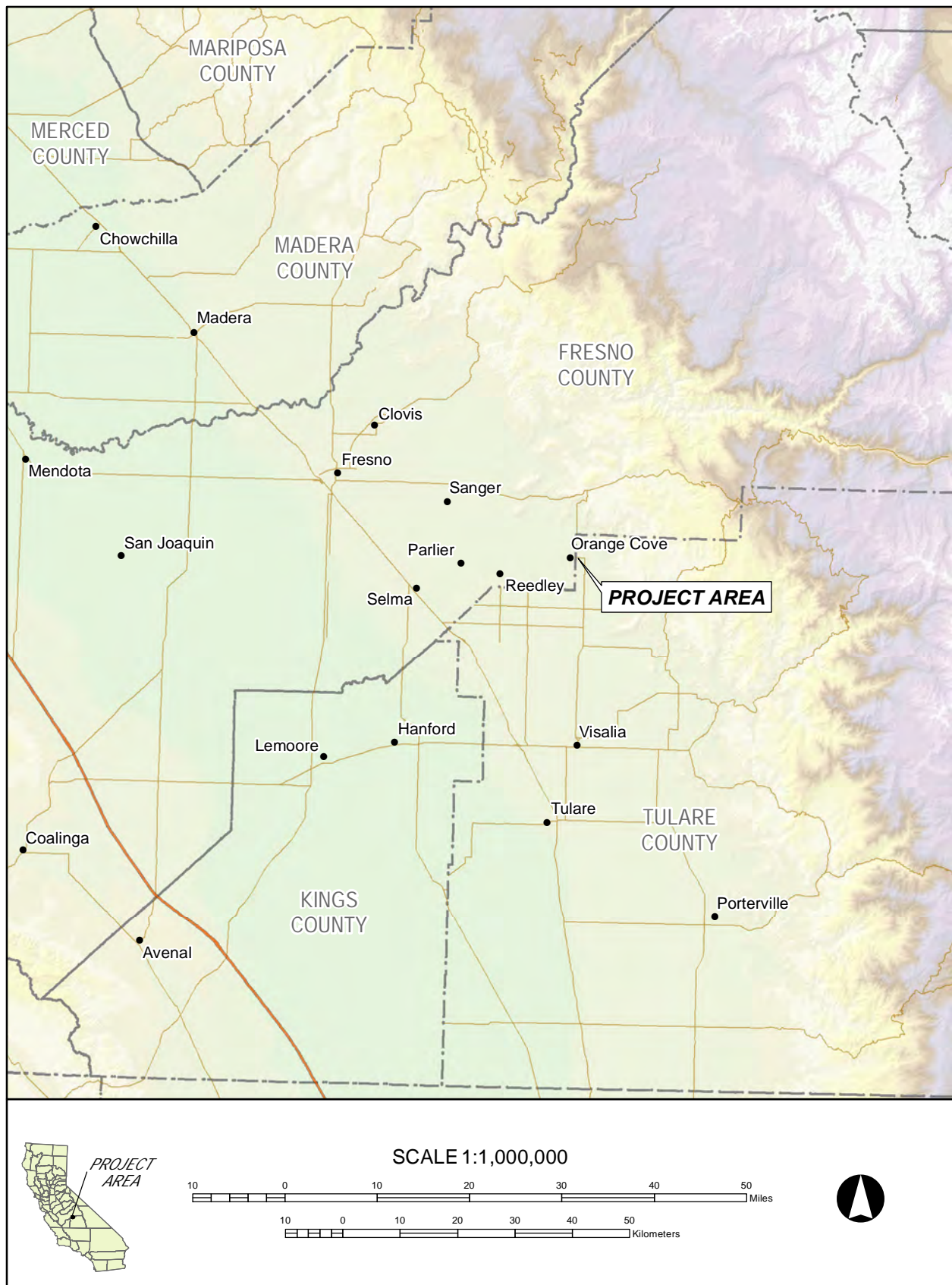


Figure 1-1 Project vicinity in Tulare County, California.

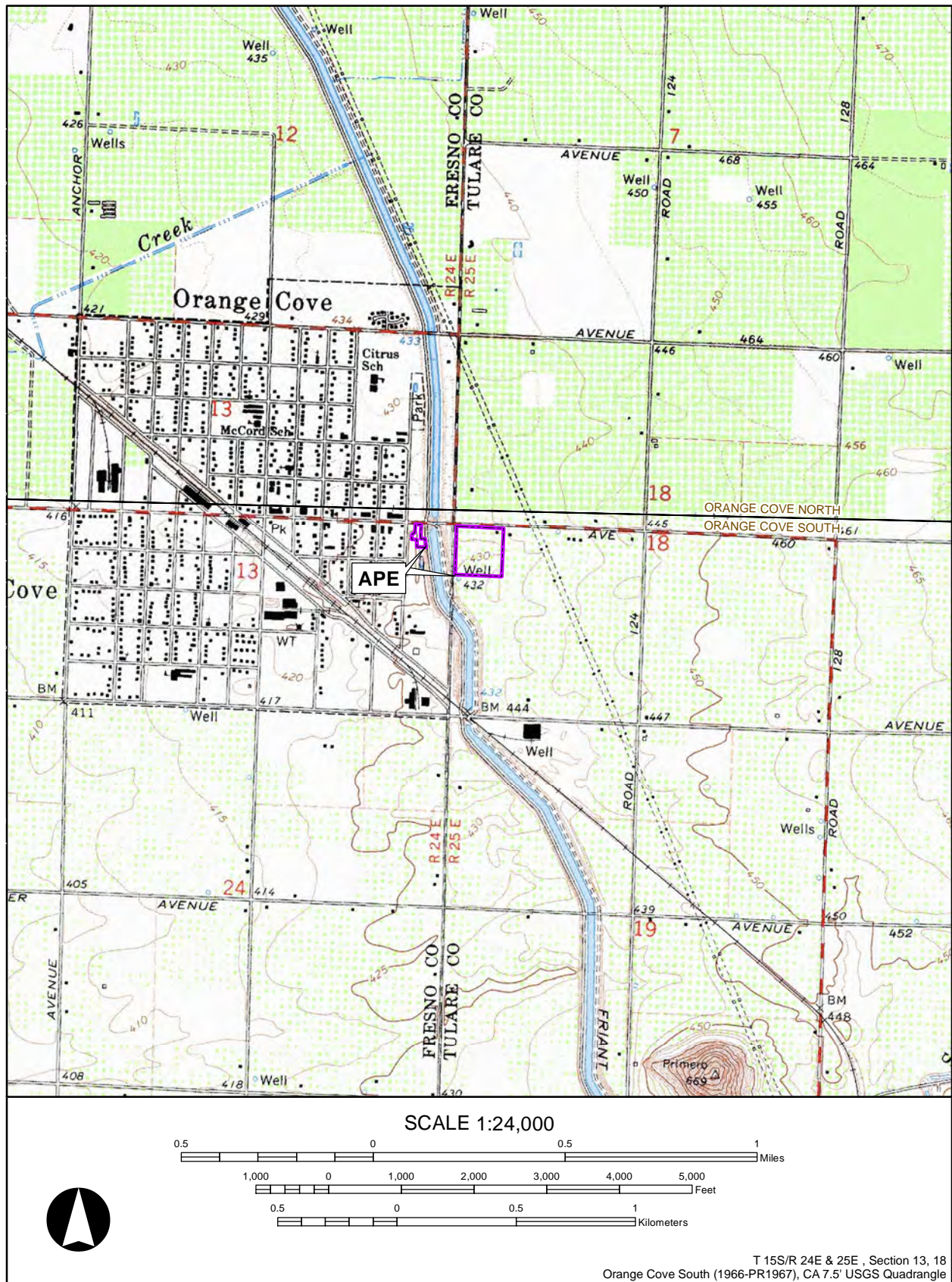


Figure 1-2 Project location on the USGS Orange Cove South 7.5-minute topographic quadrangle.

The 10.6-acre Project APE (Figure 1-3) includes a 9.82-acre area for the raw water storage basin in Assessor's Parcel No. (APN) 5050051 at the southeast corner of Avenue 460 and South Hills Valley Road east of the Friant-Kern Canal and 0.78 acres in APN 37823023T at the existing WTP facilities on the southeast corner of Park Street and Second Street west of the Friant-Kern Canal (Figure 1-3).

Specifically, construction will include installing plastic lining in the three existing raw water storage basins and building a new raw water storage basin on an adjacent 9.82-acre property to the east. The basin will be 6–7 feet deep and a new pipeline will be installed 5–6 feet deep that will connect the new water storage basin to the northernmost existing water basin. In addition, the City will be constructing new infrastructure and improving existing infrastructure at the water treatment plant—including new raw water pumps and plumbing, a new plant building, filtered water transfer pumps, a new clearwell, new variable frequency drives on booster pumps, a new sludge dewatering box, new backwash pumps, a new concrete masonry unit wall and access gate, and new effluent flow meters. The depth of excavation for the additional and improved infrastructure is not expected to exceed 5 feet.

Æ's investigations included a records search at the Southern San Joaquin Valley Information Center (SSJVIC) of the California Historical Resources Information System (CHRIS) to identify previously recorded cultural resources and prior studies in the area; historical research; a search of the Native American Heritage Commission's (NAHC) Sacred Lands File and communication with local Native American tribes and individuals; a pedestrian survey of the APE; identification and NRHP and CRHR eligibility evaluation of the remains of a historical homestead within the APE; and a buried site sensitivity assessment.

1.3 REPORT STRUCTURE

This technical report that has been prepared according to the California Office of Historic Preservation standards outlined in *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format* (Office of Historic Preservation 1990) and fulfills the requirements for an NHPA Section 106 compliant report as outlined by the State Water Resources Control Boards in *Overview of Section 106 of the National Historic Preservation Act Reporting Process for Drinking Water and Clean Water State Revolving Fund Applicants*.

Following this introduction, Chapter 2 describes the natural environment and provides a prehistoric and ethnographic overview for the APE and surrounding vicinity. Chapter 3 details the methods used for the records search, archival research, Native American outreach, pedestrian survey, site identification and evaluation, and buried site sensitivity assessment. Findings from Æ's inventory are presented in Chapter 4 along with the NRHP and CRHR eligibility evaluation of the historical archaeological site identified within the APE and results of the buried site assessment. Chapter 5 summarizes the study, discusses potential impacts, and provides management recommendations. A complete list of references cited is provided in Chapter 6. Appended to the report are the résumés for key personnel (Appendix A), the CHRIS records search results (Appendix B), Æ's nongovernmental Native American outreach (Appendix C), and California Department of Parks and Recreation (DPR) 523 series record forms (Appendix D).

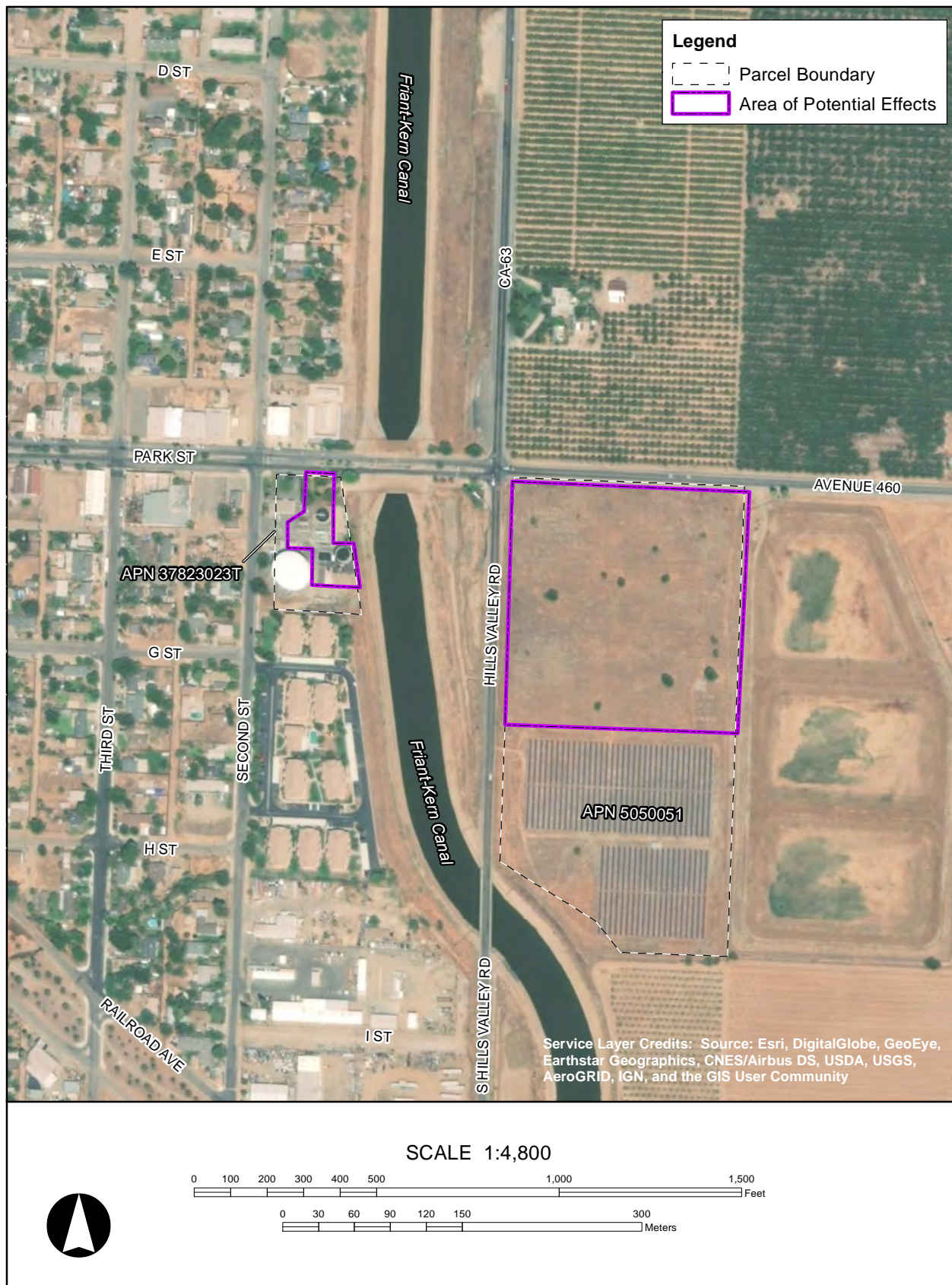


Figure 1-3 Aerial view of the Area of Potential Effects.

1.4 PROFESSIONAL QUALIFICATIONS

Æ Principal Archaeologist Mary Baloian (Ph.D.), a Registered Professional Archaeologist (RPA 15189), served as project manager for this investigation, providing quality oversight and technical guidance for all aspects of the study. Æ Senior Historical Archaeologist M. Colleen Hamilton (M.A., RPA 10535) guided the archival research and NRHP/CRHR evaluation of the historical archaeological site. Æ Architectural Historian Annie McCausland (M.A.) conducted the site-specific archival research and prepared the historic context and NRHP/CRHR site evaluation. Æ Associate Archaeologist Randy Ottenhoff (Ph.D., RPA 17098) led the pedestrian survey, conducted the Native American outreach, and served as primary author of the report. Staff Archaeologist Josh Tibbet (B.A.) assisted with the pedestrian survey, and Staff Archaeologist and Geographic Information Systems (GIS) Technician Jessica Jones (B.A.) prepared maps and report graphics and compiled the GIS data. Résumés for personnel are provided in Appendix A.

2 ENVIRONMENTAL AND CULTURAL SETTING

2.1 NATURAL ENVIRONMENT

The Project lies along the eastern edge of the central San Joaquin Valley near its border with the Sierra Nevada foothills. The San Joaquin Valley parallels the Sierra Nevada geomorphic province, which encompasses a 40–100-mile-wide area ranging in elevation from 400 feet above mean sea level (amsl) along the western boundary to more than 14,000 feet amsl in the east (Norris and Webb 1990:63). The geological formations surrounding the Project area form a natural cove in the valley surrounded by Campbell Mountain, Bear Mountain, and Granite Hill to the north, the Curtis Mountains to the south, and Smith Mountain to the southwest.

The San Joaquin River is the prominent hydrologic feature that drains the San Joaquin Valley into San Francisco Bay. The tall, steep peaks of the Sierra Nevada effectively block moisture moving eastward from the coast, resulting in a higher level of precipitation on the western slopes. East–west-trending rivers, like the Kings River that lies east of the Project area, drain the Sierra Nevada range before converging on the San Joaquin River. The Kings River and seasonal drainages (like Sand and Wooten creeks) would have provided habitat for an abundance of food resources such as aquatic plants, fish, beaver, and other animals procured prehistorically and historically. The annual rainfall for this area varies from 6 to 14 inches. In historical times and before the development of hydroelectric dams, the eastern valley floor was prone to periodic flooding. Winters are cool and dry, and snow is uncommon (Hill 1984:29). Summers are generally hot and dry, and temperatures often exceed 100°F.

