



MITIGATED NEGATIVE DECLARATION

City of Avenal – Sanitary Sewer Collection
System and Wastewater Treatment
Plant Improvements

January 2020

PREPARED FOR:

City of Avenal
919 Skyline Boulevard
Avenal, CA 93204

PREPARED BY:



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

Initial Study/Mitigated Negative Declaration
**City of Avenal – Sanitary Sewer Collection System and Wastewater
Treatment Plant Improvements**

Prepared for:

City of Avenal
919 Skyline Boulevard
Avenal, CA 93204

Contact: Melissa Whitten, City Manager
Phone: (559) 386-5766

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 Avenal (City) sewer system. The City proposes to improve its sewer system by replacing and rehabilitating parts of its sewer main infrastructure and upgrading components of its wastewater treatment plant (WWTP). The Project will involve repairing approximately 65,229 linear feet of sewer main within the City limits and adding or replacing various components at the existing WWTP. The purpose of the Project is to repair damaged and deteriorated sewer infrastructure and update the WWTP to improve wastewater treatment operations. The proposed Project is more fully described in Chapter Two – Project Description.

The City of Avenal 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 with Clean Water State Revolving Fund (CWSRF) funds administered through the California State Water Resources Control Board (Water Board). One requirement of CWSRF funding is that the CSD 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 CSD 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

The proposed Project is located throughout the City of Avenal, north and east of Highway 33 in western Kings County, California. Sewer main infrastructure is dispersed throughout the City, east of State Route 33 and north and south of State Route 269. The existing wastewater treatment plant (WWTP) is approximately 1.95 miles southeast of the intersection of State Route 33 and State Route 269, on the east side of State Route 33. Elevation within the Project area ranges from approximately 750-ft to 900-ft above mean sea level (amsl), sloping slightly from southwest to northeast, where the City abuts the edges of the Kettleman Hills. See Figures 1 and 2 for Project locations.

2.2 Setting and Surrounding Land Use

The Project site is synonymous with the City of Avenal and consists of residential and commercial development, paved streets, and dirt alleyways. The Project site also includes the existing WWTP south of the City, which supports disturbed (dirt and gravel) land cover surrounded by fallow agriculture and a ruderal field to the south. The Project site in the City is bordered by agricultural development on all sides, a small airport to the south, and a small patch of disturbed, nonnative grassland to the north. The WWTP is bordered by fallowed agricultural development and a solar farm to the north and east, a private gun range to the west, and a ruderal field to the south that supports weeds including mainly tumbleweed and mustard.

The proposed Project involves replacing 41,073 linear feet of gravity sewer mains using the conventional dig and replace construction method; rehabilitating 24,156 linear feet of gravity sewer mains using the trenchless cured-in-place pipeline (CIPP) method; and miscellaneous repairs to the WWTP. See Section 2.4 – Project Description for more information. The Project area of potential effect (APE) is entirely within existing, previously disturbed ROWs.