The San Joaquin Valley can be divided into two geological sections. The first is along the western flank of the Sierra Nevada that is made of ancient lake beds and alluvial fans. The second is a linear belt of deformed Mesozoic and Cenozoic rocks along the east side of the Coast Ranges that dips below the valley (Norris and Webb 1990:417). At the base contact point between the Sierra Nevada and Coast Ranges, it is presumed that there is a fault or subduction zone (Norris and Webb 1990:417). San Joaquin Valley soils are composed of unconsolidated Quaternary sediments (Norris and Webb 1990:417). Stream channels that cut into the surface sediments often expose ancient lake beds that are comprised of clays, diatomites, or the remains of alluvial fans (Norris and Webb 1990:417).

The Project lies within the Lower Sonoran life zone, marked by prairie grassland communities that cover the plains and low rolling hillocks that border the Sierra Nevada. These grasslands are interspersed with narrow bands of riparian woodland that follow the valley stream corridors. The land in and around the Project area has been intensively farmed for many years; current crops include oranges, grapes, olives, and other tree fruit. Few areas of native grassland remain. Plants indigenous to the area would have included white, blue, and live oak as well as walnut, cottonwood, willow, and tule, many of which still occur along drainages.

The previously swampy valley floor provided a lush habitat for a variety of animals. Large herds of mule deer, tule elk, and pronghorn once roamed the valley. Historical accounts indicate that,

due to their vast numbers, tule elk and pronghorn were a major food source for the Yokuts Indians, explorers, trappers, and others (Clough and Secrest 1984:27–28; Wallace 1978:449). Grizzly and black bears, wolves, and mountain lions also were once prominent valley species (Preston 1981:245–247). Other mammals noted are the valley coyote, bobcat, gray and kit foxes, and rabbits. The valley’s large variety of birds consists of the American osprey, redwing blackbird, marsh hawk, willow and Nuttall woodpeckers, western meadowlark, and quail. Water sources such as the Kings River supported anadromous and freshwater fish species that include salmon, golden trout, river lamprey eel, and white sturgeon.

2.2 PREHISTORY

The central San Joaquin Valley prehistoric record is among the least understood of all regions in California. Reconstruction of past cultural patterns, particularly in the southern San Joaquin Valley, has been stymied by two key factors: geomorphology and human activity (Dillon 2002; Siefken 1999). The valley floor that encompasses the city of Orange Cove has been inundated with thick alluvial deposits resulting from granitic and sedimentary outflow from the Kings, Tulare, and Kaweah Rivers, particularly during mass flood events. This pattern has continued for millennia and has resulted in the burial of early to middle Holocene archaeological sites, estimated to be buried as deep as 10 meters along the lower stretches of the San Joaquin Valley drainage systems (Moratto 1984:214). Thus, compared to other regions in the state, there is a paucity of research and a related lack of data from which to build a complete understanding of past human behavior specific to Tulare County and the surrounding counties.

In addition, archaeological sites buried in shallow deposits (i.e., less than 6 feet below the ground surface) have been heavily impacted by agricultural, transportation, and urban development since the historic period. Development has effectively removed mounds and shallow subsurface cultural deposits that once existed in great numbers across the valley floor (Rosenthal et al. 2007). Most archaeological investigations in the central and southern San Joaquin Valley have occurred at mid-elevation sites along the Tulare River and in the vicinities of Tulare and Kaweah lakes. Thus, geomorphology and recent human activity have created a challenge for archaeologists interested in gaining a clearer understanding of human behavioral change through time in the San Joaquin Valley.

Nevertheless, an increasing body of data is available for sites in valley lacustrine environs and in the Sierra foothills, which are helpful in identifying key cultural changes in the central San Joaquin Valley. The summary of cultural traits presented below is based on a review of San Joaquin Valley lacustrine, riverine, and valley floor site data discussed in Rosenthal et al. (2007), and foothill site data summarized by Lloyd et al. (2011). Cultural periods and accompanying dates (given as calibrated years before present [cal B.P.]) are based on Rosenthal et al. (2007:150–159), Moratto (1984:333), McGuire and Garfinkel (1980:49–53), and Bennyhoff and Fredrickson’s unpublished chronologies (Fredrickson 1973, 1974).

The Paleo-Indian Period (13,500–10,500 cal B.P.) is represented by ephemeral lacustrine sites dominated by atlatl and spear projectile points. The earliest evidence of distinct valley and foothill cultural patterns appears during the Lower Archaic Period (10,500–7450 cal B.P.). Valley sites contain crescents and stemmed projectile points, and reveal the consumption of freshwater fish, waterfowl, mussels, deer, and longhorn sheep. In contrast, foothills sites are

dominated by dense ground stone and flaked stone assemblages with a diet narrowly focused on deer, pronghorn sheep, and presumably nuts or seeds. The Middle Archaic (7450–2500 cal B.P.) includes the Lamont Phase (5950–3150 cal B.P.), a time when semipermanent villages first appear along river banks in tandem with larger, more established lacustrine villages. An abundance of stone tools exist, meanwhile ground stone tool kits and long-distance trade and exchange networks emerge focused on obsidian, shell beads, and ornaments. In the foothills, lithic and dietary patterns of the Early Archaic continue.

New cultural patterns emerge during the Upper Archaic Period (2500–850 cal B.P.), especially during the Canebrake Phase (3150–1350 cal B.P.) when a distinct shift in burial practices occurs and geographic differences in site and artifact types appear. Changes in the Sawtooth Phase (1350–650 cal B.P.) are marked by the sudden presence of mound sites in the valley. Widespread proliferation of specialized technology is evident, including new types of bone tools, projectile points, and ceremonial objects such as wands and blades. The use of labor-intensive and seasonally abundant resources occurs, including acorns, pine nuts, salmon, and shellfish. Similarly, the Emergent Period (850 cal B.P.–Historic Era) is marked by continued variation in settlement and burial patterns across valley and foothill regions, coupled with the disappearance of atlatl and dart tool kits that are replaced with bow-and-arrow technology (i.e., small corner-notched and Desert Series points) at about 650 cal B.P. Fishing tool kits expand to include more efficient harpoons, bone fishhooks, and gorge hooks. In the Tulare basin, pottery obtained via trade appears along with baked clay balls used for cooking and carved clay effigies.

2.3 ETHNOGRAPHY

The late prehistoric Yokuts resided in nearly all of the San Joaquin Valley as well as the lower Sierra Nevada foothills south of the Fresno River (Moratto 1984). The Southern Valley Yokuts populated Tulare, Buena Vista, and Kern lakes, their connecting sloughs, and the lower portions of the Kings, Kaweah, Tule, and Kern rivers. At the beginning of the historic period, 15 tribelets of Southern Valley Yokuts occupied this area, each speaking a separate dialect of the Yokuts language, all of which have been assigned traditionally to the California Penutian linguistic stock (Moratto 1984; Wallace 1978). Kroeber (1939) estimated that Yokuts political units averaged 350 persons each, giving a total aboriginal population of 5,250 for the 15 tribelets of Southern Valley Yokuts. A much higher population figure (15,700) was based on estimates and/or head counts for various villages by Spanish expeditions exploring the area in the early nineteenth century (Cook 1955).

The late prehistoric Yokuts social organization comprised a husband, wife, and children, and each family was tied into a patrilineal totemic lineage (Wallace 1978:452). A child would receive the father's animal totem, and the mother's (Figure 2-1) totem would be respected by the whole family. The totem animal, either as crow, seal, hawk, ground owl, raven, or skunk, could not be eaten or killed by the family whose totem was one of these animals (Wallace 1978:452). Marriages were often arranged for boys and girls before puberty occurred. Multiple wives were uncommon but could occur with some chiefs. After a death, Yokuts sometimes practiced levirate and sororate (Wallace 1978:454).

Houses were made with a steep tule thatch roof and mats covering the walls (Figure 2-2), and these houses were typically arranged in a row (Cook 1955; Wallace 1978:451). Tule was used

for a large number of items, including baskets, boats, cradles, mats, and much more (Wallace 1978:451). Boats, called “balsas,” could carry six passengers and were piloted by using a long stick.



Figure 2-1 Mrs. Ben Hancock, a Yokuts woman (Latta 1999:166).

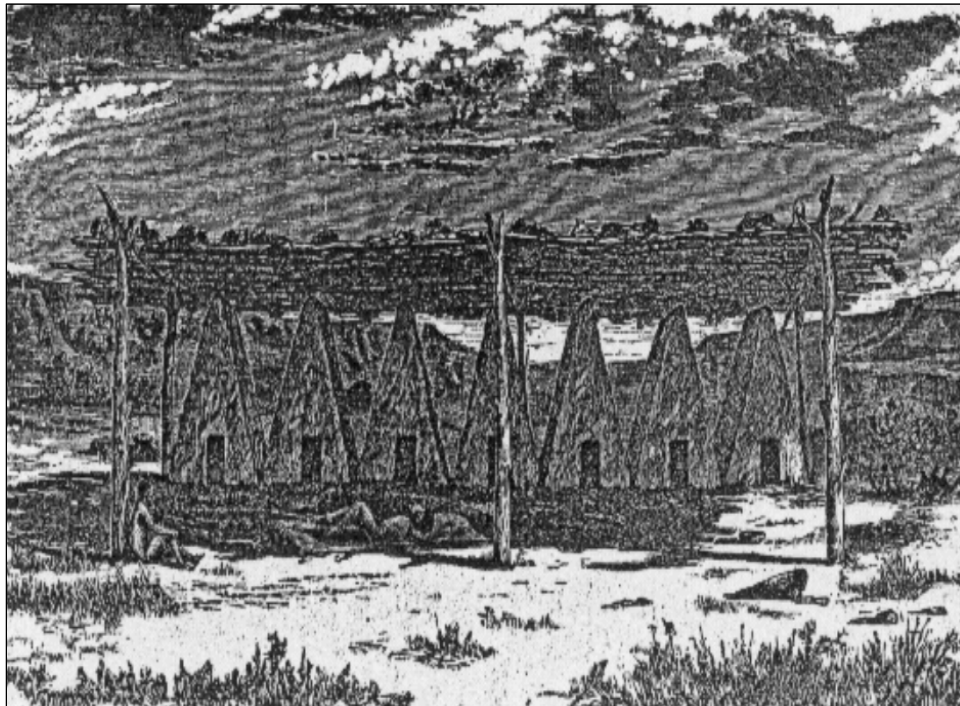


Figure 2-2 Yokuts tule thatch houses (Cook 1955:371).

Near the Project area the Choinumne Yokuts inhabited an place near the Kings River at the junction of Mill Creek where there was a large village site called *Duhnii* (Duh-nī-oo) or Jimson Weed Place (Latta 1999:170). Another nearby Yokuts group is the Chukimena who lived in a small village named *Tahtchahmeu* (That-cháh-me-oo), meaning Lefthanded Place, in the southeast corner of Squaw Valley (Latta 1999:170).

Southern Valley Yokuts tribal groups have survived into the present time and are represented by the Big Sandy Rancheria of Western Mono Indians, Cold Springs Rancheria, Dumna Wo-Wah Tribal Government, Traditional Choinumni Tribe, Wuksache Indian Tribe/Eshom Valley Band, Kings River Choinumni Farm Tribe, Santa Rosa Rancheria Tachi Yokut Tribe, and the Table Mountain Rancheria. The tribes have an ancestral relationship with the Project area and have developed language apprenticeship programs and early childhood education centers to serve tribal members. Several Yokuts tribal groups are governed by elders' councils and operate auxiliary departments that serve local tribal populations in areas of healthcare, education, and cultural resource management.

2.4 HISTORIC CONTEXT

2.4.1 Early Exploration

The first Europeans known to have entered the San Joaquin Valley were Spanish soldiers led by Pedro Fages, who came to the valley through Tejon Pass in 1772 (Wallace 1978:459). Other Europeans followed in 1806, when Lieutenant Gabriel Moraga led a group of Spanish explorers into the San Joaquin Valley to locate new lands for missions (Clough and Secrest 1984:25–27).

The expansion of missions in California ceased by the early 1820s as a result of Mexico's independence from Spain (Clough and Secrest 1984:26). Fur trappers discovered the California interior soon after and began their forays into the San Joaquin Valley. Jedediah S. Smith may have been the first to enter the area during a fur trapping expedition in 1827. Smith's adventures included friendly encounters with the Yokuts while trapping and camping along the San Joaquin River (Clough and Secrest 1984:27). After Smith's visit, other trappers followed until about 1837, when fur-bearing animals were nearly gone from the valley. These trappers included Kit Carson, Peter Skene Ogden of the Hudson's Bay Company, and Joseph Reddeford Walker.

Compared to the California coastal regions, Euro-Americans settled in the Central Valley relatively late. The Mexican government issued land grants in the Fresno County area on three occasions in the 1840s (Clough and Secrest 1984:32–36), but the area remained sparsely settled due to the resistance from indigenous tribes and the harshness of the land. As part of the terms of the Treaty of Guadalupe Hidalgo, which formally concluded the Mexican-American War and ceded California to the United States, the claims on grants would be respected by the federal government provided that they complied with Mexican colonization laws. Aside from a small Hispanic presence located primarily in the western part of Fresno County (Clough and Secrest 1984:39–43), it was not until after 1849 and the early stages of the gold rush that Euro-American miners seriously considered establishing permanent residence in the valley.

The gold rush, which is perhaps best-known as a northern California phenomenon, extended to the state's central highlands. Prospectors first established camps at Coarse Gold (presently the town of Coarsegold) and Fine Gold (Clough and Secrest 1984:46). The first settlements in the

valley emerged along the major waterways—the Chowchilla, Fresno, San Joaquin, and Kings rivers, which could be crossed only via ferry. Outposts such as Fort Miller, Fort Bishop, and Campbell’s Ferry offered river crossing points, supplies, lodging and, in the case of the first two, fortification from Indian attacks.

The momentum of the gold rush could not be sustained, and by the early 1850s most of the miners began to look to other pursuits. James Smith had set out for California shortly after the news about the discovery of gold reached his hometown in Pennsylvania (Clough and Secrest 1984:55–56). After a successful stint as a miner near Columbia, Smith traveled to the east to reclaim his family but returned to settle in what is presently the town of Reedley. In 1855, he established Smith’s Ferry, which operated continuously for the next 19 years. It outlasted all other ferrying businesses and survived the floods of 1862 and 1867. As with other ferry stations, Smith’s Ferry sat along a major road (the old Stockton–Los Angeles state route), but the success of his operations is due to the fact that it was located at the only point along the Kings River that could be crossed during high water. Smith built a two-story hotel that served travelers for many years until it was dismantled in 1886. Smith’s Mountain, southwest of the study area, bears the name of this early pioneer.

2.4.2 Agricultural Development Prior to 1920

The San Joaquin Valley has long been synonymous with agriculture, but the early settlers in the 1850s could not have imagined the extent and diversity of crops presently covering the valley floor. With the gold rush in decline, most miners descended from the foothills to pursue other professions. The town of Centerville—located along the Kings River in a relatively lush portion of the valley—became an early agricultural and cattle center in the 1850s and 1860s. During this time, farms were generally located near a perennial water source. This constraint on early agriculture kept the valley’s two major industries—farming and ranching—in balance. Competition for real estate was minimized since agricultural interests had little reason to expand into pasturelands that were unsuitable for farming.

The development of complex water conveyance systems changed the complexion of the valley by making huge tracts of arable lands available to farmers. Moses Church and A. Y. Easterby, whose interests were consolidated into the Fresno Canal and Irrigation Company, are credited with the irrigation of parcels around Fresno. The 76 Land and Water Company similarly developed the agricultural potential of the Reedley area (Clough and Secrest 1984:158).

Established in 1882, the company bought up large acreages at undervalued prices from landowners after drought had forced them into bankruptcy. To add value to these parcel, and thus make them more marketable, the irrigation concern then constructed a \$400,000 canal system, which tapped the waters of the Kings River above Wahtoke Lake. Plots ranged from \$5 to \$35 per acre, with a \$5 per acre water right. The easternmost canal of the 76 Land and Water Company system flowed along the channel of the present-day Alta East Branch Canal, which passes just west of the Project area (Mead 1901:Plate XXIV). The burgeoning wheat crops fostered by irrigation attracted the railroad to the area, and in 1888 Reedley was founded as a station along the Fresno-Porterville line of the Southern Pacific (Clough and Secrest 1984:290–291).

Early settlers came to the San Joaquin Valley with intentions to grow wheat, but by the late 1800s farmers realized that the climate and soil were much better suited for orchard crops and vineyards. While crop diversification began relatively early in other areas, the lands east of Reedley were covered in wheat fields. Citrus orchards had flourished around towns such as Sanger and Centerville since the late 1800s, so in 1914 landowner Elmer M. Sheridan gave the town of Orange Cove its portentous name (Key to the City 2003). After subdividing his holdings, Sheridan convinced the Atchison, Topeka & Santa Fe Railway to build a road connecting the district to agricultural markets, which was later followed by a rail line through the town.

Orange orchards apparently displaced wheat fields overnight. By 1916, a cooperative was established to promote the interest of the local citrus industry (Masumoto 1986:103). Because orange growers faced competition from not only the eastern United States but overseas (Spain and Italy), they financed cooperatives and associations to market their products and create brand awareness. The most graphic outcome of these efforts was the orange crate labels, which often went beyond mere advertisement and at times bordered on their own art form.

2.4.3 Agricultural Evolution (1920–1950)

The ever-increasing expanses of agricultural fields required vast quantities of water for irrigation. By 1920, the rate of water being pumped from the ground aquifer was greater than the recharge rate. During the 1920s, a state water plan that called for the construction of dams, canals, and other water facilities was drafted. Because of this plan, the San Joaquin Valley received assistance through the Central Valley Project (CVP) Act of 1933. The CVP was a massive water conveyance system constructed to alleviate local shortages and balance water supply throughout much of the state (JRP Historical Consulting Services and California Department of Transportation 2000). Construction of the CVP was delayed by World War II, but by the early 1950s the project, which includes the Delta-Mendota Canal, the Madera Canal, the Friant-Kern Canal, and Friant Dam, was functioning as an integrated system.

The Friant-Kern Canal, which bisects the Project area in Orange Cove, was constructed by the Bureau of Reclamation between 1945 and 1951 to carry water from Millerton Lake south to the Kern River in the Bakersfield area, providing irrigation supplies for Fresno, Tulare, and Kern counties (Autobee 1994). With the establishment of the Friant-Kern Canal by 1951, water distribution became more centralized and available for irrigation districts to distribute and resell. The Orange Cove community continued to grow into the twentieth century. Orange Cove was incorporated in 1948.

2.4.4 Project Area History

Elmer M. Sheriden is considered the father of Orange Cove. He and his partners, D. W. Wikersham, Frank Lower, William Schilling, N. S. Brewster, and C. H. Atrim, founded the Orosi Orange Land Company in 1912 (Rehart et al. 2007:50). The company purchased 6,000 acres of grain land within Tulare County on the Fresno County line. The company sold off the land in 10- and 20-acre tracts at \$100 and \$200 per acre (Figure 2-3). These fertile and “frost free” lots were sold by the end of 1913 to mostly private farmers and their families (Johnson 2014). Citrus was the primary crop of the area, but olives, grapes, fruits, truck crops, cotton, and grain also were grown. A branch of the Santa Fe Railroad came to the area in 1914, and a depot was constructed to the west of Orosi Orange Lands within Fresno County. This fostered growth in the



area, and the town started to expand westward within Fresno County. In 1915 the Orange Cove Post Office was established (Rehart et al. 2007:50). Citrus growers such as Samuel Marlian Peet and his wife Anette M. Peet were early settlers in Orange Cove (Orange Cove Chamber of Commerce 1956:109).

The Orange Cove Citrus Association and packing house have been in operation since 1916 (Figure 2-4). In 1973, the association merged with Sanger Citrus and is now known as the Orange Cove-Sanger Citrus Association. The association services more than 4,300 member acres in Fresno, Kern, Madera, and Tulare counties. They pack and sell navel, Valencia, and Cara Cara oranges as well as Minneola tangelos and grapefruit (Orange Cove-Sanger Citrus Association 2012).



Figure 2-4 Orange Cove Citrus Association, 1959 (courtesy, Orange Cove-Sanger Citrus Association).

After the end of the Great Depression and drought of the 1930s, the population of the Orange Cove area grew. In 1937 the Orange Cove Irrigation District was formed, and in 1940 the first feed store opened in Orange Cove. American farmers from the Midwest and the South moved to the area during this time. After the World War II, work began on the Friant-Kern Canal in 1947 to bring water to the area. The City of Orange Cove became incorporated in 1948 with a new police department and city hall. Today the city's population is close to 10,000 people.

3 METHODS

3.1 RECORDS SEARCH

On October 1, 2018, Æ requested a records search of the CHRIS from the SSJVIC at California State University, Bakersfield. The records search encompassed the APE and a 0.5-mile radius surrounding the APE. SSJVIC staff examined site records, files, maps, and other materials to identify previously recorded resources and prior surveys within the delineated area (Appendix B). Additional sources included the OHP Historic Properties Directory, Archaeological Determinations of Eligibility, and the California Inventory of Historic Resources (1976).

3.2 NATIVE AMERICAN OUTREACH

Æ sent an e-mail to the Native American Heritage Commission (NAHC) on October 1, 2018, requesting a search of its Sacred Lands File and the contact information for local Native American tribal representatives who may have an interest in sharing information about the APE and surrounding area. The NAHC responded on October 10, 2018, with its findings and attached a list of Native American tribes and individuals culturally affiliated with the Project area. Æ sent a letter describing the Project to each tribal representatives asking for input regarding sacred sites in the APE. The letters were sent to the individuals listed in Appendix C via the U.S. Postal Service. Æ followed up by telephone on October 30, 2018. Sending letters and recording responses received are part of Æ's standard tribal outreach to complete an inventory report and are not intended to serve the purpose of satisfying NHPA Section 106 or Assembly Bill (AB) 52 government-to-government Native American tribal consultation. A record of all correspondence with the NAHC and tribal contacts are included in Appendix C.

3.3 PEDESTRIAN SURVEY

Æ staff archaeologists conducted an archaeological and built environment survey of the 10.6-acre APE, which includes the 9.82-acre area for the raw water storage basin at the southeast corner of Avenue 460 and South Hills Valley Road east of the Friant-Kern Canal and 0.78 acres at the existing WTP on the southeast corner of Park Street and Second Street (Figure 1-3). The existing storage basins were excluded from the APE for the purposes of the cultural resource studies. The archaeologists surveyed all open ground using parallel and meandering transects spaced no more than 15 meters apart. They photographed the area using an iPhone 7 digital camera to document the environmental setting and ground visibility and recorded observations on a Survey Field Record. All photographs and field notes are on file at Æ's Fresno office.

3.4 SITE IDENTIFICATION AND EVALUATION

3.4.1 Site Recordation

When an artifact or feature was encountered that appeared to be of historic age (i.e., 45 years old or older), surveyors marked its position and closely examined the surrounding area for associated

artifacts and/or features. Site recording involved inspecting the ground surface using tight (5-meter) transects and flagging individual artifacts, features, or discrete concentrations to fully define the extent of cultural material. After the extent of the cultural material was reasonably established, Æ compared its location with the boundaries of known previously recorded resource. Æ recorded observations about the resource on California Department of Parks and Recreation (DPR) 523 series cultural resource inventory forms. A Trimble GeoXH hand-held Global Positioning System (GPS) unit was used to record resource locations and produce sketch maps in the field. Complete documentation of cultural resources, including confidential location maps, is included in Appendix C.

3.4.2 Archival Research

Æ's archival research met two objectives. First, it sought to gather general historical information about the study vicinity to prepare a historic context. The context identifies the themes that will be used in evaluating the historic-era archaeological site that occurs within the Project APE. Second, it sought to obtain information on historical developments within the subject property, Æ Architectural Historian Annie McCausland conducted archival research for the Project at repositories in Visalia and Fresno. Research focused on historical maps, photographs, written histories, newspaper articles, and manuscripts. Specifically, McCausland visited or contacted the following repositories and persons as part of gathering data and preparation of this report:

- History Room, Fresno County Public Library, Fresno;
- Lee Bailey, Orange Cove-Sanger Citrus Association, Orange Cove;
- Annie Mitchell Room, Tulare County Library, Visalia;
- Terry Ommen, Tulare County Historical Society, Visalia;
- Tulare County Assessor's Office and Recorder's Office, Visalia;
- Map Aerial Locator Tool (MALT) of the Henry Madden Library at California State University, Fresno (<http://malt.lib.csufresno.edu/MALT/>);
- Various online resources for historical maps and documents (e.g., Ancestry.com, Newspapers.com, Genealogy Bank); and
- Æ's in-house library, which includes local histories.

3.4.3 State and National Register Evaluation

The purpose of evaluating the eligibility of a cultural resource identified in a project APE is to determine whether it meets the criteria of a historical resource eligible for inclusion in the CRHR or a historic property eligible for inclusion in the NRHP. If cultural resources eligible for the NRHP or CRHR occur within the APE, they must be assessed for Project effects/impacts and may be subject to mitigation, whereas resources that are not eligible do not require such consideration.

In this regard, the National Park Service (NPS) has established a process for identifying, evaluating, and assessing effects to cultural resources. Practically speaking, determinations made

within a federal regulatory context are almost always universally accepted for purposes of identifying, evaluating, and assessing impacts under CEQA.

The first threshold in this process is to ascertain whether a site or built environment property within the Project APE is old enough to be considered a cultural resource and, accordingly, eligible for federal and/or state registers. Consistent with 36 CFR 60.4, to be eligible for the NRHP, an archaeological or built environment resource must be 50 years old or older. Except under exceptional circumstances (National Park Service [NPS] 2002:25–43), sites and properties less than 50 years old are dismissed from further consideration. If a cultural resource is found to meet this age criterion, the following sequential steps apply:

- Classifying the resource as a district, archaeological site, building, structure, or object;
- Determining the theme, context, and relevant thematic period of significance with which the resource is associated;
- Determining whether the resource is historically important under a set of significance criteria; and
- If significant, determining whether the resource retains integrity.

In California, cultural resources are usually classified according to *Instructions for Recording Historical Resources*, published by the California Office of Historic Preservation in 1995. This handbook contains listings of resource categories for prehistoric and historical sites as well as standing structures. For built environment resources, it is additionally helpful to define a property's economic dimensions (e.g., commercial vs. residential, urban vs. rural, agricultural vs. industrial). In this regard, *Historical Context and Archaeological Research Design for Agricultural Properties* (California Department of Transportation 2007) is a useful guide for categorizing rural resources.

The historic context establishes the framework within which decisions about significance are based (NPS 2002:9). The evaluation process essentially weighs the relative importance of events, people, and places against the larger backdrop of history. Within this process, the context provides the comparative standards and/or examples as well as the theme(s) necessary for this assessment. According to the NPS (2002:9), a theme is a pattern or trend that has influenced the history of an area for a certain period. A theme is typically couched in geographic (i.e., local, state, or national) and temporal terms to focus and facilitate the evaluation process.

Significance is based on how well a subject resource represents one or more themes through its associations with important events or people and/or through its inherent qualities. A resource must demonstrate more than just association with a theme; it must be a good representative of the theme, capable of illustrating the various thematic elements of a particular time and place in history. In order to be included in the NRHP and thus be considered a historic property per 36 CFR 800.16(l), 36 CFR 60.4 stipulates:

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and

- (a) It is associated with events that have made a significant contribution to the broad patterns of our history; or
- (b) It is associated with the lives of persons significant in our past; or
- (c) It embodies distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction; or
- (d) It has yielded, or may be likely to yield, information important in prehistory or history.

Similarly, according to the CEQA Guidelines, in order for a resource to be eligible for the CRHR, it must meet at least one of the criteria defined in California PRC 5024.1:

- (1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
- (2) Is associated with the lives of persons important in our past.
- (3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
- (4) Has yielded, or may be likely to yield, information important in history or prehistory.

To be included in the NRHP and CRHR, a resource must not only possess historical significance but also the physical means to convey such significance—that is, it must possess integrity. Integrity refers to the degree to which a resource retains its original character. To facilitate this assessment, the NPS provides the following definition of the seven aspects of integrity.

Location is the place where the historic property was constructed or the place where the historic event occurred. . . .

Design is the combination of elements that create the form, plan, space, structure, and style of a property. . . .

Setting is the physical environment of a historic property. . . .

Materials are the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property. . . .

Workmanship is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory. . . .

Feeling is a property's expression of the aesthetic or historic sense of a particular period of time. . . .

Association is the direct link between an important historic event or person and a historic property. . . [NPS 2002:44–45].

In order to obtain information on historical developments within the subject property, Æ Architectural Historian Annie McCausland conducted archival research. Data on the property and historic ranch was acquired from the Tulare County Assessor's and Recorder's Office. In addition, she examined historical maps, including the USGS Trimmer (1922), Sultana (1923), Dinuba (1924), and Orange Cove South (1950, 1966) quadrangles and maps of Tulare County from 1884, 1892, 1913, and 1920 to identify historical structures in the vicinity. She also consulted aerial photographs dating from 1937 to the present were consulted to identify historical land use of the area and property. Property history was acquired from local Orange Cove resident, Lee Bailey, Orange Cove-Sanger Citrus Association Board Chair. Tulare County directories and census records were accessed through Ancestry.com. Newspapers.com, Genealogy Bank, and other relevant databases and online sources.

3.5 BURIED SITE SENSITIVITY ASSESSMENT

Æ Archaeologist Randy Ottenhoff conducted a geologic and hydrologic review of the APE to identify the potential for buried cultural resources. He consulted geological maps, historical maps, geologic/sediment databases, geoarchaeological studies, and soil surveys documenting areas within the APE. These sources provided information regarding the natural watercourses in the area as well as data about local soils and sediments, parent rock formations, and historical vegetation. This information was used to estimate the age of the sediments surrounding the APE, consider the hydrologic and geologic forces that created and placed these sediments, and assess the probability of encountering buried cultural resources within the vertical APE during Project activities.

4 FINDINGS

4.1 RECORDS SEARCH

The SSJVIC provided results of the records search in a letter dated October 26, 2018 (Records Search File No. 18-400). This search revealed that there is one previously recorded cultural resource, a poured concrete footing with an associated concrete pad and steel well casing (P-54-005009), within the APE. There are four cultural resources within a 0.5 mile radius of the APE (see Appendix B). The search also revealed that there have been three previous studies within the APE and 10 that have occurred within the 0.5 mile radius around the APE. The entire eastern portion of the APE has been surveyed twice: once in 1993 for a previous City of Orange Cove water improvement project (Kus 1993 [TU-00369]) and again in 2013 for a proposed solar farm (Kile 2013 [TU-01630]). The concrete pad and well casing (P-54-005009) was discovered and recorded during the 2013 survey.

4.2 NATIVE AMERICAN OUTREACH

In an e-mail dated October 10, 2018, the NAHC stated that a search of the Sacred Lands File did not indicate the presence of Native American resources in the immediate Project areas. The NAHC advised that the absence of specific site information in this file does not indicate the absence of cultural resources in the APE. The NAHC suggested contacting other sources who might have specific knowledge regarding Native American use of the Project area and provided contact information for 13 Native American individuals, representing 11 organizations (Appendix C).

On October 15, 2018, Æ sent a letter describing the Project with a location map to each of the individuals and groups identified by the NAHC. Æ sent a follow-up e-mail on November 1, 2018 to those contacts with active e-mail addresses.

- Elizabeth D. Kipp, Chairperson, Big Sandy Rancheria of Western Mono Indians
- Carol Bill, Chairperson, Cold Springs Rancheria;
- Robert Ledger Sr., Chairperson, Dumna Wo-Wah Tribal Government;
- Benjamin Charley Jr., Dunlap Band of Mono Indians;
- Dirk Charley, Tribal Secretary, Dunlap Band of Mono Indians;
- Stan Alex, Kings River Choinumni Farm Tribe;
- Ron Goode, Chairperson, North Fork Mono Tribe;
- Rueben Barrios Sr., Chairperson, Santa Rosa Indian Community of the Santa Rosa Rancheria;

- Leanne Walker-Grant, Chairperson, Table Mountain Rancheria of California.
- Bob Pennell, Cultural Resources Director, Table Mountain Rancheria of California;
- David Alvarez, Chairperson, Traditional Choinumni Tribe;
- Rick Osborne, Cultural Resources, Traditional Choinumni Tribe; and
- Kenneth Woodrow; Chairperson, Wuksache Indian Tribe/Eshom Valley Band.

Æ received four responses as a result of its outreach. The responses came from Dick Charley of the Dunlap Band of Mono Indians, Stan Alec of the Kings River Choinumni, Ron Goode with the North Fork Mono Tribe and Robert Pennell, Tribal Cultural Resources Director for Table Mountain Rancheria; all of whom stated that the Project was either outside their area of interest and/or declined any further participation in this Project.

4.3 PEDESTRIAN SURVEY

On October 3, 2018, Æ Staff Archaeologists Randy Ottenhoff and Josh Tibbet conducted an intensive archaeological and built environment pedestrian survey of the 10.6-acre APE. Ground visibility within the survey area ranged from poor (15–25 percent) to excellent (100 percent). The APE consists of two discontinuous areas: the City of Orange Cove WTP and the proposed raw water storage basin (Figure 4-1). Each will be discussed separately below.

4.3.1 City of Orange Cove Water Treatment Plant

The ground within the WTP area was mostly covered with concrete and piping (Figures 4-2 and 4-3). Unpaved portions were covered with decomposed granite and weeds. The proposed expansion overlaps a grassy area outside the fenced WTP adjacent to Park Boulevard. In this area, Æ observed several trees, an automatic sprinkler system, water utility boxes, and a large maintenance cover (Figure 4-4). No isolated artifacts, features, or archaeological constituents were discovered within the WTP survey area.