Figure 1 – Regional Location Map

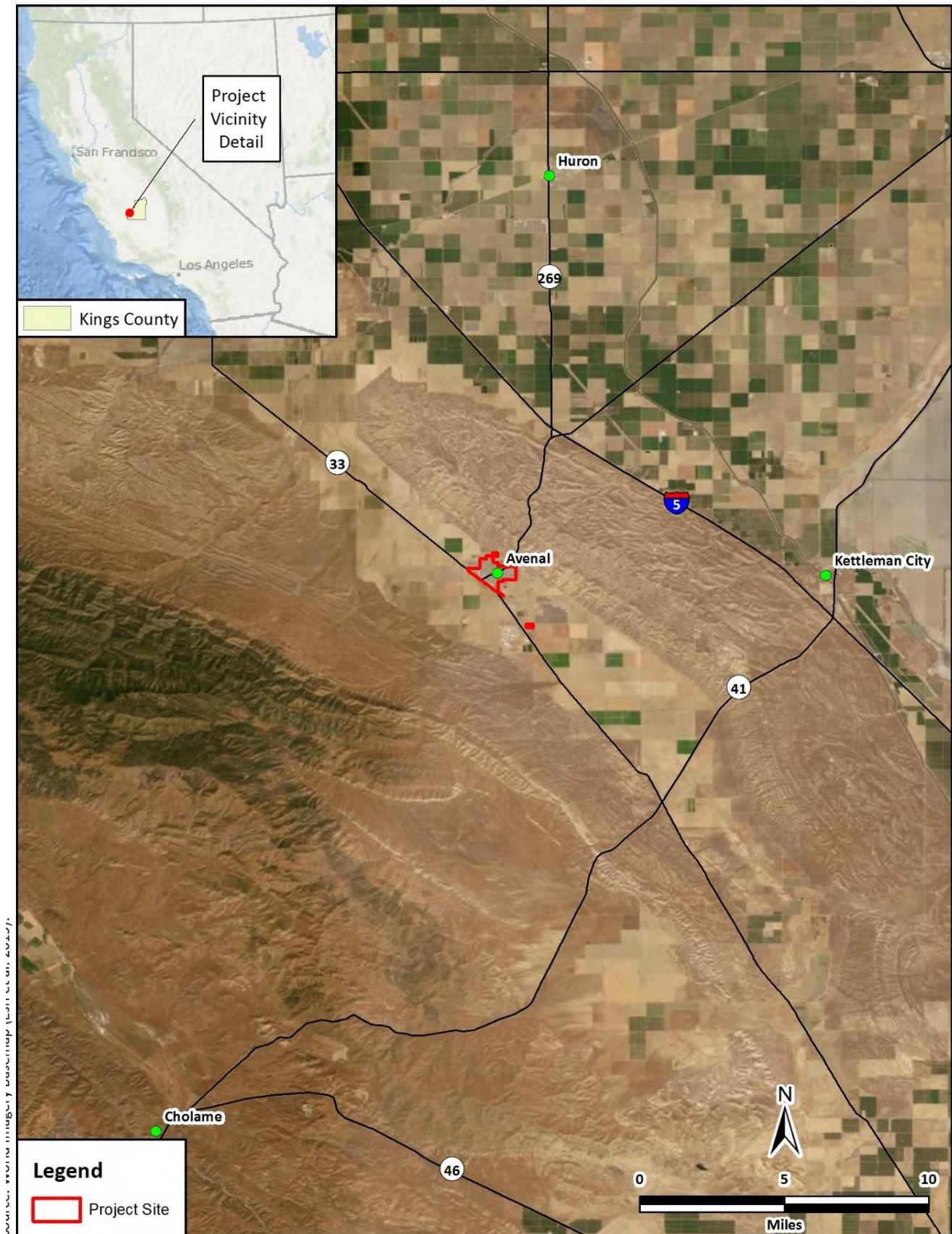
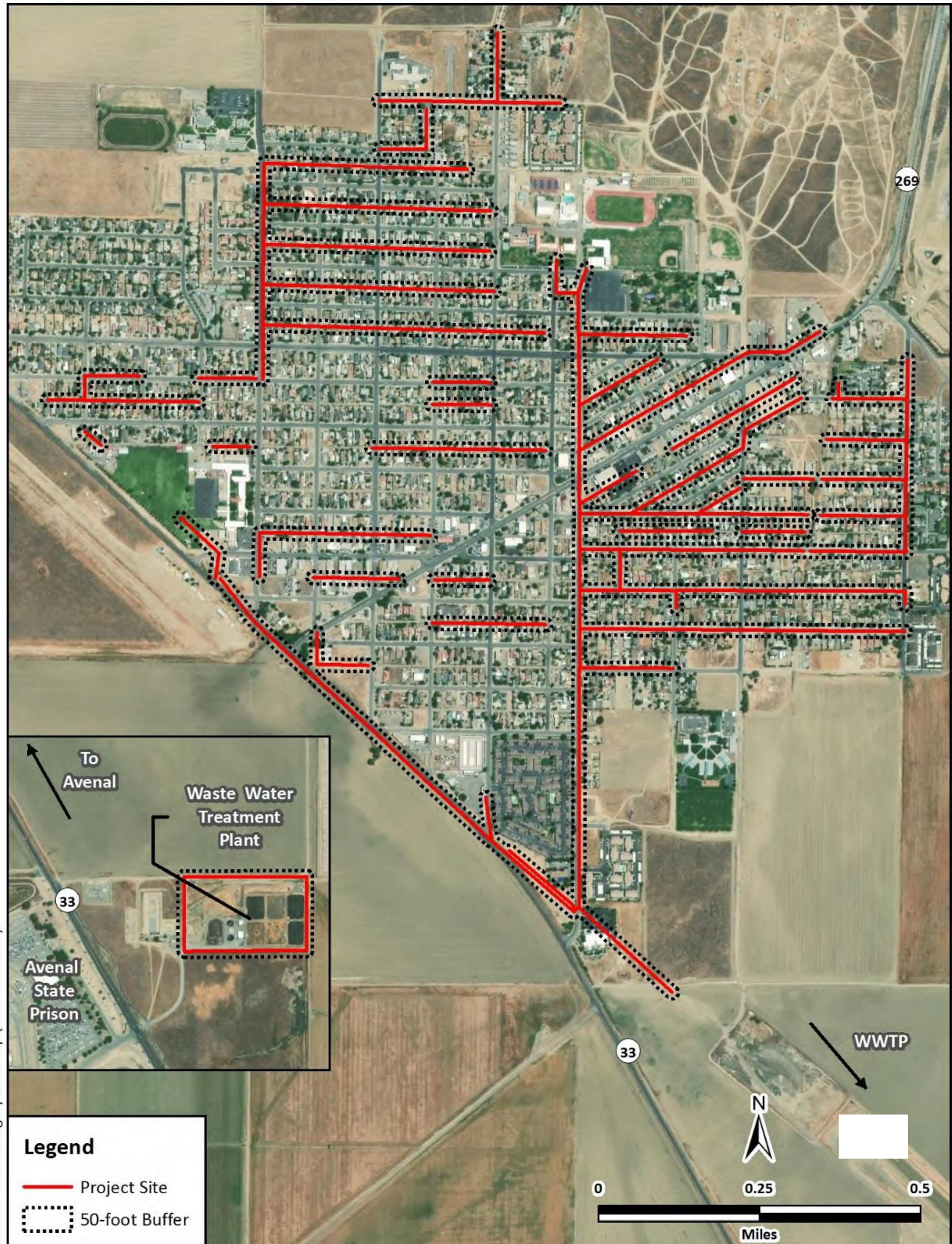


Figure 2 – Project Site Map



2.3 Project Background

The City owns and operates a City-wide sewer collection system and a WWTP under Waste Discharge Requirements (WDR) No. 5-00-231. The sewer collection system currently (as of 2019) serves 1,864 residences and 52 businesses. The City also provides sewer service to the Avenal State Prison.

The City's sewer collection system is aged and some of the older portions of the system experience frequent blockages, overflows and require cleaning or removal of roots. The physical condition of some of these sewer lines is believed to be very poor, likely beyond their life expectancy, and need to be replaced. Beyond the required maintenance and repair activities, there has not been any major replacement or rehabilitation of the City's sewer collection system to date.

A condition survey of the sewer collection system was conducted to document the system's existing condition, identify deficiencies, and estimate the useful life of the sewer mains. The current physical condition of the system's components was assessed through site-visits, discussion with City staff, and an comprehensive closed-circuit television (CCTV) inspection. As part of this preliminary engineering process, the City conducted a comprehensive CCTV inspection on the older portions of the sewer collection system.

The primary need for a sewer collection system improvement project is due to the significant deterioration of the sewer infrastructure. The City's maintenance staff regularly response to problems with the collection system as back-ups and overflows/spills and spends a great deal of their time locating and/or repairing the system in response to emergency calls from the City's residents. According to the results of the CCTV inspection, approximately 65 percent of the sewer lines inspected require either replacement or rehabilitation.

The major concerns related to health and safety are associated with the age and operating condition of the City's collection system. As stated above, the current state of the system is the cause of blockages and sewer system overflows (SSOs). There have been no formal Notices of Violation (NOV) from regulatory agencies concerning the City's sewer collection system. The recent CCTV inspection provided the best evidence of the poor condition of some segments of the sewer collection system which are responsible for most of the SSOs in the City. There are numerous public health and safety threats arising from SSOs onto the City's streets and residential properties. There are also significant health and safety risks for staff that is responsible for the cleanup and repair of the sewer lines.