4.3.2 Proposed Water Storage Basin

The proposed raw water storage basin area lies in an open fallow field that was once used as an orchard (Figure 4-5). While there were no fruit trees remaining within the Project APE, Æ observed remnants of plastic irrigation pipes and faint outlines of tree rows. The irrigation system still visible appears modern. At the time of the survey, the field was covered in wild oats (*Avena fatua*) and great brome (*Bromus diandrus*), which obscured 35–40 percent of the surface. Æ observed an irrigation ditch adjacent to Hills Valley Road just outside the APE (Figure 4-6). The age of the ditch is unknown, and it was not investigated further because it lies outside the Project APE. In the northeast corner of the field, recent burning of approximately 0.5 acre had removed ground cover and afforded better ground visibility (80–90 percent; Figure 4-7). In this portion of the field, the surveyors noted a sparse scatter of historical debris, including seven glass fragments (green, aqua, opaque, and clear solarized), a thick metal hinge, and a double-edged razor blade.

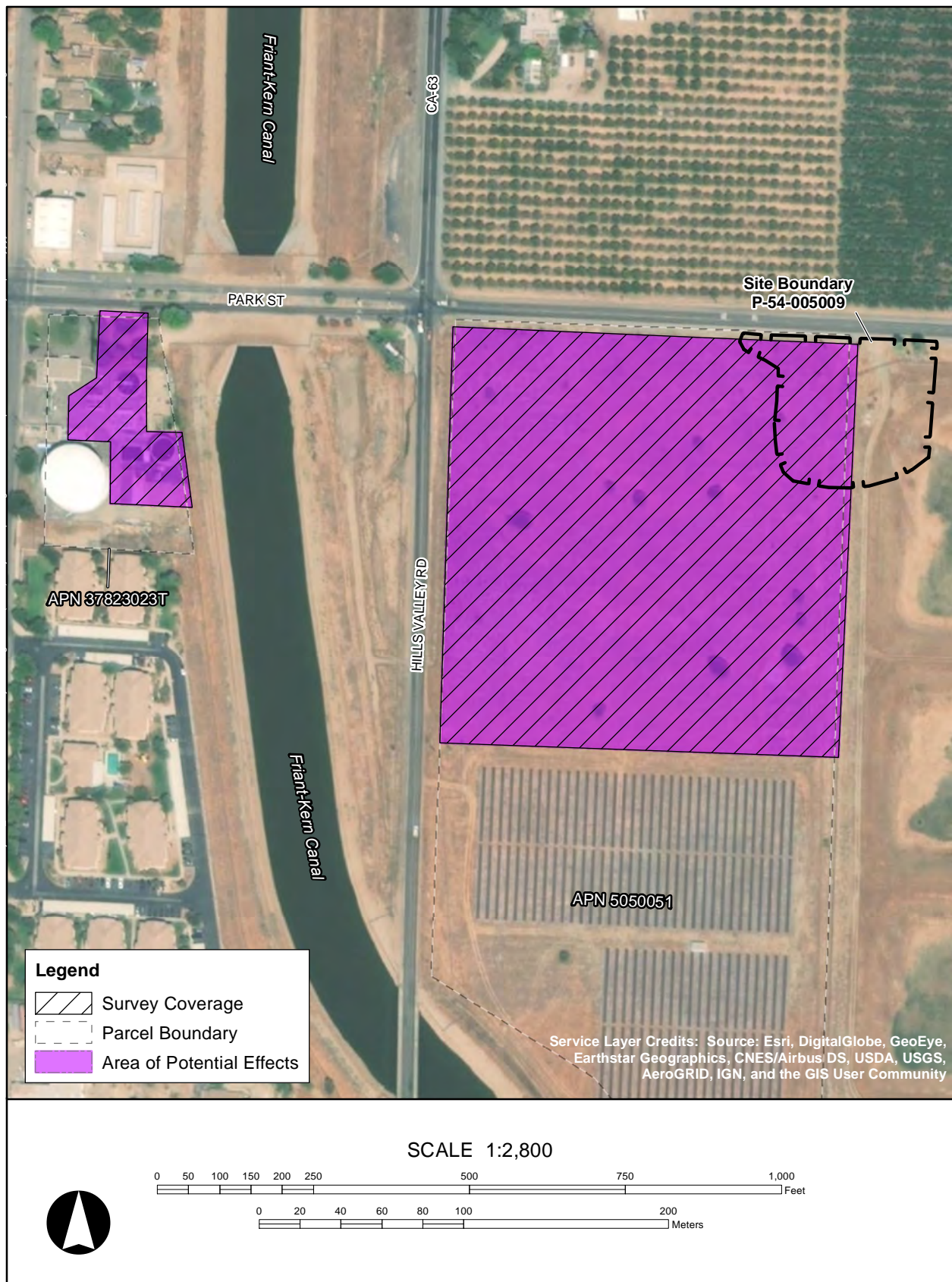


Figure 4-1 Aerial view of the Project APE showing survey coverage.



Figure 4-2 Orange Cove Water Treatment Plant; view to the east.



Figure 4-3 Orange Cove Water Treatment Plant; view to the north.



Figure 4-4 Orange Cove Water Treatment Plant northern expansion area; view to the west.



Figure 4-5 Overview of the area planned for the new water storage basins; view to the southwest.



Figure 4-6 Irrigation ditch adjacent to Hills Valley Road just outside the APE; view to the south.



Figure 4-7 Ground visibility in the burned area within the APE; view to the south.

In addition, Æ's surveyors located the known historical feature, a poured concrete footing with an associated concrete pad and steel well casing (Figure 4-8) that was identified and recorded during a previous cultural resource investigation as P-54-005009 (Kile 2013). Æ observed a number of associated features related to a historic-era homestead in this area of the APE. A portion of the property appeared to have been bulldozed. This historic-era cultural resource is described further below. No other archaeological sites, features, or isolated artifacts were discovered in the APE.



Figure 4-8 Concrete pad and well casing; view to the west.

4.4 P-54-005009 (Historic-era Homestead)

4.4.1 Archaeological Site Description

P-54-005009 marks the remains of a historic-era homestead that occupied the northeast corner of the APE in the early twentieth century (see Figure 4-1). The site includes the poured concrete footing with an associated concrete pad and steel well casing previously identified on the property (Kile 2013) as well as four additional features and a light scatter of metal and glass debris. Approximately 45 feet north of the well casing is a buried and collapsed concrete pad (Figure 4-9). This pad was designated Feature 1 and is buried under 6–7 inches of soil. Using a metal probe, Æ was able to determine that the pad is 10 feet long by 5 feet wide. Two sections of the pad have collapsed, exposing a cavity or vault. The exposed concrete is 4 1/2 inches thick.

Feature 2 is a piece of corrugated metal sticking out of the ground. The exposed metal measures 1 foot 5 inches long by 1 foot 5 inches wide (Figure 4-10). A palm tree growing along the edge of Avenue 460 is identified as Feature 3 (Figure 4-11). Palm, eucalyptus, and other ornamental



Figure 4-9 Collapsed concrete pad (Feature 1); view to the east.



Figure 4-10 Exposed fragment of corrugated metal (Feature 2).



Figure 4-11 Palm tree (Feature 3) marking site of homestead; view to the south.

trees are common landscape features associated with rural homesteads (Farmer 2013). Feature 4 is a concrete agricultural standpipe and concrete riser (Figure 4-12). The standpipe is 7 feet 2 inches tall and 2 feet 4 inches wide. A metal ladder is attached to the standpipe, and an adjacent 1 foot 5 inch tall by 1 foot 8 inch wide concrete riser has a metal cap stamped “SNOW/HS/8D/1915.” There is modern agricultural pump within a fenced enclosure adjacent to Feature 4.



Figure 4-12 Concrete agricultural standpipe and short riser beside modern agriculture pump and fenced enclosure; view to the south.

4.4.2 Archival Research and Interpretation

P-54-005009 is within Section 18 of Township 15 South, Range 25 East. John F. Smith of Fresno County purchased the land within Sections 17 and 18 on May 25, 1872, as a cash land sale (Bureau of Land Management 2019; Figure 4-13). Jacob Levi Sr. of San Francisco acquired the property sometime in the late 1880s, and the Sand Creek School House was constructed within the northern portion of Section 17, east of P-54-005009, circa 1888 (Figure 4-14). Jacob Levi Sr. and his sons, Herman and Jacob Jr., owned and managed Levi H. & Co. with Henry Koch. Levi H. & Co. was an importer and wholesale grocery company at 109-115 California Street in the Embarcadero District of San Francisco. Although the Levis owned the property, they lived in San Francisco at 1016 Van Ness Avenue (Ancestry 2011).



Figure 4-13 1876 map of Tulare County showing ownership in Sections 17 and 18 (Baker 1876).

One building is depicted within Section 18 near the county line southwest of the P-54-005009 on the 1892 Tulare County Map (Figure 4-14). No records indicate any infrastructure or extant buildings within the subject property during the nineteenth century, and it appears that the property was used solely for agricultural purposes.

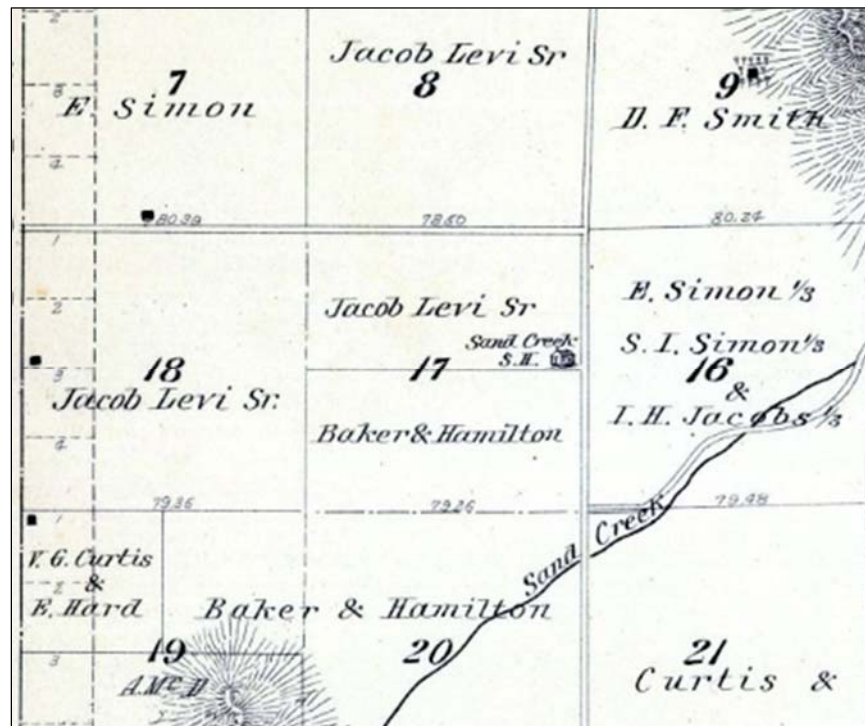


Figure 4-14 1892 Tulare County Map (Thompson 1892) depicting Levi ownership and the Sand Creek School within Section 17.

Sections 7, 17, 18, and a portion of Section 6 within Township 15 South and Range 25 East were subdivided by the Oroqui Land Company in 1912 (see Figure 2-3). P-54-005009 is within the 21-acre Lot 24. The lots within this subdivision were primarily used for citrus groves, the premier crop in the area during the early twentieth century (USGS 1922, 1923, 1924, 1950, 1960; NETROnline 2019). Citrus is still the primary crop and industry in Orange Cove and the surrounding area.

Sometime between 1912 and 1916, Samuel Marlian Peet and his wife Anette M. Peet, both originally from Iowa, purchased Lot 24. The Peets constructed a dwelling on Lot 24 sometime between 1912 and 1920 and established a citrus grove (Moye 1920; Nielson 1912; U.S. Census Bureau 1920). The 1920 census lists the Peets as self-employed citrus growers. According to available sources, the lot adjacent to the east, Lot 23, was purchased by Etta and Oscar R. Barber, also originally from Iowa, sometime between 1912 and 1920. The Barbers were also self-employed citrus growers and had constructed a dwelling on Lot 23 prior to 1920 (Moye 1920; Nielsen 1912; U.S. Census Bureau 1920). The Peets acquired Lot 23 from the Barbers' widowed daughter, Josephine Barber, in 1938 (Tulare County 1938). Lot 23 and 24 are referred to as the Peet Ranch (Figure 4-15).

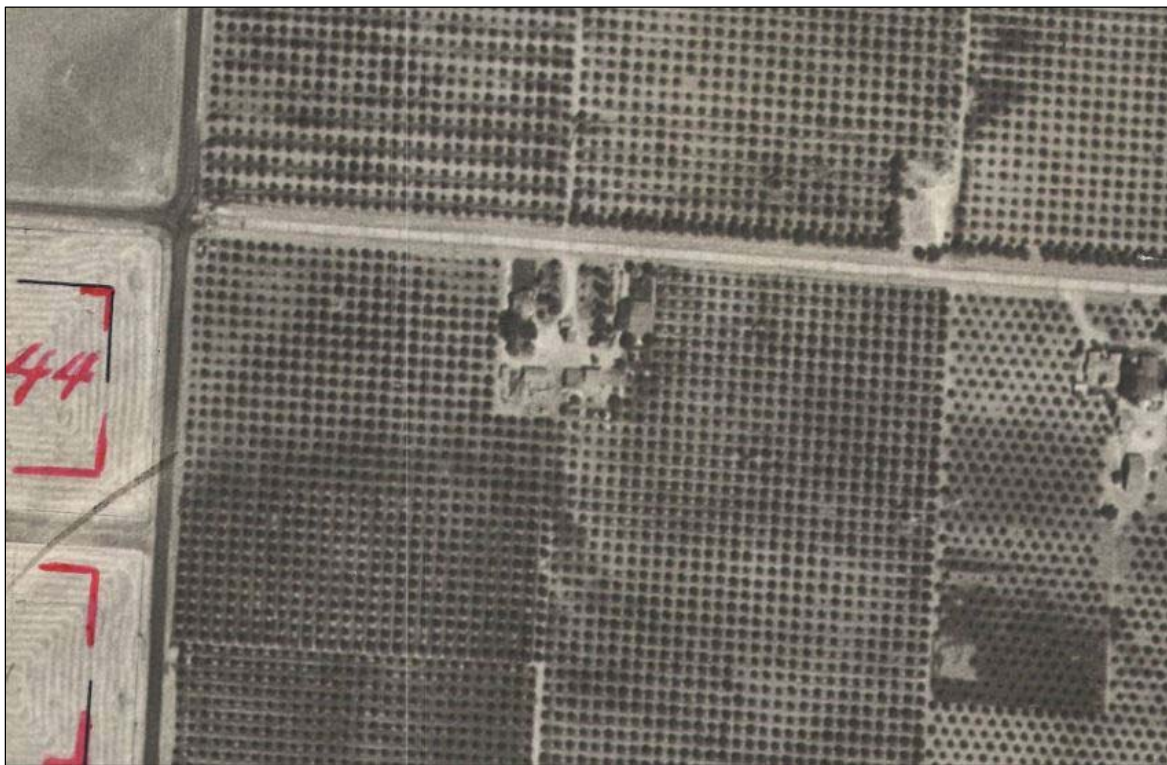


Figure 4-15 1937 aerial photograph of the Peet Ranch.

The Peets lived and worked on their ranch until Samuel's death in 1955. In 1959, Lots 23 and 24 were sold to a group of Orange Cove citrus growers—Kent A. and Annette E. Fish, John C. and Rita F. Knapp, and James J. and Mildred M. Hurley (Tulare County Recorder 1959). It is unclear who resided on the ranch after the sale, but Bailey (personal communication 2019) mentioned that the houses were rented out to tenants, including a Jim Gibbens. No information on Gibbens

or any other tenants was found. Aerial images dating between 1937 and 1967 show little change to the property over a span of 30 years (Figure 4-16).

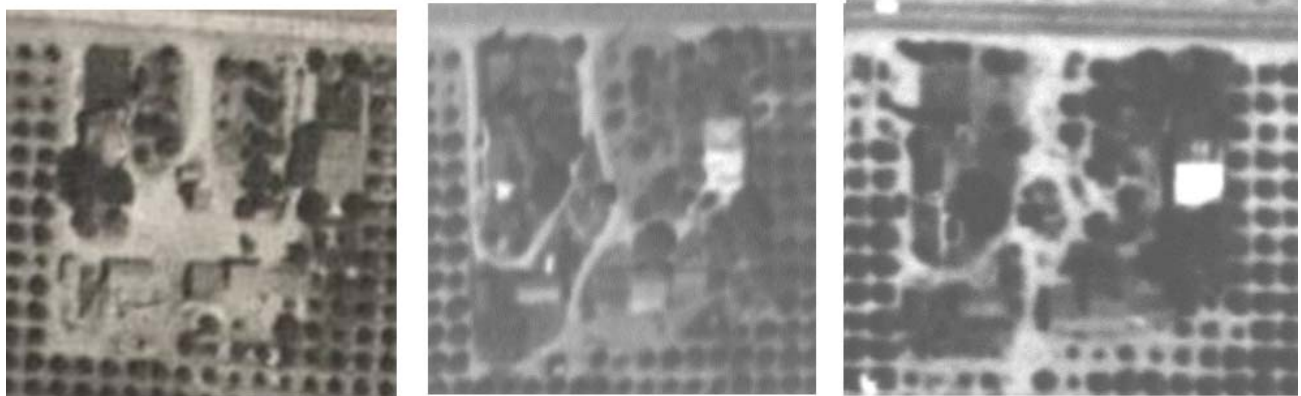


Figure 4-16 Peet Ranch in 1937, 1956, and 1967 (left to right) (courtesy Henry Madden Library, California State University, Fresno, and Annie Mitchell Room, Tulare County Library).

The dwellings and infrastructure on Peet Ranch were demolished by 1993 (Kus 1993). The citrus groves were abandoned and removed by 2010 (NETROnline 2019).

Æ archaeologists met with local resident Lee Bailey at the site on January 9, 2019. Bailey, a citrus grower and Orange Cove-Sanger Citrus Association Board Chair, knew the Peets and worked in their orange orchard in the 1950s. According to Bailey, the Peet Ranch featured large citrus groves, two dwellings, a pump house, chicken coop, and other accessory buildings and structures. Bailey remembers an older wood-framed house constructed circa the 1920s to the east and a more contemporary stucco-clad house on the west side of the property. Bailey stated that sometime in the late 1960s (post 1967) the wood house to the east burned down along with the pump house that was between the houses. He remembers seeing the pump house explode when he responded to the fire as a member of the fire department at the time. He does not recall when the wood house was torn down, but he is sure the house was never repaired from the fire.

Bailey was able to identify the houses, water tower, and location of a chicken coop and a possible equipment shed visible on a 1967 aerial image of the property (Figure 4-16), and he provided additional information that helped identify the archaeological features currently visible. Bailey recalled that both the stucco and wood house had indoor plumbing, but the plumbing was not connected to the city sewer system. He was confident that the houses were on septic systems that probably included a leach line. He thought the collapsed concrete feature (Feature 1) might be a septic vault.

4.5 EVALUATION OF P-54-005009

Under the guidelines of the OHP (1995), P-54-005009 is recorded as a historical archaeological site associated with a citrus orchard (the Peet Ranch) that was active from circa 1912 to 1990. The evaluation below employs the NPS (2002) criteria and guidelines in evaluating the archaeological site's historical significance and considers the NRHP and CRHR evaluation criteria.

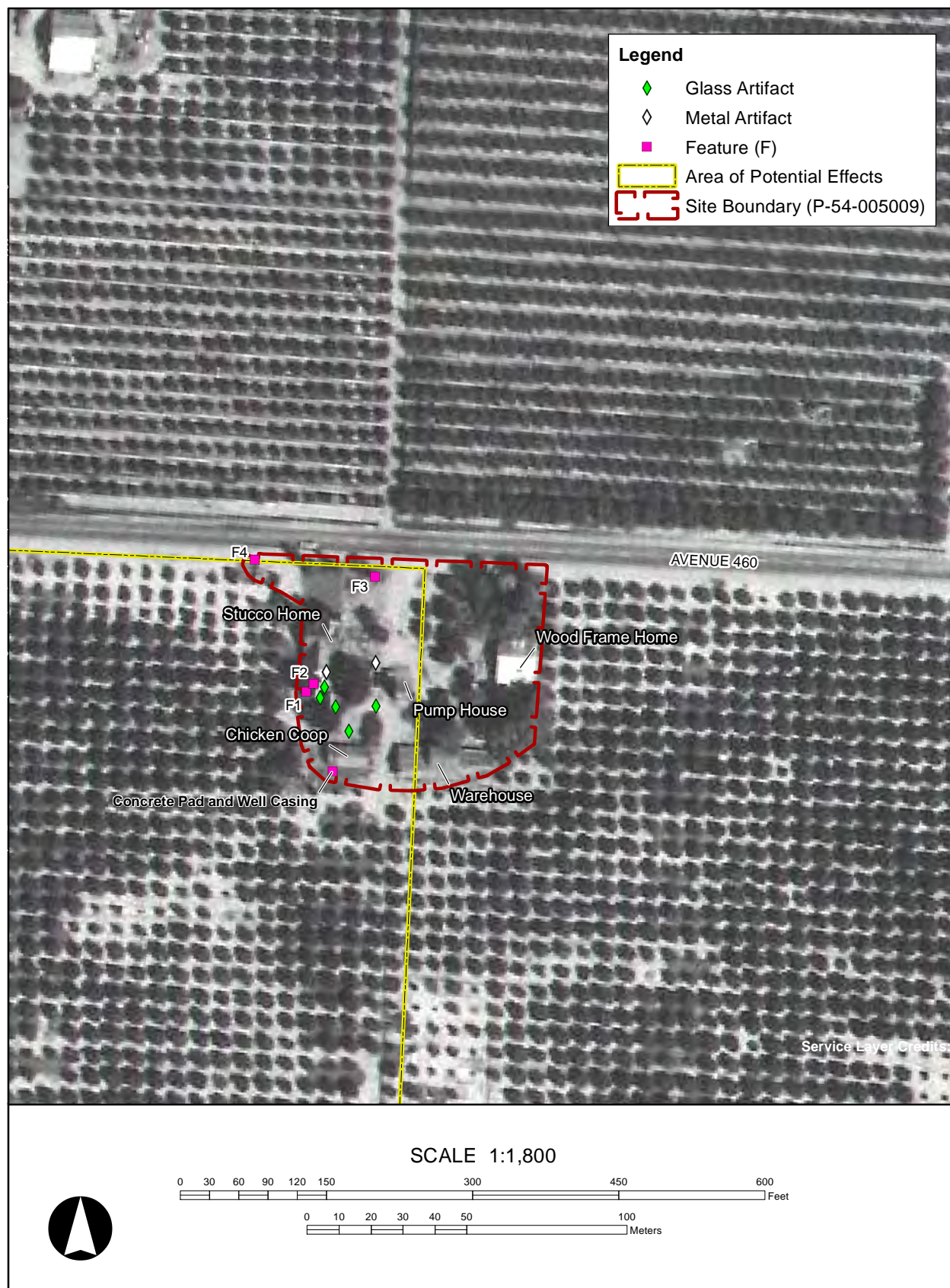


Figure 4-17 P-54-005009 site boundary and features overlain on the 1967 aerial image.

4.5.1 SIGNIFICANCE

4.5.1.1 Criterion A/1

As mentioned in Chapter 3, Criterion A/1 considers the association of a resource with an important event in history. However, the mere association with an important event does not by itself confer significance; a resource must also be a “good representative” of an aspect of history (NPS 2002:7, 12). In other words, a historically significant resource must serve as a vivid and physical manifestation of its related theme(s). Based on prior evaluations of similar agricultural and commercial properties in the San Joaquin Valley, a resource generally accrues significance under Criterion A/1 if it: (1) was constructed during the formative period of the industry (i.e., a pioneer of the industry); (2) is associated with an important innovative in the industry (i.e., a trendsetter), (3) is associated with the industry’s leader or a dominant enterprise; and/or (4) is associated with developments that influenced history beyond or outside the agricultural industry.

The historic context in Chapter 2 identifies significant historical periods in Fresno/Tulare County agriculture that potentially would impart historical significance under Criterion A/1 to the subject resource under the four standards above. P-54-005009 consisted of two separate lots within the Orosi Orange Lands subdivision in 1912. Both lots were acquired between 1912 and 1920 by settlers from Iowa looking to make a living as citrus farmers. However, while P-54-005009 can be linked to pre-1920 early settlement and agriculture as well as the agricultural boom after 1920, it does not measure up to the standards that would confirm significance under Criterion A/1. Specifically, because the property was one of several formed in Fresno and Tulare counties during the latter part of the formative agricultural period, it was neither a pioneer of the industry nor a trendsetter. Furthermore, there was no evidence found to suggest the property was the first of its type or associated with developments in citrus farming that influenced history. For these reasons, P-54-005009 is not considered historically significant at the local level under Criterion A/1 for its association with agricultural development prior to 1920 or agricultural evolution after 1920.

4.5.1.2 Criterion B/2

In order to be considered significant under Criterion B/2, a resource must satisfy at least two conditions: (1) persons associated with the resource must be individually significant and (2) the resource must be associated with the person’s productive life and be exemplary of his/her contributions to history (NPS 2002:15). The historical ranch (P-54-005009) was developed and operated by the Peets and the Barbers. While the Peets and Barbers were early settlers within the Orosi Orange Lands subdivision, they were not particularly well known nor were they associated with recorded events important in the local history or development of the community or region. Thus, P-54-005009 is not associated with any person(s) of historical significance and it is not considered historically significant under Criterion B/2.

4.5.1.3 Criterion C/3

Criterion C/3 evaluates the physical design or construction of a resource, including such elements as architecture, landscape architecture, engineering, and aesthetics (NPS 2002:17–20). While such qualities can be found in archaeological sites (albeit rarely), this criterion usually applies to built environment resources. The structural remains observed at P-54-005009 do not

embody the distinctive characteristic of a method of construction, or represent the work of a master, or possess high artistic values. The site is not considered historically significant under Criterion C/3.

4.5.1.4 Criterion D/4

The significance of P-54-005009 under Criterion D/4 is measured by the availability, or potential availability, of information important to the history of California or nation.

Æ observed a sparse temporally distributed historical artifact scatter from which inferences could be derived about the possible source of the deposit (e.g., domestic refuse). There is not a spatially discrete concentration or dense deposit of artifacts on the surface, nor is there an identifiable soil color change that would signify an intact midden or hollow feature. In an effort to determine a location on the property that may harbor intact archaeological materials and yield data important to the site's period of significance, Æ reviewed the information obtained from Lee Bailey, who worked on the ranch in the 1950s. Bailey identified the structures visible on early aerial photographs and confirmed that the houses had indoor plumbing connected to a septic tank. Thus, the chances of uncovering a privy (outhouse) on the property is extremely low. Bailey surmised that the families burned their trash but could not identify where on the property this activity may have occurred. Regardless, there is little chance of uncovering a concentrated rubbish pile that would yield significant data. Finally, the remaining archaeological features on the site such lack identifying temporal characteristics and span a wide temporal range (1912–1990), which limits the site's ability to provide important information on the historical periods or themes identified in the historic context. Taken as a whole, P-54-005009 is not considered significant under Criterion D/4.

4.5.1.5 Assessment of integrity

Because the site does not lend any information or physical evidence to further our understanding of important themes in history, it is not significant under any of the four NRHP or CRHR criteria, and is thus not eligible for either register. An assessment of the site's integrity is not necessary.

4.6 BURIED SITE SENSITIVITY ASSESSMENT

This section assesses the potential for intact buried archaeological deposits (primarily prehistoric deposits) within the vertical APE (not to exceed 7 feet below surface) and identifies the conditions affecting preservation of cultural materials, should any exist. Determining the general sensitivity for the presence of buried archaeological sites can be gauged by various factors, including the APE's distance from water, age of geological deposits, landform, ground slope, and soil types present (Rapp and Hill 2006; Waters 1992).

The potential for buried prehistoric resources decreases greatly with distance from water. The APE's nearest major water sources are the Kings River, 10–13 miles north and east of the APE, and the St. James River, which is a tributary of the Kaweah River and lies 20 miles to the south. The distance to water makes the APE soils more stable because there is less potential for mass flood events that would destroy or alter archaeological deposits. Soil development is also more stable and dependent on annual rainfall that results in the gradual breakdown of rocks into fine

sediments or deposition buildup caused by windblown sediments (Rapp and Hill 2006). A seasonal water source, Sand Creek, lies within a mile east of the APE and likely drew people to the area in prehistory for hunting and gathering activities.

Geologically, the APE is underlain by Tertiary (66–2.5 million years) and Quaternary (2.5 million years–present) deposits (California Department of Water Resources 2006:2). It lies within the Kings River East Subbasin, which contains older and younger alluvial deposits derived from parent granitic material dating to the late Pleistocene (15,000–11,500 cal B.P.) and Holocene age (11,500 cal B.P.–present) (Clemens-Knott 2011:4). Older alluvium consists of clay, silt, sand, gravel, cobbles, and boulders (California Department of Water Resources 2006:2). The youngest deposits are made of fluvial arkosic feldspar-rich granitic-derived sediments that average 13.6 meters (approximately 44.5 feet) in depth (Meyer et al. 2010:154). The APE is on an alluvial fan that through human modification now forms an open plain with 0–3 percent slope (Soil Survey Staff 2018a, 2018b, 2018c).

The San Joaquin soil series dominates the APE and consists of San Joaquin sandy loam (ScA; Soil Survey Staff 2018a) and San Joaquin loam (SeA and 154; Soil Survey Staff 2018b, 2018c). The San Joaquin series is recorded to a maximum depth of 79 inches and is characterized by a sandy loam that increases in clay content with depth. The duripan (or hardpan) horizon is typically encountered below the sandy clay loam at a depth of 20–36 inches. It is impervious to roots or water. The duripan gradually gives way to a stratified sandy loam or coarse sandy loam that continues to a depth of at least 79 inches. Soils above the duripan are acidic with an approximate pH level of 5.8. This contrasts with neutral soils averaging a pH of 7.6 that exist to depths of 60 inches (National Cooperative Soil Survey 1999). The San Joaquin soils are moderately well drained with a very high runoff and make the Orange Cove area prime landscape for agricultural practices. Soils are nonsaline to very slightly saline (0–2 millimhos per centimeter).

Activities that can cause total or partial destruction of archaeological deposits include natural disaster such as mass flood or earthquakes, bioturbation caused by ground-dwelling animals, and human activity such as infrastructural development or agricultural activities (e.g., plowing or using a disc cultivator). Farmers over the last century significantly modified the San Joaquin soils utilized for agricultural crops to increase rooting depth and water infiltration into the soil. This may include leveling the soil mechanically followed by deep ripping to break up the clay and duripan horizons. All these actions can result in partial to complete loss of archaeological data in primary context along the vertical or horizontal axis. Neutral and alkaline soils (pH 7 and higher) with low salinity tends to preserve all classes of archaeological materials, whereas acidic soils (pH 0–6) or well-drained soils with high saline content typically accelerate decomposition of organic materials and metal artifacts (Kibblewhite et al. 2015). Acidic soils with high to very high drainage often deteriorate and severely fragment bone and can fully dissolve organic materials such as basketry or cordage. In addition, long-term use of insecticides and fungicides, which is common in agricultural fields, intensifies the chemical breakdown of bone, shell, and other organic cultural deposits (Kibblewhite et al. 2015).

In general, given that the Project lies more than 10 miles from a major high-flow drainage, there is low probability that prehistoric archaeological materials would be found deeply buried within the vertical APE. If prehistoric cultural materials were to exist, the available data about the local

geology and sedimentology, as well as the fact that much of the APE was used as an orange orchard for at least 80 years, suggests poor preservation above and within the duripan (0–3 feet below the ground surface) (Agricultural Adjustment Administration 1937). However, the duripan likely acts as a barrier that protects lower alkaline soils from rapid water percolation that would otherwise introduce acidic or chemical additives to deeper and older buried archaeological deposits. Thus, bone, shell, and other organic material may be moderately well preserved if present below 3 feet. Because Orange Cove does not experience cycles of freezing and thawing, which would otherwise cause ceramic, lithic, and ground stone artifacts to shift significantly along a horizontal axis, it is expected that these artifacts types, if present, would also retain primary context (Rapp and Hill 2006). That being said, the likelihood of discovering intact buried archaeological deposits below the duripan is extremely low.

5 SUMMARY AND CONCLUSION

Æ performed a historic properties inventory for the City of Orange Cove Water Treatment Plant Improvement Project (Project). The Project consists of two components in discontinuous areas separated by the Fresno-Tulare County Line and the Friant-Kern Canal. The two parts include: (1) lining of existing basins and construction of a new basin in the eastern portion of the WTP and (2) an expansion of the existing WTP in the western portion of the plant, including the construction of new treatment facilities and a new clear well.

As a subconsultant to Crawford & Bowen Planning, Inc., Æ conducted a historic properties inventory of the combined 10.6-acre APE to determine if historic properties/historical resources are present that could be affected by the proposed project. Accordingly, Æ performed background research, obtained a records search from the SSJVIC of the CHRIS, reviewed the results of a search of the NAHC Sacred Lands File, contacted local tribal representatives, assessed the sensitivity of the vertical APE for buried resources, conducted an intensive pedestrian survey of the APE, and evaluated the NRHP/CRHR eligibility of historical archaeological site P-54-005009.

The SSJVIC reported one previously recorded cultural resource within the APE (P-54-005009) and four cultural resources within a 0.5-mile radius of the APE. The search also revealed that three previous cultural resource studies have occurred within the APE and 10 others within a 0.5-mile radius around the APE. The entire eastern portion of the APE had been surveyed previously and the P-54-005009 was identified and first recorded in 2013.