2.4 Project Description

An Preliminary Engineering Report entitled “City of Avenal Sanitary Sewer Collection System and Wastewater Treatment Plant Improvements” was prepared by AM Consulting Engineers in August 2019 to address the needed improvements. Please refer to that document for specific project characteristics. A summary of Project activities is included herein.

Sewer Main Replacement and Rehabilitation

This Project will involve replacing or rehabilitating approximately 65,229 linear feet of existing sewer main pipeline within the City of Avenal and upgrading existing infrastructure at the WWTP. Sewer main improvements will consist of “in-kind” rehabilitation and replacements of the City’s gravity sewer mains. In order to ensure structural integrity of the sewer system, conventional “open-trench” construction methods will be used to replace the sewer mains that display pipe deformations, broken pipes, or sags greater than 60 percent of the pipe diameter. Sewer main replacement will involve traditional “open-trench” construction methods on approximately 41,073 linear feet of sewer main. Sewer main rehabilitation will involve trenchless, cured-in-place-pipe (CIPP) construction methods on approximately 24,156 linear feet of sewer main. Using this method will reduce the amount of ground disturbance and limit the number of traffic and pedestrian detours needed to complete the Project.

Improvements to the Existing WWTP

Upgrading infrastructure at the WWTP will involve (1) replacing manual valves at the plant’s headworks, (2) adding a screen for the headwork’s bypass, (3) replacing an oxidation basin outlet gate, (4) adding a variable frequency drive on a turbine, (5) rebuilding the gearbox on aerator #2, (6) replacing a valve to the south scum and drain pit, (7) recoating the clarifier and replace the sacrificial anodes, (8) replacing return activated sludge room valves, (9) adding rail mounted floats on the scum pit mixer, (10) installing a supervisory control and data acquisition auto dialer, and (11) adding an effluent flow meter and a new standby effluent pump. All repairs or upgrades at the WWTP will be completed within the existing footprint and will not involve new ground disturbance.

Construction methods

Pipe Bursting

Pipe bursting is a method by which the existing pipe is forced outward and opened by a bursting tool. In pipe bursting the existing pipe is used as a guide for inserting the expansion head (part of the bursting tool). The expansion head, typically pulled by a cable rod and winch,

increases the area available for the new pipe by pushing the existing pipe radially outward until it cracks. The bursting device pulls the new pipeline behind itself. During the pipe bursting process, the rehabilitated pipe segment must be taken out of service by rerouting flows around it. After the pipe bursting is completed, laterals are re-connected, typically by conventional excavation methods.

Cured-in-place Pipe (CIPP)

Cured-in-place method uses a flexible fiberglass fabric liner coated with a thermosetting polyester resin to form a new pipe inside an existing pipe. The liner is inserted into the existing pipe through existing manholes and cured to form a new liner. The fabric liner holds the resin in place until a tube is inserted in the pipe to be cured.

Installing new manholes will require: (1) excavating to the depth needed to install the new manhole to new or existing sewer main infrastructure, (2) installing the concrete manhole chamber, (3) connecting new or existing sewer mains, (4) backfill excavations, and (5) restoring the soil surface. Rehabilitating manholes will involve applying a polymer coating to the interior surface of the manhole chamber. Bringing manhole lids to grade will consist of installing a concrete riser column then restoring the soil surface to match the existing grade. Installing sealed or locking manhole lids will involve altering existing concrete collars to accommodate the new locking lids.

Project Schedule

Construction is expected to begin in February 2022 and end in February 2023.

2.5 Objectives

The primary objectives of the proposed project are as follows:

- The City of Avenal's primary objective is to provide adequate sewer services to its customers.
- The City of Avenal seeks to prevent system blockages and sewer overflows.
- The City seeks to operate the sewer distribution system and WWTP 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 Avenal.
- Regional Water Quality Control Board approval.
- State Water Board approval.

Chapter 3

IMPACT ANALYSIS

Initial Study Checklist

3.1 Environmental Checklist Form

Project title:

City of Avenal – Sanitary Sewer Collection System and Wastewater Treatment
Plant Improvements

Lead agency name and address:

City of Avenal
919 Skyline Boulevard
Avenal, CA 93204

Contact person and phone number:

Melissa Whitten, City Manager: (559) 386-5766
Alfonso Manrique, PE: (559) 473-1371

Project location:

See Section 2.1

Project sponsor's name/address:

City of Avenal

General plan designation:

Various, City-wide project

Zoning:

Various, City-wide project

Description of project:

See Section 2.3

Surrounding land uses/setting:

See Section 2.2

**Other public agencies whose approval or consultation is required (e.g., permits,
financing approval, participation agreements):**

See Section 2.5

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 Native American Heritage Commission was contacted, requesting a contact list of applicable Native American Tribes, which was provided. Letters were provided to the listed Tribes, notifying them of the Project and requesting consultation, if desired. A Tribal representative from Santa Rosa Rancheria requested that a Tribal monitor be present during construction activities. See Section 3.17 – Tribal Cultural Resources for more information.

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.

Melissa Whitten, City Manager

City of Avenal

Date

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 type="checkbox"/>	<input checked="" 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. The proposed Project involves upgrades to a sewer collection system that will include installing underground sewer main pipelines and constructing minor improvements to the existing WWTP. Views of surrounding areas will not be impacted by the project, since the majority of the finished work will be below grade. Any replacement of at-grade structures such as those at the WWTP will be similar to existing facilities and will not introduce new features that are not already

common to the built environment along the existing sewer collection system. As such, the proposed Project will not impede any scenic vistas.

Construction activities will occur over a 12-month period and will be visible from the adjacent residences, businesses and roadsides; however, the construction activities will be temporary in nature and will not affect a scenic vista, as described above. There will be *no impact*.

There are no state designated scenic highways within the vicinity of the proposed Project site.¹ The proposed Project would not damage any trees, rock outcroppings or historic buildings within a State scenic highway corridor. There is *no impact*.

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 majority of the work (proposed pipelines) will be installed underground. The pipelines will not be visible once installed and thus would not degrade the existing visual character of the area. Any replacement of at-grade structures such as those at the existing WWTP will be similar to existing facilities and will not introduce new features that are not already common to the built environment along the existing sewer collection system. Construction activities will be seen by the residences and businesses within the immediate vicinity and by vehicles driving in the City; however, construction activities will be temporary.

As such, the proposed Project will not substantially degrade the existing visual character or quality of the area or its surroundings.