Æ's pedestrian survey yielded no new cultural resources; however, a careful inspection of the area immediately surrounding P-54-005009 resulted in the identification of additional features. Archival research revealed that archaeological features mark the remains of an early twentieth-century agricultural homestead once present in the northwest corner of the APE. Æ expanded the site boundary and updated the site record with the archaeological findings and historical information and evaluated the eligibility of the site for listing in the NRHP and CRHR. Æ concluded that the site does not lend any information or physical evidence to further our understanding of important themes in history, particularly early settlement and agricultural development prior to 1920 and the post-1920 agricultural boom in Fresno and Tulare counties. It is not significant under any of the four NRHP or CRHR criteria; thus, the site is not considered a historic property under the NHPA or a historical resource for the purposes of CEQA.

No other cultural resources were identified in the APE as a result of the NAHC Sacred Lands File search, archival research, or pedestrian survey. Æ's geoarchaeological assessment of the vertical APE revealed that there is low probability of encountering well-preserved cultural deposits in primary context.

Consistent with state and federal statutes and regulations, Æ advises that in the event archaeological remains are encountered during Project development or ground-moving activities within any portion of the APE, all work in the vicinity of the find should be halted until a

qualified archaeologist can identify the discovery and assess its significance. In addition, if human remains are uncovered during construction, the Fresno or Tulare County Coroner is to be notified to arrange their proper treatment and disposition. If the remains are identified on the basis of archaeological context, age, cultural associations, or biological traits to be those of a Native American, California Health and Safety Code 7050.5 requires that the county coroner notify the NAHC within 24 hours of discovery. The NAHC will then identify the Most Likely Descendent, who will be afforded the opportunity to recommend means for treatment of the human remains following protocols in California Public Resources Code 5097.98.

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APPENDIX A

Qualifications of Key Personnel

Areas of Expertise

- Cultural resource management
- Prehistoric archaeology
- Project management

Years of Experience

- 28

Education

Ph.D., Anthropology, Southern Methodist University, 2003

M.A., Anthropology, Southern Methodist University, 1995

B.A., Anthropology, University of California, Davis, 1989

Registrations/Certifications

- Register of Professional Archaeologist No. 15189

Permits/Licensure

- Principal Investigator, California BLM Statewide Cultural Resources Use Permit CA-15-29
- Crew Chief, Nevada BLM Statewide Cultural Resources Use Permit N-85878

Professional Affiliations

- Society for American Archaeology
- Society for California Archaeology

Professional Experience

2000–	President (2015–), Regional Manager (2012–2014), Assistant Division Manager (2010–2011), Senior Archaeologist (2000–), Applied EarthWorks, Inc., Fresno, California
1998–2001	Adjunct Faculty Member, Fresno City College, Fresno, California
1995–1996	Staff Archaeologist, Applied EarthWorks, Inc., Fresno, California
1994–1995	Staff Archaeologist, INFOTEC Research, Inc., Fresno, California
1992–1994	Teaching Assistant, Southern Methodist University, Dallas, Texas
1989–1991	Archaeological Project Leader, California Department of Transportation, Sacramento

Technical Qualifications

Dr. Clark Baloian has been involved in archaeology in California and the western United States since 1987. Her areas of expertise include the prehistory of the San Joaquin Valley, Sierra Nevada, Great Basin, central California coast, and the Iron Age of West Africa. Dr. Baloian has served as Project Manager, Field Supervisor, Crew Chief, or Field Technician for projects throughout California, Oregon, Nevada, New Mexico, Texas, Hawaii, and West Africa. Her experience in cultural resources management includes research design, data acquisition, laboratory analysis, and preparation of technical reports and compliance documents; she also has completed the Advisory Council on Historic Preservation course in National Historic Preservation Act Section 106 compliance policies and procedures. Her analytic skills include lithic and ceramic analyses as well as settlement pattern studies and spatial analysis, which were the foci of her doctoral research. As a Senior Archaeologist for Applied EarthWorks, Dr. Baloian directs professional staff and subcontractors and provides quality assurance for all project work. She has directed numerous surveys, testing and data recovery excavations as well as prepared dozens of technical reports and compliance documents. She administers both large, complex, multiyear, multiphase projects as well as smaller.

Areas of Expertise

- Architectural history
- California history
- Archival research
- Public history
- Oral history
- Project management
- Technical writing

Years of Experience

- 5

Education

M.A., Arts in Public History,
California State University
Sacramento, 2015

B.A., Arts in History, Chapman
University, Orange, California, 2010

Professional Experience

2017– Associate Architectural Historian, Applied EarthWorks, Inc., Hemet, California

2016–2017 Archivist and Collections Registrar, Sonoma Valley Historical Society, Sonoma, California

2016 Park Aide, California State Parks, Bodie State Historic Park, California

2015–2016 Architectural Historian, Sapphos Environmental, Inc., Pasadena, California

2015 Museum Registration and Collections Management Intern, Academy of Motion Picture Arts and Sciences, Los Angeles, California

2014 Corporate Archives and Production Collections Intern, NBCUniversal, Universal City, California

2013–2014 Archives and Museum Collections Intern, Placer County Museum Archives and Research Center, Auburn, California

2010–2013 Volunteer Historian, California State Parks, Orange Coast District, San Clemente, California

Professional Affiliations

- California Council for the Promotion of History
- American Association for State and Local History
- National Council on Public History
- California Preservation Foundation
- Los Angeles Conservancy
- Society of Architectural Historians

Technical Qualifications

Ms. McCausland specializes in California history and architecture and has served as architectural historian for projects in California and she meets the Secretary of the Interior Professional Qualification Standards for Architectural History and History. Her expertise includes inventory, research, and significance evaluations, and she has completed numerous studies of residential, agricultural, commercial and industrial properties. Ms. McCausland has prepared technical reports for historical built environment resources to satisfy compliance requirements under National Historic Preservation Act Section 106 and the California Environmental Quality Act and to support preparation of both programmatic and project-specific environmental impact reports. She also has documented and evaluated built environment resources following California Department of Transportation (Caltrans) guidelines. Ms. McCausland has performed architectural surveys and significance evaluations on behalf of Los Angeles County Department of Parks and Recreation; other federal, state, and local agencies; and private-sector clients. Additional skills include archives and collections management, oral history, Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) documentation, agency consultation, exhibit curation, interpretation, and heritage tourism.

Areas of Expertise

- Cultural resource management
- Federal and California/Nevada regulations
- Design and implementation of pedestrian survey and subsurface site testing
- Rock art recordation and analysis
- Spatial analysis

Years of Experience

- 12

Education

Ph.D., Archaeology, University of Central Lancashire, 2015

B.A., Anthropology, University of California, Davis, 2004

A.A., Liberal Arts, American River College, Sacramento, 2001

Registrations/Certifications

- Registered Professional Archaeologist 17098
- Permitted Oregon Qualified Archaeologist

Professional Affiliations

- Society for American Archaeology
- Society for California Archaeology

Professional Experience

2018–	Associate Archaeologist, Applied EarthWorks, Inc., Fresno, California
2017–2018	Cultural Resource Specialist II, ICF, Sacramento, California
2016–2017	Cultural Resource Specialist II, HDR Engineering, Inc., Sacramento, California
2010	Field Technician, Chambers Group, LLC, Reno, Nevada
2007–2010	Field Archaeologist, Pacific Legacy, Sacramento, California
2007–2009	Staff Archaeologist, Abercrombie's Archaeology Consultants, Reno, Nevada
2004–2007	Field Archaeologist, Kautz Environmental, Reno, Nevada
2006	Field Technician, ASM Affiliates, Reno, Nevada

Technical Qualifications

Dr. Ottenhoff has 18 years of experience in cultural resources management and meets the Secretary of the Interior's qualification criteria as an archaeologist. He has extensive experience managing field projects pursuant to applicable federal, state, and local regulations for projects in the Sierra Nevada, including projects with historic-period artifact scatters and mines as well as prehistoric sites. Dr. Ottenhoff has served as sole and co-author of numerous technical reports, including Class/Phase I Inventory and Class III federal reports as well as letter reports summarizing the methods and results of project monitoring. He is familiar with National Historical Preservation Act Section 106, National Environmental Policy Act, and California Environmental Quality Act compliance, including public and tribal comment and response; development of research designs; and design and implementation of cultural resources plans. He is qualified to conduct archaeological survey, including the supervision of small to medium-sized field crews, as well as field and laboratory processing of artifact assemblages. Dr. Ottenhoff has project experience in coastal, highlands, grasslands, desert, and remote mountain settings across the state of California and is certified to conduct archaeological investigations in Oregon.

APPENDIX B

Records Search Results



10/26/2018

Mary Baloian
Applied EarthWorks, Inc.
1391 W. Shaw Ave., Suite C
Fresno, CA 93711

Re: City of Orange Cove Water Treatment Plant
Records Search File No.: 18-400 Revised

The Southern San Joaquin Valley Information Center received your record search request for the project area referenced above, located on the Orange Cove South USGS 7.5' quad. The following reflects the results of the records search for the project area and the radius 0.5 mile radius:

As indicated on the data request form, the locations of resources and reports are provided in the following format: ☐ custom GIS maps ☒ shapefiles

Resources within project area:	P-54-005009
Resources within 0.5 mile radius:	P-10-005402, P-10-005508, P-10-005801, P-10-006923 (P-54-004832)
Reports within project area:	TU-00369, TU-01017, TU-01630
Reports within 0.5 mile radius:	FR-00568, FR-00569, FR-01824, FR-02093, FR-02153, FR-02414 (TU-01498), FR-02561, FR-02634, FR-02654, TU-00259

Resource Database Printout (list): ☒ enclosed ☐ not requested ☐ nothing listed

Resource Database Printout (details): ☒ enclosed ☐ not requested ☐ nothing listed

Resource Digital Database Records: ☒ enclosed ☐ not requested ☐ nothing listed

Report Database Printout (list): ☒ enclosed ☐ not requested ☐ nothing listed

Report Database Printout (details): ☒ enclosed ☐ not requested ☐ nothing listed

Report Digital Database Records: ☒ enclosed ☐ not requested ☐ nothing listed

Resource Record Copies: ☒ enclosed ☐ not requested ☐ nothing listed

Report Copies: ☐ enclosed ☒ not requested ☐ nothing listed

OHP Historic Properties Directory: ☒ enclosed ☐ not requested ☐ nothing listed

Archaeological Determinations of Eligibility: ☐ enclosed ☐ not requested ☒ nothing listed

CA Inventory of Historic Resources (1976): ☐ enclosed ☐ not requested ☒ nothing listed

Caltrans Bridge Survey: Not available at SSJVIC; please see
<http://www.dot.ca.gov/hq/structur/strmaint/historic.htm>

Ethnographic Information: Not available at SSJVIC

Historical Literature: Not available at SSJVIC

Historical Maps: Not available at SSJVIC; please see
<http://historicalmaps.arcgis.com/usgs/>

Local Inventories: Not available at SSJVIC

GLO and/or Rancho Plat Maps: Not available at SSJVIC; please see
<http://www.glorerecords.blm.gov/search/default.aspx#searchTabIndex=0&searchByTypeIndex=1> and/or
<http://www.oac.cdlib.org/view?docId=hb8489p15p;developer=local;style=oac4;doc.view=items>

Shipwreck Inventory: Not available at SSJVIC; please see
<http://www.slc.ca.gov/Info/Shipwrecks.html>

Soil Survey Maps: Not available at SSJVIC; please see
<http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Invoices for Information Center services will be sent under separate cover from the California State University, Bakersfield Accounting Office.

Thank you for using the California Historical Resources Information System (CHRIS).

Sincerely,

Celeste M. Thomson  Digitally signed by Celeste M. Thomson
Date: 2018.10.26 11:47:26 -07'00'

Celeste M. Thomson
Coordinator

Resource List

SSJVIC Record Search 18-400

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-10-005402		Resource Name - Orange Cove Santa Fe Railway Depot; OHP Property Number - 052435	Structure	Historic	HP17	1978 (Bill Little, City of Orange Cove)	
P-10-005508		Resource Name - Harding & Leggett Water Tower; OHP Property Number - 154825	Structure	Historic	HP11	2005 (Heather Blind, Pacific Legacy, Inc.); 2012 (URS Corporation, URS Corporation)	FR-02093, FR-02634
P-10-005801	CA-FRE-003519H	Resource Name - JFR-009; Resource Name - Friant-Kern Canal	Structure	Historic	HP20	1991 (Unknown, Unknown); 2001 (Lex Palmer, Applied EarthWorks); 2008 (Mark Beason, Rebecca Flores, JRP Historical Consulting, LLC.); 2016 (Randy Baloian, Applied Earthworks)	FR-02846
P-10-006923		Resource Name - Big Creek East & West Transmission Line; National Register - 16000468	Structure	Historic	HP11	2016 (Audry Williams, Southern California Edison)	

Report List

SSJVIC Record Search 18-400

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
FR-00568		1988	Neuenschwander, Neal	Cultural Resource Assessment of the Proposed Orange Cove Senior Apartments, Fresno County, California	Peak & Associates, Inc.	
FR-00569		1988	Neuenschwander, Neal	Cultural Resource Assessment of the Proposed Citrus Grove Apartments, Fresno County, California	Peak & Associates, Inc.	
FR-01824	Submitter - Clayton Project No. 70-01821.01.001	2001	Cochran, Linda	NEPA Screening for Wirelss Telecommunication Sie - Orange Cove Cell Site, 700 Center Street, Orance Cove, Fresno County, California	Clayton Group Services	
FR-02093	Submitter - Site (FS-519-01)	2005	Bartoy, Kevin	Archaeological Survey of the Orange Cove Cingular Wireless Cell Site (FS-519-01), Fresno County, California	Pacific Legacy, Inc.	10-005508
FR-02153		2005	Supernowicz, Dana E.	Cultural Resources Study of the Oranges Project SRES Site No. CA-3252A, 700 Center Street, Orange Cove, Fresno County, California 93646	Historic Resource Associates	
FR-02414	Submitter - Contract No. 06A1106; Submitter - Expenditure Authorization No. 06-0A7408	2010	Leach-Palm, Laura, Brandy, Paul, King, Jay, Mikkelson, Pat, Seil, Libby, Hartman, Lindsay, and Bradeen, Jill	Cultural Resources Inventory of Caltrans District 6 Rural Conventional Highways in Fresno, Western Kern, Kings, Madera, and Tulare Counties Summary of Methods and Findings	Far Western Anthrpological Research Group, Inc., Davis and JRP Historical Consulting, LLC, Davis	10-004703, 10-005797, 10-005809, 10-005810, 10-006207
FR-02561		2013	Losee, Carolyn	Cultural Resource Investigation for AT&T Mobility CNU2519 "Orange Cove" 700 Center Street, Orange Cove, Fresno County, California 93646	Archaeological Resources Technology	
FR-02634		2012	Martorana, Dean	Results of Architectural History Survey for Verizon Cellular Communications Tower Site - Orange Cove 700 Center Street, Orange Cove, California	URS Corporation	10-005508
FR-02654		2014	Peterson, Cher L. and Crawford, Kathleen A.	Cultural Resources Records Search and Site Visit Results for T-Mobile West, LLC Candidate SC08852A (Orange Cove Harding), 700 Center Street, Orange Cove, Fresno County, California	Environmental Assessment Specialists, Inc.	

Resource List

SSJVIC Record Search 18-400

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-54-004832	CA-TUL-003011H	Resource Name - Big Creek East & West Transmission Line; National Register - 16000468	Structure, Element of district	Historic	HP11	2012 (Hubert Switalski, AMEC Environment and Infrastructure, Inc.); 2016 (Audry Williams, Southern California Edison)	TU-01616
P-54-005009		Resource Name - DM1	Other	Historic	AH05	2013 (Doug Macintosh, Culturescape)	TU-01630

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
TU-00259		1981	Cantwell, R.J.	Archeological and Historical Survey Report for Road 120 from Avenue 432 to State Highway 63, Tulare County	Individual Consultant	
TU-00369	NADB-R - 1140595	1993	Kus, James S.	Negative Archaeological Survey Report for the City of Orange Cove Water System Improvement Project	California State University, Fresno	
TU-01017	Caltrans - 06-TUL-63 PM 19.8/30.1 EA 06-44800K	2000	Hovey, Kevin and Tackett, Will	Negative Archaeological Survey Report to Construct Asphalt Concrete Overlay and Shoulder Backing on State Route 63 From Route 201 to Avenue 460 In Tulare County, California	California Department of Transportation	
TU-01498	Submitter - Contract No. 06A1106; Submitter - Expenditure Authorization No. 06-0A7408	2010	Leach-Palm, Laura, Brandy, Paul, King, Jay, Mikkelsen, Pat, Seil, Libby, Hartman, Lindsay, and Bradeen, Jill	Cultural Resources Inventory of Caltrans District 6 Rural Conventional Highways in Fresno, Western Kern, Kings, Madera, and Tulare Counties.	Far Western Anthropological Research Group, Inc.	54-000580, 54-001091, 54-004595, 54-004596, 54-004611, 54-004614, 54-004619, 54-004629, 54-004630
TU-01630		2013	Kile, M.C.	Cultural Resource Inventory for Proposed Construction of a Solar Farm in Orange Cove	Culturescape	54-005009

APPENDIX C

Native American Outreach



Native American Outreach

City of Orange Cove Water Treatment Improvement Project

Organization	Name	Position	Letter	E-mail	Phone	Summary of Contact
Native American Heritage Commission						Request sent 10/01/2018, response received 10/10/18
Big Sandy Rancheria of Western Mono Indians	Elizabeth D. Kipp	Chairperson	10/15/18	11/01/18		
Cold Springs Rancheria	Carol Bill	Chairperson	10/15/18	11/01/18		
Dumna Wo-Wah Tribal Government	Robert Ledger SR.	Chairperson	10/15/18	11/01/18		
Dunlap Band of Mono Indians	Benjamin Charley Jr.	Tribal Chair	10/15/18	11/01/18		November 1, 2018 Per their request, no further email or contact was made
Dunlap Band of Mono Indians	Dick Charley	Tribal Secretary	10/15/18	11/01/18		Received Voice Message from Dirk Charley on 10-17-2018 stating that the Project is outside their area of interest and they do not have any information to share.
Traditional Choinumni Tribe	David Alvarez	Chairperson	10/15/18	11/01/18		
Traditional Choinumni Tribe	Rick Osborne	Cultural Resources	10/15/18	11/01/18		
Wuksache Indian Tribe/Eshom Valley Band	Kenneth Woodrow	Chairperson	10/15/18	11/01/18		
Kings River Choinumni Farm Tribe	Stan Alec		10/15/18		11/01/18	Stan Alec has no concerns about the project.
North Fork Mono Tribe	Ron Goode	Chairperson	10/15/18	11/01/18		Responded by email. Stated that this project is outside their area.
Santa Rosa Rancheria Tachi Yokut Tribe	Rueben Barrios Sr.	Chairperson	10/15/18		11/01/18	Left message
Table Mountain Rancheria	Leanne Walker-Grant	Chairperson	10/15/18		11/01/18	Asked to phone Cultural Resources director
Table Mountain Rancheria	Bob Pennell	Cultural Resources Director	10/15/18		11/01/18	Received a letter via certified mail 1/10/2019 stating that the Tribe declines participation in this project

NATIVE AMERICAN HERITAGE COMMISSION

Environmental and Cultural Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710



October 10, 2018

Mary Baloian
Applied Earth Works

Sent by Email: mbaloian@appliedearthworks.com
Number of Pages: 2

RE: City of Orange Cove Water Treatment Plant, Orange Cove, Fresno County

Dear Ms. Boloian:

A record search of the Native American Heritage Commission (NAHC) *Sacred Lands File* was completed for the area of potential project effect (APE) referenced above with negative results. **Please note that the absence of specific site information in the *Sacred Lands File* does not indicate the absence of Native American cultural resources in any APE.**

I suggest you contact all of those listed, if they cannot supply information, they might recommend others with specific knowledge. The list should provide a starting place to locate areas of potential adverse impact within the APE. **By contacting all those on the list, your organization will be better able to respond to claims of failure to consult.** If a response has not been received within two weeks of notification, the NAHC requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact via email: sharaya.souza@nahc.ca.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read "Sharaya Souza", is written over a light blue horizontal line.

Sharaya Souza
Staff Services Analyst
(916) 573-0168

**Native American Heritage Commission
Native American Contacts List
10/10/2018**

Big Sandy Rancheria of Western Mono Indians Elizabeth D. Kipp, Chairperson PO. Box 337 37387 Auberry Mission Rd. Auberry ,CA 93602 lkipp@bsrnation.com (559) 374-0066 (559) 374-0055	Western Mono	Kings River Choinumni Farm Tribe Stan Alec 3515 East Fedora Avenue Fresno ,CA 93726 (559) 647-3227 Cell	Foothill Yokuts Choinumni
Cold Springs Rancheria Carol Bill, Chairperson P.O. Box 209 Tollhouse ,CA 93667 (559) 855-5043 (559) 855-4445 Fax	Mono	North Fork Mono Tribe Ron Goode, Chairperson 13396 Tollhouse Road Clovis ,CA 93619 rwgoode911@hotmail.com (559) 299-3729 Home (559) 355-1774 - cell	Mono
Dumna Wo-Wah Tribal Goverment Robert Ledger SR., Chairperson 2191 West Pico Ave. Fresno ,CA 93705 ledgerrobert@ymail.com (559) 540-6346	Dumna/Foothill Yokuts Mono	Santa Rosa Rancheria Tachi Yokut Tribe Rueben Barrios Sr., Chairperson P.O. Box 8 Lemoore ,CA 93245 (559) 924-1278 (559) 924-3583 Fax	Tache Tachi Yokut
Dunlap Band of Mono Indians Benjamin Charley Jr., Tribal Chair P.O. Box 14 Dunlap ,CA 93621 ben.charley@yahoo.com (760) 258-5244	Mono	Table Mountain Rancheria Leanne Walker-Grant, Chairperson P.O. Box 410 Friant ,CA 93626 (559) 822-2587 (559) 822-2693 Fax	Yokuts
Dunlap Band of Mono Indians Dick Charley, Tribal Secretary 5509 E. McKenzie Avenue Fresno ,CA 93727 dcharley2016@gmail.com (559) 554-5433	Mono	Table Mountain Rancheria Bob Pennell, Cultural Resources Director P.O. Box 410 Friant ,CA 93626 rpennell@tmr.org (559) 325-0351 (559) 325-0394 Fax	Yokuts

This list is current as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code, or Section 5097.98 of the Public Resources Code.

**This list is only applicable for contacting local Native American Tribes for the proposed:
City of Orange Cove Water Treatment Plant, Orange Cove, Fresno County.**

**Native American Heritage Commission
Native American Contacts List
10/10/2018**

Traditional Choinumni Tribe David Alvarez, Chairperson 2415 E. Houston Avenue Fresno ,CA 93720 dave@davealvarez.com (559) 217-0396 Cell	Choinumni
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Traditional Choinumni Tribe Rick Osborne, Cultural Resources 2415 E. Houston Avenue Fresno ,CA 93720 (559) 324-8764 lemek@att.net	Choinumni
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Wuksache Indian Tribe/Eshom Valley Band Kenneth Woodrow, Chairperson 1179 Rock Haven Ct. Salinas ,CA 93906 kwood8934@aol.com (831) 443-9702	Foothill Yokuts Mono Wuksache
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This list is current as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code, or Section 5097.98 of the Public Resources Code.

**This list is only applicable for contacting local Native American Tribes for the proposed:
City of Orange Cove Water Treatment Plant, Orange Cove, Fresno County.**



EXAMPLE

1391 W. Shaw Ave., Suite C
Fresno, CA 93711-3600
O: (559) 229-1856 | F: (559) 229-2019

October 15, 2018

Elizabeth D. Kipp
Chairperson
Big Sandy Rancheria of Western Mono Indians
PO. Box 337 37387 Auberry Mission Rd
Auberry, CA 93602

RE: City of Orange Cove Water Treatment Plant Improvement Project

Dear Elizabeth D. Kipp,

Applied EarthWorks, Inc. (Æ) is currently providing cultural resource services to Crawford & Bowen Planning, Inc. for the City of Orange Cove Water Treatment Plant Improvement Project in Orange Cove, Fresno County, California. The City is proposing to expand and upgrade the water treatment plant with a new filtration system, build a new well within the plant confines, and construct a 10-acre water storage basin east of the Friant-Kern Canal. Because the project will be funded by a Drinking Water State Revolving Fund grant, a joint federal-state program, it is subject to both Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and the California Environmental Act (CEQA). These statutes hold municipalities and agencies accountable for adverse effects to important cultural resources.

The project area lies within Township 15 South, Range 24 and 25 East, Section 13 and 18 on the USGS Orange Cove South quadrangle (see attached map). This map gives the general location of the project. If you would like more detailed maps of the project area, please contact Æ and we would be more than happy to provide them.

Æ requested a records search for the project from the Southern San Joaquin Valley Information Center of the California Historical Resources Information System. The results of this search are still pending. Æ's pedestrian survey of the project area did not yield any isolated artifacts, sites, or features relating to Native American use of the area. Æ also reached out to the Native American Heritage Commission's (NAHC) to request a search of their *Sacred Lands File*. The NAHC replied that their search did not indicate the presence of cultural or tribal cultural resources in the immediate Project area.

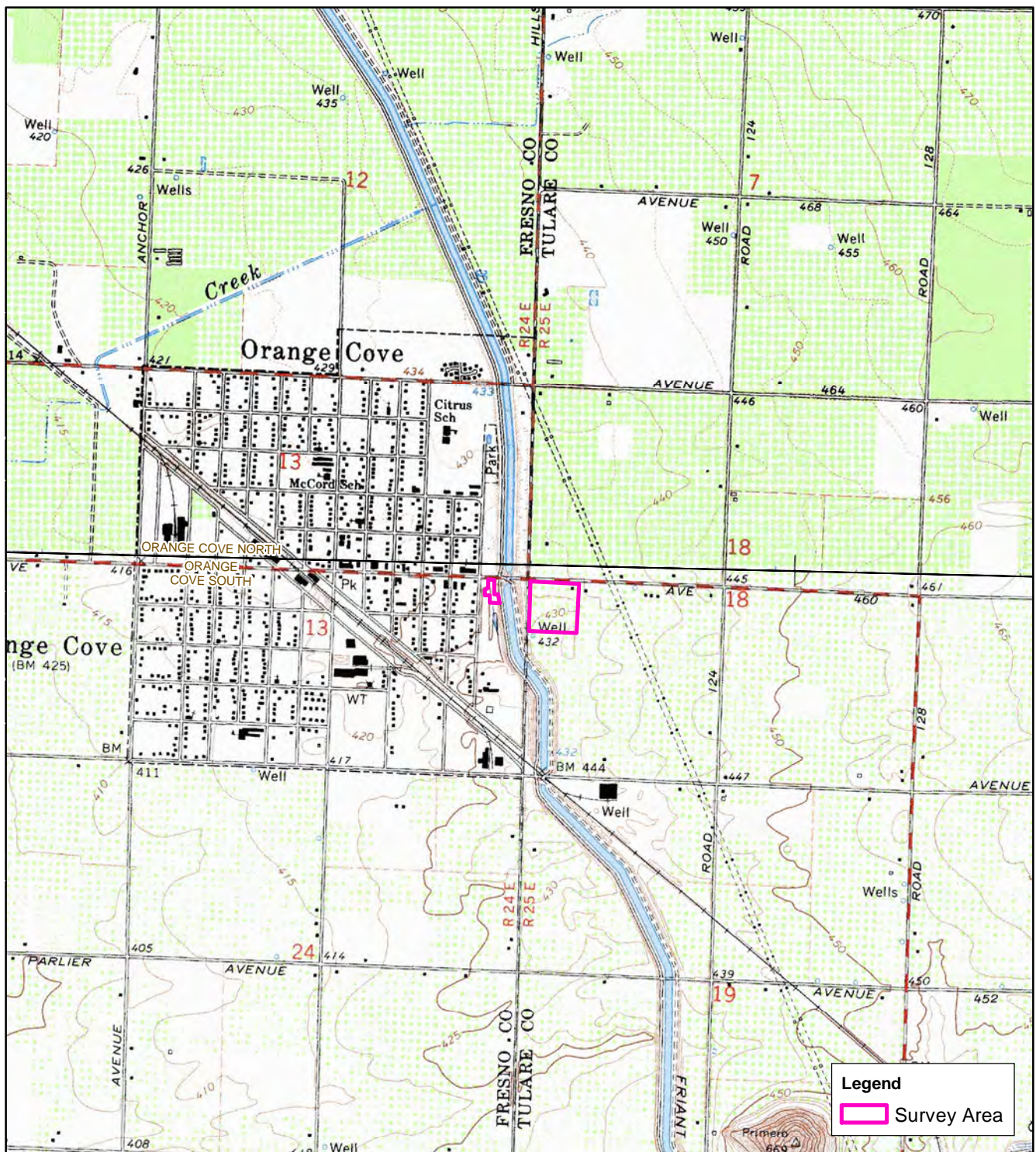
Your name and address were provided to us by the Native American Heritage Commission as someone who might have additional information about the Project area. If you have information on sacred or special sites in the area or have specific concerns about the project, please phone me or send a letter or email to my attention. Your comments will be included in our cultural resources report; however, any information regarding the specific location of archaeological sites, cemeteries, or sacred places will be treated confidentially, as required by law, and not disclosed in any document available to the general public. You can contact me during normal business hours at 559-229-1856 Ext. 11 or at mbaloian@appliedearthworks.com if you have any questions or need additional information. Thank you.

Sincerely,

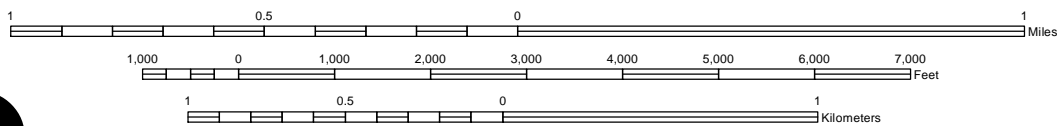
A handwritten signature in cursive script that reads "Mary Baloian".

Mary Baloian
Principal Archaeologist

encl.: Project Map



SCALE 1:24,000



T 15S/R 24E & 25E , Section(s) 13, 18
Orange Cove South (1967), CA 7.5' USGS Quadrangle

NAHC location map for the City of Orange Cove Water Treatment Plant Project - AE3932.



TABLE MOUNTAIN RANCHERIA

TRIBAL GOVERNMENT OFFICE

CERTIFIED 7522 8190

January 10, 2019

Leanne Walker-Grant
Tribal Chairperson

Beverly J. Hunter
Tribal Vice-Chairperson

Craig Martinez
Tribal Secretary/Treasurer

Matthew W. Jones
Tribal Council Member

Richard L. Jones
Tribal Council Member

Mary Baloian, Ph.D., RPA 15189
Principal Archaeologist
Applied Earth Works, Inc.
1391 W. Shaw Ave., Suite C
Fresno, Ca. 93711

RE: City of Orange Cove Water Treatment Plant Improvement Project

Dear: Mary Baloian

This is in response to your letter dated, October 15, 2018, regarding, City of Orange Cove Water Treatment Plant Improvement Project. Thank you for notifying us of the potential development and the request for consultation.

We decline participation at this time but would appreciate being notified in the unlikely event that cultural resources are identified.

Sincerely,


Robert Pennell
Tribal Cultural Resources Director
rpennell@tmr.org
559.325.0351

23736

Sky Harbour Road

Post Office

Box 410

Friant

California

93626

(559) 822-2587

Fax

(559) 822-2693

APPENDIX D

Updated Site Record for P-54-005009

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # 54-005009

HRI #

Trinomial

NRHP Status Code

Other Listings
Review Code

Reviewer

Date

Page 1 of 8

Resource Name or #

P1. Other Identifier: Peet Ranch

***P2. Location: a. County:** Fresno

☒ Not for Publication ☐ Unrestricted

b. USGS 7.5' Quad: Orange Cove South **Date:** 1967 T 15 S, R 25; NE ¼ of the NE ¼ of Section 18; Mt. Diablo **B.M.**

c. Address: N/A; **City:** Orange Cove, CA 93646

d. UTM: NAD 83, Zone; 11N 294075 mE / 4055629 mN

e. Other Locational Data: Starting from the Orange Cove Water Treatment Plant at 602 2nd street in Orange Cove, turn east onto Park Blvd and travel east on park Blvd for 0.25 miles passing over the Friant-Kern Canal and across Hill Valley Rd. Park Blvd changes into Avenue 460. After 0.25 miles turn south onto an unpaved two track road and stop. The site datum is a low growing tree approximately 150 feet away at 222°.

***P3a. Description:** P-54-005009 is a historical archaeological site associated with a historical citrus ranch (Peet Ranch) that was active from circa 1912 to 1990. No historical aboveground buildings remain on the site. The remaining ranch buildings were demolished in the 1990s for the expansion of the water treatment ponding basins. The existing basins were built in the eastern portion of the historical ranch. Five archaeological features and a sparse scatter of glass and metal fragments are visible in the western portion of the ranch.

***P3b. Resource Attributes:** AH2, AH5

***P4. Resources Present:** ☐ Building ☐ Structure ☐ Object ☒ Site ☐ District ☐ Element of District ☐ Other:

***P5a. Photograph or Drawing:**



P5b. Description of Photo: Feature 1, buried concrete pad marking a possible septic vault. Tree to the left is site datum; view to the north.

***P6. Date Constructed/Age and Sources:**
☐ Prehistoric ☒ Historic ☐ Both

***P7. Owner and Address:**

***P8. Recorded By:** Randy Ottenhoff
Applied EarthWorks, Inc.
1391 W. Shaw Ave., Suite C
Fresno, CA 93711

***P9. Date Recorded:** 10/23/2018

***P10. Survey Type:** ☒ Intensive
☐ Reconnaissance ☐ Other

Describe: Survey transects were 10–15 meter apart.