The impact will be *less than significant*.

Mitigation Measures: None are required.

- d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

¹ California Department of Transportation. California Scenic Highway Mapping System. Kings County.
<https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways>. Accessed December 2019.

No Impact. Currently the sources of light in the project area are from building lights, the vehicles traveling along surrounding roads, and some security lighting at nearby businesses and some residences. No lighting will be associated with pipeline installation. Accordingly, the proposed Project would not create substantial new sources of light or glare. There is *no impact*.

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 proposed Project includes the installation of new and replacement sewer mains and associated appurtenances at the WWTP within the City limits of Avenal. The pipeline and associated infrastructure will largely occur within the existing right of way and will be installed underground. The purpose of the Project is to improve the existing Avenal's sewer infrastructure and does not have the potential to result in the conversion of farmland to non-agricultural uses or forestland uses to non-forestland.

There are no agricultural lands in the City under a Williamson Act Contract. The proposed Project does not include land under a Williamson Act Contract. No conversion of forestland, as defined under Public Resource Code or General Code, as referenced above, would occur as a result of the proposed Project.

No land conversion from farmland or forest land would occur as a result of the proposed Project. The proposed Project includes new sewer mains, largely within the existing right-of-way. All improvements will take place within an area that is built up with rural and urban uses. As such, the proposed Project does not have the potential to result in the conversion of Farmland to non-agricultural uses or forestland uses to non-forestland. There is *no impact*.

Mitigation Measures: None are required.

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 San Joaquin Valley Air Basin (SJVAB) is designated nonattainment of state and federal health based air quality standards for ozone and PM_{2.5}. The SJVAB is designated nonattainment of state PM₁₀.² 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);

² San Joaquin Valley Air Pollution Control District. Ambient Air Quality Standards & Valley Attainment Status. <http://www.valleyair.org/aqinfo/attainment.htm>. Accessed December 2017.

- 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.

As discussed below, predicted construction and operational emissions would not exceed the SJVAPCD's significance thresholds for ROG, NO_x, 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. Additionally, the Project would comply with all applicable rules and regulations.

The nonattainment pollutants for the SJVAPCD are ozone, PM₁₀ and PM_{2.5}. Therefore, the pollutants of concern for this impact are ozone precursors, regional PM₁₀, and PM_{2.5}. Ozone is a regional pollutant formed by chemical reaction in the atmosphere, and the Project's incremental increase in ozone precursor generation is used to determine the potential air quality impacts, as set forth in the GAMAQI.

The annual significance thresholds to be used for the Project emissions are as follows³:

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

Neither the pipeline nor the improvements at the existing wastewater treatment plant will generate emissions once they are constructed. The estimated annual construction emissions are shown below. The Sacramento Metropolitan Air Quality Management District's Road Construction Emissions Model,

³ 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 December 2019.

Version 8.1.0 was utilized to estimate emissions generated from project construction. Modeling results are provided in Table 1 and the Road Construction Emissions Model output files are provided in Appendix A.

Table 1
Proposed Project Construction Emissions

Pollutant/ Precursor	Construction Emissions (tpy)	Threshold/ Exceed?
CO	5.98	100/ N
NO_x	7.20	10/ N
ROG	0.76	10/ N
SO_x	0.01	27/ N
PM₁₀	5.95	15/ N
PM_{2.5}	1.47	15/ N
CO_{2e}	1061.88	n/a

The nearest sensitive receptors to the proposed Project site are the residential houses located along the proposed pipeline alignment, as an objective of the project is to improve the sewer system City-wide.

Construction would take place within the vicinity of sensitive receptors, however, construction emissions would be below SJVAPCD thresholds and be temporary in nature. Therefore, the relatively small amount of emissions generated and the short duration of the construction period would not expose sensitive receptors to substantial pollutant concentrations.

Because the Project will not exceed any established air emission thresholds, does not result in a cumulatively considerable net increase of any criteria pollutant, and does not significantly impact sensitive receptors, the impact is determined to be *less than significant*.

Mitigation Measures: None are required.

- d. 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 new 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input 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:

- 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?
- 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?

Less Than Significant Impact With Mitigation. A Biological Resource Evaluation (BRE) was prepared for the proposed Project in October 2019 by Colibri Ecological Consulting, LLC (CEC). The BRE is included as 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, multiple field surveys were conducted as described herein. The results of the BRE are summarized as follows:

Environmental Setting

The Project site is synonymous with the City of Avenal and consists of residential and commercial development, paved streets, and dirt alleyways. The Project site also includes the existing WWTP south

of the City, which supports disturbed (dirt and gravel) land cover surrounded by fallow agriculture and a ruderal field to the south. The Project site in the City is bordered by agricultural development on all sides, a small airport to the south, and a small patch of disturbed, nonnative grassland to the north. The WWTP is bordered by fallowed agricultural development and a solar farm to the north and east, a private gun range to the west, and a ruderal field to the south that supports weeds including mainly tumbleweed and mustard.

Desktop Review

The United States Fish & Wildlife Service (USFWS) species list for the Project site included 13 species listed as threatened or endangered under the FESA (USFWS 2019a, Table 1, Appendix A of Appendix B). None of those species could occur on or near the Project site due to either a lack of habitat, the Project site being outside the current range of the species, or the presence of development that would otherwise preclude occurrence (Table 1 of Appendix B). As identified in the species list, the Project site does not occur in USFWS-designated Critical Habitat for any species (USFWS 2019a, Appendix A of Appendix B).

Searching the California Natural Diversity Database (CNDDDB) for records of special-status species from within the Kettleman Plain 7.5- minute USGS topographic quad and the eight surrounding quads produced 198 records of 37 species (Table 1, Appendix B). Of those 37 species, five are not considered further because state or federal regulatory agencies or special interest groups do not recognize them through special designation (Appendix B). Of the remaining 32 species, 17 are known from within 5 miles of the Project site (Table 1, Figure 4 of Appendix B). Of those 17 species, four could occur on or near the Project site. In addition, Swainson's hawk (*Buteo swainsoni*), which was identified outside the 5- mile radius but within the CNDDDB 9-quadrant search, could also occur on or near the Project site. All other special-status species are considered absent because the Project site is outside their current known range, the property lacks habitat for them, they were not detected during the reconnaissance survey, or a combination thereof.

Searching the CNPS inventory of rare and endangered plants of California yielded 23 species (CNPS 2019, Appendix C of Appendix B), 13 of which have of a CRPR of 1B (Table 1 of Appendix B). None of those species are expected to occur on or near the Project site due to lack of habitat.

Reconnaissance Survey

CEC Staff Scientists Christopher Winchell and Kristofer Robison conducted field reconnaissance surveys of the Project site on October 1, 2019. The Project site and a 50- foot buffer surrounding the Project site was walked and thoroughly inspected to evaluate and document the potential for the site to support federally or state-protected resources. All plants except those under cultivation or planted in residential 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) and as defined by the CDFW.

A total of 45 plant species (16 native and 30 nonnative) were found during the reconnaissance survey (Table 2 of Appendix B). Twenty bird species, three mammal species, and one lizard species were also detected (Table 2 of Appendix B).

Effects Determinations

Critical Habitat

The BRE concludes the Project will have no effect on critical habitat as no critical habitat has been designated or proposed in the survey area.

Special-Status Species

As identified in the BRE, the Project may affect but is not likely to adversely affect the state-listed as threatened Swainson's hawk, the federally listed as endangered and state-listed as threatened San Joaquin kit fox, or two California Species of Special Concern: burrowing owl and American badger. The Project is not expected to affect any other special-status species due to the lack of habitat or known occurrence records for those species near the Project site. These species are discussed further herein.

Migratory Birds

The BRE concludes the Project may affect but is not likely to adversely affect nesting migratory birds.

Regulated Habitats

The BRE concludes the Project will have no effect on regulated habitats. Although one such regulated habitat was identified in the survey area, no impacts to that feature are anticipated.

Direct and Indirect Impacts

The Project could adversely effect, either directly or through habitat modifications, several special-status animals that occur or may occur on or near the Project site. Construction activities such as excavating, trenching, or using other heavy equipment that disturbs or harms a special-status species or substantially modifies its habitat could constitute a significant impact. Therefore, Mitigation Measures BIO-1–BIO-4 (below) will be included in the conditions of approval to reduce the potential impact to a less than-significant level.

Mitigation Measures:

BIO – 1 Protect San Joaquin Kit Fox

1. To protect San Joaquin kit fox, a qualified biologist shall conduct a preconstruction survey to identify potential dens (burrows larger than 4 inches in diameter) in suitable land cover types. If potential San Joaquin kit fox dens are present, their disturbance and destruction shall be avoided. If occupied or potentially occupied San Joaquin kit fox dens are adjacent to the work area, exclusion zones shall be implemented following USFWS procedures. Exclusion zones shall be determined based on the type of den and current use: Potential Den—50 feet; Known Den—100 feet; Natal or Pupping Den—to be determined on a case-by-case basis in coordination with USFWS and CDFW. All pipes greater than 4 inches in diameter stored on the construction site shall be capped, and exit ramps shall be installed in trenches and other excavations to avoid direct mortality. When possible, construction shall be conducted outside of the breeding season from October 1 to November 30. U.S. Fish and Wildlife Service Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior or During Ground Disturbance (USFWS 2011) shall also be followed.

BIO – 2 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 – 3 Protect burrowing owls

1. Conduct focused burrowing owl surveys to assess the presence/absence of burrowing owl in accordance with guidance set forth by the California Department of Fish and Wildlife Staff Report on Burrowing Owl Mitigation (CDFG 2012).
2. If a burrowing owl or the positive sign of burrowing owl use (i.e., feathers, scat, pellets) is detected on or within 500 feet of the Project site, and a qualified biologist determines that Project activities would disrupt the owl(s), a construction-free buffer, limited operating period, or passive relocation shall be implemented in consultation with the CDFW.

BIO – 4 Protect American badger

1. To protect American badger, a qualified biologist shall conduct a pre-construction survey in suitable land cover types. If American badger activity (dens, digging, or direct observation) is detected, the qualified biologist shall establish an exclusion zone of 50 feet between active dens and the work area. Exclusion fencing shall be installed around the work area to prevent American badgers from entering. If a 50-foot exclusion zone cannot be established, a site-specific plan shall be developed by the qualified biologist to minimize the potential to affect the survival or reproductive success of American badger.
- 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 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. 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 could 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. Therefore, mitigation measure BIO-5 (below) be included in the conditions of approval to reduce the potential impact to a less-than-significant level.

Mitigation Measures:

BIO – 5 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 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.
- 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. There are no local policies or ordinances that the Project will conflict with. 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input 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 type="checkbox"/>	<input checked="" 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?

Less Than Significant Impact With Mitigation. The proposed Project involves replacing 41,073 linear feet of gravity sewer mains using the conventional dig and replace construction method; rehabilitating 24,156 linear feet of gravity sewer mains using the trenchless cured-in-place pipeline (CIPP) method; and miscellaneous repairs to the WWTP. The repairs to WWTP are minor with no excavation involved.

The Project area of potential effect (APE) is entirely within existing, previously disturbed ROWs. All access, staging, laydown and work areas will be within these ROWs. With the exception of a segment of the main collection pipeline running to the WWTP, these ROWs are currently paved. The horizontal APE for the project, approximately 12.35-mi long and 45-ft wide, is about 67 acres (ac) in total area. The vertical area, consisting of the maximum depth of excavation, is 6 feet.

Methodology

To meet State and federal requirements, the City retained ASM Affiliates, Inc. (ASM) to conduct background research, complete a records search, request a search of the Native American Heritage Commission's Sacred Lands File and reach out to appropriate Native American contacts, conduct a cultural resources survey, and prepare a technical report, dated December 2019 (see Appendix C). The results of the Report are summarized herein and were used to support the determinations made in this CEQA document.

Native American Outreach

A Sacred Lands File Request was submitted to the Native American Heritage Commission (NAHC) who provided a list of applicable Native American Tribes. Tribal organizations on the NAHC contact list were sent letters requesting their concerns or the opportunity to consult on the project in September - October 2019. Follow-up phone calls were also made. One comment was received: the Santa Rosa Rancheria – Tachi Yokuts requested that a tribal monitor be present during ground-surface disturbance due to the potential sensitivity of the study area. The City will continue its outreach and coordination efforts with the Tribe pertaining to a Tribal monitor on-site.