***P11. Report Citation:**

Ottenhoff, Randy L., and Annie McCausland

2019 *Historic Property Identification Report for the City of Orange Cove Water Treatment Improvement Project, Fresno and Tulare Counties, California.* Applied EarthWorks, Inc. Fresno, California. Prepared for Crawford & Bowen Planning Inc., Visalia, California.

***Attachments:** ☐ NONE

☐ Building, Structure,
and Object Record
☐ Photograph Record

☒ Location Map
☒ Archaeological Record
☐ Milling Station Record
☐ Other (list):

☒ Sketch Map
☐ District Record
☐ Rock Art Record

☒ Continuation Sheet
☐ Linear Feature Record
☐ Artifact Record

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
ARCHAEOLOGICAL SITE RECORD

Primary #
HRI #/Trinomial

Page 2 of 8

Resource Name or #

*A1. **Dimensions:** a. Length 74 meters E/W x b. Width 71 meters N/S

Method of Measurement: ☐ Paced ☐ Taped ☐ Visual estimate ☒ Other: GIS

Method of Determination (check any that apply): ☒ Artifacts ☒ Features ☐ Soil ☐ Vegetation
☐ Topography ☐ Cut bank ☒ Animal burrow ☐ Excavation ☒ Property boundary
☐ Other (explain):

Reliability of Determination: ☒ High ☐ Medium ☐ Low Explain:

Limitations (check any that apply): ☐ Restricted access ☐ Paved/built over ☐ Site limits incompletely defined
☒ Disturbances ☐ Vegetation ☐ Other (explain): The historical boundaries of the property have been modified by the development of the Wastewater Treatment Plant storage basins.

A2. **Depth:** ☐ None ☒ Unknown Method of determination: no subsurface excavation occurred.

*A3. **Human Remains:** ☐ Present ☒ Absent ☐ Possible ☐ Unknown (explain):

*A4. **Features:** Five features have been identified at the site. These include one previously recorded and four new features (Feature 1–4):

- A poured concrete footing with an associated concrete pad and steel well casing (noted by Kile (2013) as Feature 1);
- Feature 1: a concrete pad that is buried under 6-7 inches of soil. Using a steel metal probe, it appears that the size of the pad is 10 feet long by 5 feet wide. The function of the pad is unknown, but two sections (Sections 1 and 2) of the pad have collapse exposing a vault (likely septic). The collapsed Section 1 measures 2 feet 5 inches long by 1 foot 5 inches wide by 1 foot 5 inches deep. Section 1 has an exposed piece of sheet metal that appears to be laying on top of the concrete pad. Collapsed Section 2 measures 3 feet long by 1 foot 6 inches wide by 1 foot 4 inches deep. The exposed concrete is 4 ½ inches thick.
- Feature 2 is a piece of corrugated metal that appears mostly buried, but is twisted and sticking up from the ground. The exposed metal measures 1 foot 5 inches long by 1 foot 5 inches wide.
- Feature 3 is a palm tree that is growing along the edge of Avenue 460.
- Feature 4 is a concrete agricultural standpipe and concrete riser. The standpipe measures 7 feet 2 inches tall by 2 feet 4 inches wide. Attached to the standpipe is a metal ladder. Beside the standpipe on the ground is a short concrete riser with a metal cap. The concrete riser measures 1 foot 5 inches tall by 1 foot 8 inches wide. The metal cap is stamped with "SNOW/HS/8D/1915." Beside Feature 4 is updated pumping equipment presumably related to modern agricultural operations.

*A5. **Cultural Constituents (not associated with features):** A sparse historic scatter comprised of approximately 7 glass fragments (green, aqua, opaque and clear solarized), a thick metal hinge, and a double edge razor blade. The artifacts are mixed with modern debris.

*A6. **Were Specimens Collected?** ☒ No ☐ Yes (If yes, attached Artifact Record or catalog.)

*A7. **Site Condition:** ☐ Good ☐ Fair ☒ Poor ☒ Disturbances: Likely large machinery

*A8. **Nearest Water (type, distance, and direction):**

*A9. **Elevation:** 440 feet amsl

A10. **Environmental Setting (vegetation, fauna, soils, geology, landform, slope, aspect, exposure, etc.):** The site is in an open flat field that shows evidence of being used as an orchard. The landscape is nearly devoid of trees with wild oats (*Avena fatua*), and great brome (*Bromus diandrus*) grasses covering the area. To the east are three large water storage basins that are operated by the City of Orange Cove. The soils are a brown sandy loam with 15 percent sedimentary pea gravels. No cobbles, boulders, or granite outcrops were observed within the site.

A11. **Historical Information** (full citations in A15 below): Information obtained from a land patent revealed that the land was purchased by John F Smith on May 25, 1872 as a cash land sale (BLM 2019). Jacob Levi Sr. of San Francisco

acquired the property sometime in the late 1880s. He and his sons, Herman and Jacob Levi Jr., owned and managed Levi H. & Co. with Henry Koch.

- A11. Historical Information (cont.):** Levi H. & Co. was an importer and whole sale grocer company in San Francisco. Although the Levi's owned the property, they lived in San Francisco (Ancestry 2011). Sections 7, 17, 18, and a portion of Section 6 within Township 15 South and Range 25 East were subdivided by the Orosi Land Company in 1912. Sometime between 1912 and 1916, Samuel Marlian Peet and his wife Anette M. Peet, both originally from Iowa, purchased the western Lot 24. The Peets constructed a dwelling on Lot 24 sometime between 1912 and 1920 and established a citrus grove (Nielson 1912; United States Census 1920). The 1920 Census lists the Peets as self-employed citrus growers. According to available sources, the lot adjacent to the east, Lot 23, was purchased by Etta and Oscar R. Barber, also originally from Iowa, sometime between 1912 and 1920. The Barbers also were self-employed citrus growers and had constructed a dwelling on Lot 23 prior to 1920 (Nielsen 1912; United States Census Bureau 1920). The Peets acquired Lot 23 from Etta and Oscar's widowed daughter, Josephine Barber in 1938 (Tulare County 1938). Lot 23 and 24 became known as the Peet Ranch.

The Peets lived and worked on their ranch until Samuel's death in 1955. In 1959 Lot 23 and 24 were sold to a group of Orange Cove citrus growers—Kent A. and Annette E. Fish, John C. and Rita F. Knapp, and James J. and Mildred M. Hurley. It is unclear who resided on the ranch after the sale, but Mr. Bailey mentioned that the houses were rented out to tenants, including a Jim Gibbens. No sources or information on Mr. Gibbens or any other tenants were found. Aerial images dating between 1937 and 1967 show little change to the property over a span of 30 years. The dwellings and infrastructure on Peet Ranch were eventually demolished by 1993 (Kus 1993). The citrus groves were abandoned and removed by 2010 (NETROnline 2019).

- *A12. Age:** ☐ Prehistoric ☐ Protohistoric ☐ 1542–1769 ☐ 1769–1848 ☐ 1848–1880 ☐ 1880–1914 ☒ 1914–1945
☒ Post 1945 ☐ Undetermined Describe position in regional prehistoric chronology or factual historic dates if known:

- A13. Interpretations:** Æ archaeologists met with local resident Mr. Lee Bailey at the site on January 1, 2019. Mr. Bailey, a citrus grower and Board Chairman of the Orange Cove-Sanger Citrus Association, knew the Peets and worked in their orange orchard in the 1950s. According to Mr. Bailey, the Peet Ranch featured large citrus groves, two dwellings, a pump house, chicken coop, and other accessory buildings and structures. Mr. Bailey remembers an older wood framed house constructed circa 1920s to the east and a more contemporary stucco clad house on the west side of the property (Bailey 2019). According to Mr. Bailey sometime in the late 1960s (post 1967) the wooden house to the east burned down along with the pump house that was between the houses. He remembers seeing the pump house explode as he was on the fire department at the time. He does not recall when the wooden house was torn down, but he is sure the house was never repaired from the fire (Bailey 2019).

Mr. Bailey was able to identify the houses, water tower, and location of a chicken coop and a possible equipment shed visible on a 1967 aerial image of the property (see attached sketch map) and provided additional information that helped identify the archaeological features currently visible. Mr. Bailey recalled that both the stucco and wood house had indoor plumbing, but the plumbing was not connected to the city sewer system. He was confident that the houses were on septic systems that probably included a leach line. He thought the collapsed concrete feature (Feature 1) might be a septic vault.

- A14. Remarks:** P-54-005009 is a historical archaeological site associated with a citrus ranch (Peet Ranch) that was active from circa 1912 to 1990. The site was evaluated for its eligibility to the National and California register (Ottenhoff and McCausland 2019) and found it to be not significant under any of the four NRHP or CRHR because it does not lend any information or physical evidence to further our understanding of important themes in history.

A15. References:

Ancestry.com

2011 U.S. City Directories: 1822–1995, accessed by subscription.

Bailey, Lee

2019 Interview by Randy Ottenhoff, 9 January. In-person interview with Applied EarthWorks, Inc. Fresno, California.

Bureau of Land Management (BLM)

2019 U.S. Department of the Interior, Bureau of Land Management, General Land Office Record. Accessed January 21, 2019. <http://glorerecords.blm.gov>.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
ARCHAEOLOGICAL SITE RECORD

Primary #
HRI #/Trinomial

Page 4 of 8

Resource Name or #

Kus, James S

1993 Negative Archaeological Survey Report for the City of Orange Cove Water System Improvement Project.
On file at the Southern San Joaquin Valley Information Center. Report No. TU-00369.

Neilson, A.J.

1912 Map of Orosi Orange Lands, Tulare Co. CAL. On file, at the Tulare County Recorder's Office.

Tulare County Recorder

1938 County Official Records, Deed Book 788, p. 500.

1959 County Official Records, Deed Book 1068, p. 120.

NETROnline

2019 Historic aerial photographs dated 1963, 1999, 2005, 2009, 2010, 2012, 2014,
<http://www.historicaerials.com>, accessed January 22, 2019.

U.S. Census Bureau

1920 Tulare County, Orosi Township Census Records, <https://www.ancestry.com/>, accessed by subscription,
January 22, 2019.

A16. Photographs: 1_9_2019, 1-9; 10_3_2018, 1-57

Original media/negatives kept at: Applied EarthWorks, Inc., Fresno, California

***A17. Form Prepared By:** R. Ottenhoff

Date: 2/5/2019

Affiliation and Address: Applied EarthWorks, Inc., 1391 W. Shaw Ave., Suite C, Fresno, CA 93711

☐ Continuation

☒ Update

Page 5 of 8

Resource Name or #:



Site overview. Note pin flags at artifact locations. Feature 1 is beside tree. View to the North (Frame 49).



Site overview, levee in background marks adjacent water storage pond. View to the East (Frame 48).



Feature 1 Collapsed concrete pad with soil overburden (possible septic vault). View to the south (Frame 39).



Feature 2 Corrugated metal. View to the north (Frame 41).



Feature 3 Palm tree along Avenue 460. View to the south. (Frame 52).



Feature 4 Agricultural standpipe with attached ladder. View to the South (Frame 54).

☐ Continuation

☒ Update

Page 6 of 8

Resource Name or #:



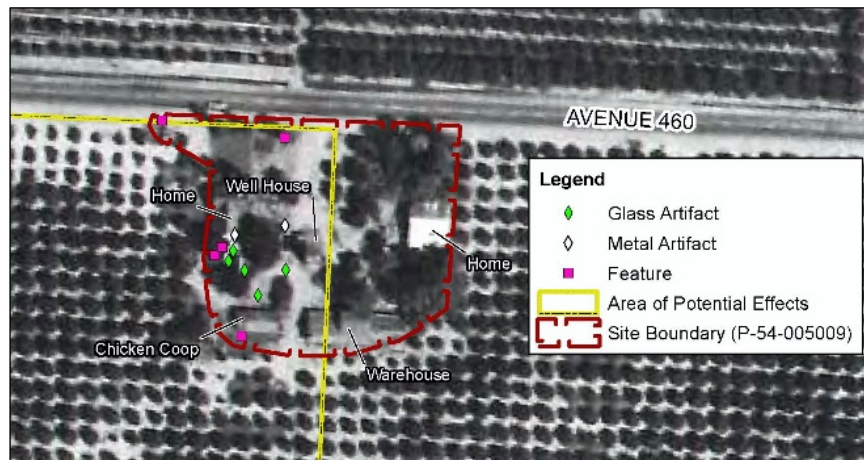
Feature 4 Agricultural riser beside standpipe. (Frame 56).



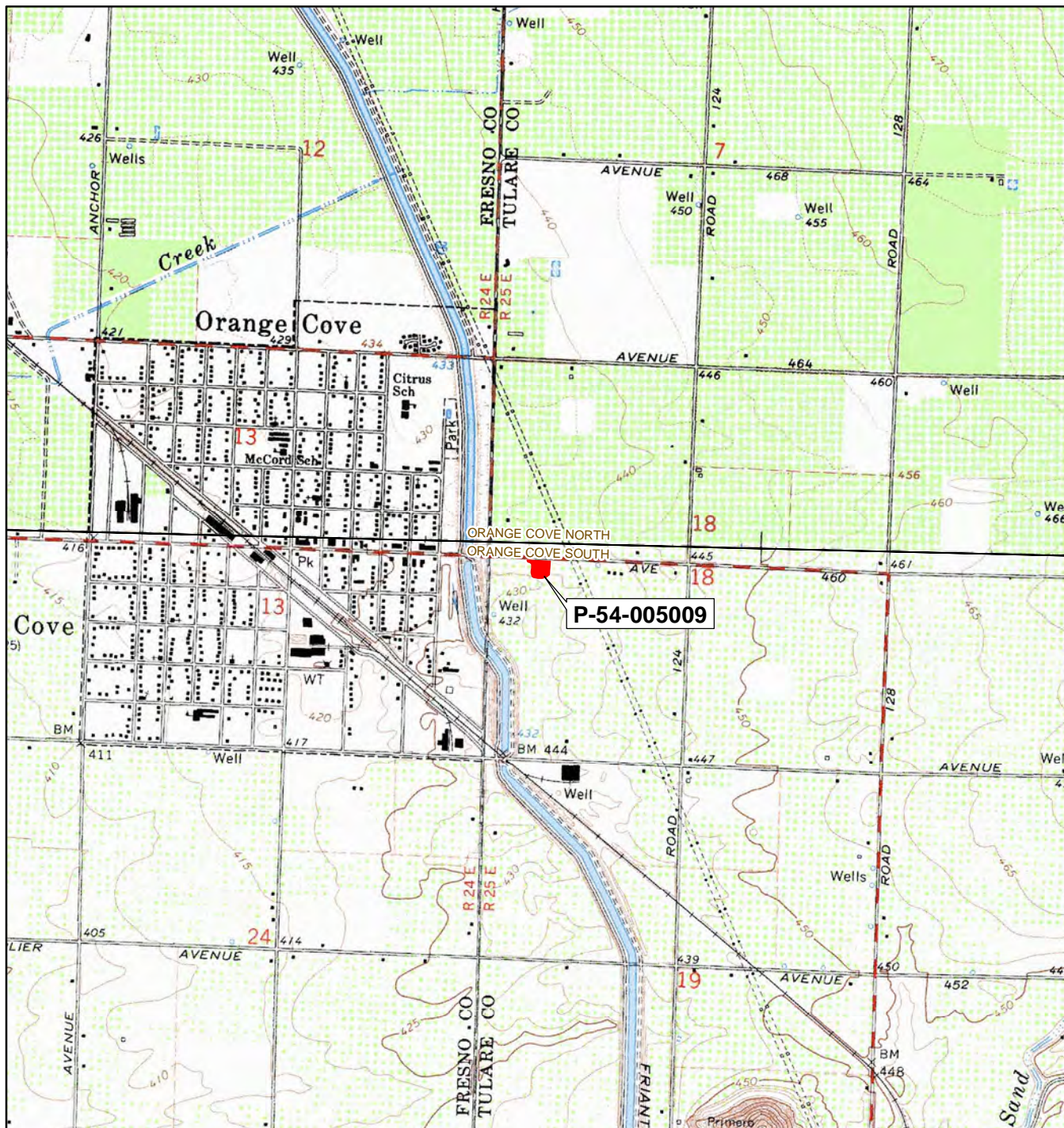
Thick metal hinge. (Frame 47).



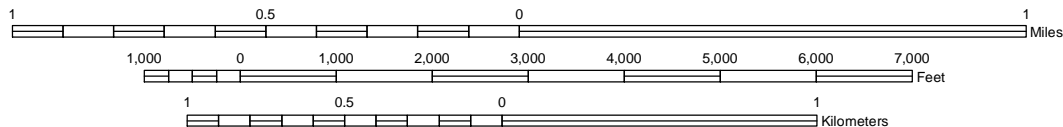
Concrete footing and well casing. View to the southeast (Frame 34).



1967 aerial photograph showing site boundary and feature locations.



SCALE 1:24,000



TRUE NORTH