Records Search and Site-Specific Research

A records search of site files and maps was conducted at the Southern San Joaquin Valley Archaeological Information Center, California State University, Bakersfield. A Sacred Lands File Request was also completed by the Native American Heritage Commission (NAHC). These investigations determined that the study area had not been previously surveyed in its entirety and that no cultural or tribal cultural resources had been recorded within it (See Appendix C). However, there were three previous studies that covered some portions of the Project APE, but no cultural resources were identified or documented within those studies.

Pedestrian Survey

The Phase I survey fieldwork was conducted with transects walked on both sides of the roads where Project activities would occur. A segment of the main sewer collection line running to the WWTP also crosses open fields. Two parallel 15 meter (m) wide transects were walked along this segment. No cultural resources of any kind were discovered during the survey. Based on these results, the Project does not have the potential to result in significant impacts to historical resources, and no additional archaeological work is recommended.

RESPONSES

The Project is subject to the California Environmental Act (CEQA), which holds municipal and state agencies accountable for impacts to the cultural environment. If a project has the potential to cause substantial adverse change in the characteristics of an important cultural resource, known as a “historical resource” under CEQA—either through demolition, destruction, relocation, alteration, or other means—then the project is judged to have a significant impact on the environment (CEQA Guidelines, Section 15064.5[b]). Section 15064.5(a) of the CEQA Guidelines (as amended) defines a historical resource as one that: (1) is listed or determined eligible for listing in the California Register of Historical Resources (California Public Resources Code [PRC] Section 5024.1; Title 14, California Code of Regulations [CCR], Section 4852); (2) is included in a local register of historical resources (pursuant to Section 5020.1[k]) of the PRC or identified as significant in a historical resources survey per the California Register eligibility criteria (PRC 5024.1[c]); or (3) is considered eligible by a lead agency under PRC 5020.1(j) or 5024.1. The definition subsumes a variety of resources, including prehistoric and historical archaeological sites, as well as built-environment resources, such as buildings, structures, and objects (CEQA Guidelines Section 15064.5[a][3] and Section 15064.5[c]). Given that the project will involve ground-disturbing activities and demolition, it has the potential to impact historical resources, if present, within the Project area.

In addition, because the proposed Project will be funded through the State Water Resources Control Board Safe Drinking Water State Revolving Fund, a joint federal-state program, it is federal undertaking per Title 36, Code of Federal Regulations, Section 800.16(y) subject to Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (Title 54, U.S. Code, Section 306108). As such, the lead federal agency must consider whether a project will have an adverse effect on historic properties (i.e., resources that are eligible for inclusion on the National Register of Historic Places) within the Project Area of Potential Effects (APE).

Human Remains

Section 7050.5 of the California Health and Safety Code states that in the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the remains are discovered has determined whether or not the remains are subject to the coroner’s authority. If the human remains are of Native American origin, the coroner must notify the Native American Heritage Commission within 24 hours of this identification. The Native American Heritage Commission will identify a Native American Most Likely Descendant (MLD) to inspect the site and provide recommendations for the proper and dignified treatment of the remains and associated grave artifacts.

Paleontological Resources

Paleontological resources are the fossilized remains of plants and animals and associated deposits. The Society of Vertebrate Paleontology has identified vertebrate fossils, their taphonomic and associated environmental indicators, and fossiliferous deposits as significant nonrenewable paleontological resources. Botanical and invertebrate fossils and assemblages may also be considered significant resources.

CEQA requires that a determination be made as to whether a project would directly or indirectly destroy a unique paleontological resource or site or unique geological feature (CEQA Appendix G(v)(c)). If an impact is significant, CEQA requires feasible measures to minimize the impact (CCR Title 14(3) §15126.4 (a)(1)). California Public Resources Code §5097.5 (see above) also applies to paleontological resources.

a. Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

Less than Significant Impact with Mitigation. As described in the Cultural Resources Report, the records search, background historical research, Native American outreach and a pedestrian survey revealed that no cultural or historical resources occur on the Project site or in the Project area.

Unidentified cultural or historical resources could be uncovered during proposed Project construction which could result in a potentially significant impact; however, implementation of Mitigation Measure CUL-1 would ensure that significant impacts remain *less than significant with mitigation incorporation*.

Mitigation Measures:

CUL – 1 In the event that archaeological remains are encountered at any time during development or ground-moving activities within the entire Project area, all work in the vicinity of the find should be halted until a qualified archaeologist can assess the discovery and take appropriate actions as necessary.

b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Less than Significant Impact with Mitigation. The possibility exists that subsurface construction activities may encounter undiscovered archaeological resources. This would be a potentially significant impact. Implementation of Mitigation Measure CUL-1 would require inadvertently discovery practices to be implemented should previously undiscovered archeological resources be located. As such, impacts to undiscovered archeological resources would be *less than significant with mitigation incorporation*.

c. Disturb any human remains, including those interred outside of formal cemeteries?

Less than Significant Impact. Although unlikely given the highly disturbed nature of the site and the records search did not indicate the presence of such resources, subsurface construction activities associated with the proposed Project could potentially disturb previously undiscovered human burial sites. Accordingly, this is a potentially significant impact. The California Health and Safety Code Section 7050.5 states that if human remains are discovered on-site, no further disturbance shall occur until the Merced County Coroner has made a determination of origin and disposition. If the Coroner determines that the remains are not subject to his or her authority and if the Coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the NAHC. The NAHC shall identify the person or persons it believes to be the “most likely descendant” (MLD) of the deceased Native American. The MLD may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resource Code Section 5097.98.

Although considered unlikely subsurface construction activities could cause a potentially significant impact to previously undiscovered human burial sites, however compliance with regulations would reduce this impact to *less than significant*.

Mitigation Measures: None are required.

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 sewer collection system and to the existing WWTP. 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 be minimal, as the pipelines do not require energy once they are installed. Operational energy would also be consumed during each vehicle trip associated with the proposed use for maintenance or otherwise.

As discussed in Impact XVII – Transportation/Traffic, the proposed Project would not generate on-going daily vehicle trips, other than for maintenance. 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 operation.

Therefore, any impacts are *less than significant*.

Mitigation Measures: None are required.

VII. GEOLOGY AND SOILS

Would the project:

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.

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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ii. Strong seismic ground shaking?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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iii. Seismic-related ground failure, including liquefaction?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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iv. Landslides?

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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b. Result in substantial soil erosion or the loss of topsoil?

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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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 checked="" type="checkbox"/>	<input type="checkbox"/>
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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"/>
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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"/>
--------------------------	--------------------------	--------------------------	-------------------------------------

- 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. Expose people or structures to 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.

Less Than Significant Impact. The City of Avenal is located in a seismically active area and there is potential for seismic activity in the Project area. No active or potentially active faults have been mapped within the City of Avenal and the Project area does not lie within a State-designated Alquist-Priolo Earthquake Fault Zone. The lack of mapped active and potentially active faults notwithstanding, the Project area could be subjected to strong ground shaking during an earthquake on a nearby fault such as the thrust fault to the east along the Kettleman Hills anticline and the San Andreas Fault to the southwest. However, the safety risk to people resulting from seismic activity would be significantly decreased by mandatory adherence to all relevant building codes, including the California Building Code (CBC) requirements, adopted by reference in the Avenal Municipal

Code. In addition, the Project does not include any habitable structures. Any impacts would be *less than significant*.

Mitigation Measures: None are required.

- a (ii-iv). Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking, liquefaction or landslides?

Less than Significant Impact. The proposed Project site is not in an area recognized for severe seismic ground shaking, landslides or liquefaction. Additionally, the project does not include the construction of substantial structures that would expose people or structures to adverse effects involving rupture of a known earthquake fault. Impacts 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. The proposed Project site has a varied topography, but does not include any Project features that would result in substantial soil erosion or loss of topsoil. Most of the project components will be located below grade. Once construction is completed, the pipeline trenches will be returned to pre-construction conditions and will not result in soil erosion greater than existing conditions. Therefore, the impact is *less than significant*.

Mitigation Measures: None are required.

- 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?

Less than Significant Impact. As described in Impact VI (aii-aiv), the potential for landslides, liquefaction, settlement or other seismically related hazards is low. As such, any impacts will be *less than significant*.

Mitigation Measures: None are required.

- 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. As described above, the potential for hazard from landslide and liquefaction in the project area is low. Therefore, the potential for liquefaction induced lateral spreading is also low. Causes of soil instability include, but are not limited to, withdrawal of groundwater, pumping of oil and gas from underground, liquefaction, and hydro-compaction.⁴ The proposed Project does not include the on-site withdrawal of groundwater and the project site is not located in an area that has been subjected to activities that might cause soil instability. Because the Project site has not been subject to activities that may cause soil instability, the risk of subsidence or collapse is expected to be low. 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?

Less Than Significant Impact. The Project itself is a sewer collection system project. The proposed Project would not generate wastewater requiring disposal. No septic tanks or alternative waste water disposal systems are included in the proposed Project. The project has been designed to work with the soil types in the City. Therefore, there would be a *less than significant 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. Paleontological resources are the fossilized remains of plants and animals and associated deposits. The Society of Vertebrate Paleontology has identified vertebrate fossils, their taphonomic and associated environmental indicators, and fossiliferous deposits as significant nonrenewable paleontological resources. Botanical and invertebrate fossils and assemblages may also be considered significant resources.

⁴ USGS. California Water Science Center. Land Subsidence: Cause & Effect. https://ca.water.usgs.gov/land_subsidence/california-subsidence-cause-effect.html. Accessed August 2018.

CEQA requires that a determination be made as to whether a project would directly or indirectly destroy a unique paleontological resource or site or unique geological feature (CEQA Appendix G(v)(c)). If an impact is significant, CEQA requires feasible measures to minimize the impact (CCR Title 14(3) §15126.4 (a)(1)). California Public Resources Code §5097.5 (see above) also applies to paleontological resources.

There are no unique geological features or known fossil-bearing sediments in the vicinity of the proposed Project site. However, there remains the possibility for previously unknown, buried paleontological resources or unique geological sites to be uncovered during subsurface construction activities. Implementation of Mitigation Measure CUL-1 would require inadvertently discovery practices to be implemented should previously undiscovered paleontological resources be located. As such, impacts to undiscovered paleontological resources would be *less than significant*.

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

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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 proposed Project would generate exhaust-related GHG emissions during construction resulting from construction equipment operation, material haul and delivery trucks, and by trips by construction worker vehicles. Construction-related GHG emissions would occur for approximately twelve months and would cease following completion of the Project. The proposed Project is not a land-use development project that would generate vehicle trips and is not a roadway capacity increasing project that could carry additional VMT. Therefore, the proposed Project would not result in a net increase in operational GHG emissions. As such, the proposed Project would not interfere or obstruct implementation of an applicable GHG emissions reduction plan. The proposed Project would be consistent with all applicable local plans, policies, and regulations for reducing GHG emissions. Any impacts related to GHG emissions would be *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 checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input 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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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 trenching 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 little or no hazardous materials. Once operational, the pipelines are sealed and will not emit hazardous materials. Since the Project is intended to improve the existing deteriorated sewer system, it is assumed to have a positive impact by reducing the number of pipeline breaks/leaks or other issues that may result in the release of hazardous materials.

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?

Less Than Significant Impact. Some spot repairs to the sewer system may occur within one-quarter mile of schools within the City. As previously described, long-term operation of the proposed Project would involve little or no hazardous materials. Once operational, the pipelines are sealed and will not emit hazardous materials. Since the Project is intended to improve the existing deteriorated sewer system, it is assumed to have a positive impact by reducing the number of pipeline breaks/leaks or other issues that may result in the release of hazardous materials.

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?

No Impact. The proposed Project site is not located on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.⁵ The only site within City limits in the database is a location near Reef-Sunset Elementary School. However, the site investigation has been closed and no further action is necessary. The Project is not impacted by the site and as such, 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?

Less Than Significant Impact. There are no public use airports in the City. The Avenal Airport is a private airstrip located in the southwest portion of the City along SR 33. As previously described, the Project does not include any above-grade structures and as such has *a less than significant impact* on any airport operations.

Mitigation Measures: None are required.

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

⁵ California Department of Toxic Substance Control. EnviroStor. <https://www.envirostor.dtsc.ca.gov/public/map/?myaddress=Avenal+City>. Accessed August 2018.

Less Than Significant Impact. Pipeline installation will be temporary in nature and will not cause any road closures that could interfere with any adopted emergency response or evacuation plan. Construction schedules pertaining to pipelines within roadways will be coordinated with sheriff/fire/emergency services. Adequate emergency access will be maintained at all times. 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. 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 City owns and operates a City-wide sewer collection system and a WWTP under Waste Discharge Requirements (WDR) No. 5-00-231. The sewer collection system currently (as of 2019) serves 1,864 residences and 52 businesses. The City also provides sewer service to the Avenal State Prison.

The proposed Project includes improvements to the sewer infrastructure system and some minor upgrades to the existing WWTP. The Project does not include any expansion of wastewater treatment facilities or processes that would result in the production of chemicals or substances that would adversely impact local water quality beyond existing conditions. The Project is intended to rehabilitate/replace a deteriorating sewer collection system and to upgrade the existing WWTP. The Project will not result in any additional water releases that could potentially impact groundwater or water quality. The State Water Resources Control Board will have ultimate review and approval of the upgraded system, thereby ensuring adequate water quality standards. The City is currently in compliance and has not received any notices of violation. There are no aspects of the Project that would result in changes to waste discharge requirements. 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 Project is an upgrade to the existing sewer collection system and will not use additional groundwater beyond what is already being used by the City. Additionally, the proposed Project will not significantly interfere with groundwater recharge as it will not introduce new impermeable surfaces. As such, any impacts to groundwater supplies will be *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 improvements to the existing community sewer system will introduce no new non-permeable surfaces. The pipelines and other improvements will be installed within the existing road right-of-way, or other easements and will not alter any existing drainage patterns. There are no waterways in the immediate vicinity of the proposed Project. Any impacts 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:

- Physically divide an established community?
- 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. The proposed Project is located largely within the existing streetscape within the City of Avenal as presented in Figure 2. The construction of the sewer lines and appurtenances would not cause any land use changes in the surrounding vicinity nor would it divide an established community. Once construction is completed, disturbed ground will be restored. The proposed Project involves improvements to the existing sewer infrastructure system and does not conflict with any land use plans, policies or regulations. *No impacts* would occur as a result of Project implementation.

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. The proposed Project includes improvements to the existing sewer infrastructure system. Construction will take place within the existing streetscape and not in an area with known mineral resources. 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 proposed Project would be the residences along the existing pipeline alignment, as presented in Figure 2. Project construction would involve temporary, short-term noise sources including site preparation and installation of the pipeline and site cleanup work is expected to last for approximately one year. Construction-related short-term, temporary noise levels would be higher than existing ambient noise levels in the Project area, but is temporary and would not occur after construction is completed.

Operations-related noise would be similar to existing conditions. The pipelines themselves do not emit noise, nor do the related improvements such as those to the manholes. As such, any impacts to sensitive receptors would be less than significant.

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.⁶ 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.

- 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?

No Impact. There are no public use airports in the City. The Avenal Airport is a private airstrip located in the southwest portion of the City along SR 33. As previously described, the Project does not include any above-grade structures and as such has *no impact* on or from noise associated with airport operations.

Mitigation Measures: None are required.

⁶ 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:

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)?

Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
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b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

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Responses:

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)?

b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

Less Than Significant Impact. There are no new homes or businesses associated with the proposed Project, nor would Project implementation displace people or housing. The proposed Project is needed to improve existing sewer infrastructure. 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?

No Impact. The proposed Project would improve the existing community sewer system. The proposed Project would not directly or indirectly induce population growth and the City's Fire Department would continue to provide service to the site. There is *no impact*.

Police Protection?

No Impact. The proposed Project will continue to be served by the City's police department. No additional police personnel or equipment is anticipated. There is *no impact*.

Schools, Parks, Other Public Facilities?

No Impact. The proposed Project would not increase the number of residents in the City, as the Project does not include residential units. Because the demand for schools, parks, and other public facilities is driven by population, the proposed Project would not increase demand for those services. As such, the proposed Project would result in *no impacts*.

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 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 would not cause a substantial increase in traffic, reduce the existing level of service, create any additional congestion at any intersections, or be inconsistent with CEQA Guidelines Section 15064.3. The construction of pipelines and appurtenances will not generate any additional traffic (beyond construction-related traffic trips) and as such, level of service standards would not be exceeded. 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. Construction schedules pertaining to pipelines within roadways will be coordinated with police/fire/emergency services. Adequate emergency access will be maintained at all times.

Once installed, the new pipelines would not generate significant additional traffic trips per day, other than as needed for periodic maintenance. 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.

A Sacred Lands File Request was submitted to the Native American Heritage Commission (NAHC) who provided a list of applicable Native American Tribes. Tribal organizations on the NAHC contact list were sent letters requesting their concerns or the opportunity to consult on the project in September - October 2019. Follow-up phone calls were also made. One comment was received: the Santa Rosa Rancheria – Tachi Yokuts requested that a tribal monitor be present during ground-surface disturbance due to the potential sensitivity of the study area. The City will continue it's outreach and coordination efforts with the Tribe pertaining to a Tribal monitor on-site. Refer to the Phase I Cultural Resources Survey in Appendix C for more information.

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 type="checkbox"/>	<input checked="" 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. The City owns and operates a City-wide sewer collection system and a WWTP under Waste Discharge Requirements (WDR) No. 5-00-231. The sewer collection system currently (as of 2019) serves 1,864 residences and 52 businesses. The City also provides sewer service to the Avenal State Prison. The proposed Project includes improvements to the City's existing sewer collection system and minor upgrades to the existing WWTP, the results of which would not exceed any wastewater treatment requirements set by the Regional Water Quality Control Board. The Project does not include any expansion of wastewater treatment facilities or processes. The Project is intended to rehabilitate/replace a deteriorating sewer collection system. The environmental impacts of the proposed project 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?

No Impact. The proposed Project includes improving the existing sewer collection system. No new water supplies would be required as a result of this 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. The proposed Project includes improvements to the City's existing sewer collection system and minor upgrades to the existing WWTP, the results of which would not require additional wastewater treatment capacity. The Project does not include any expansion of wastewater treatment facilities or processes. The Project is intended to rehabilitate/replace a deteriorating sewer collection system.

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 Project will not generate waste on an on-going basis and 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:

- Substantially impair an adopted emergency response plan or emergency evacuation plan?
- 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 areas that have been developed with urban uses. The proposed Project includes improvements to the City's existing sewer collection system, which will include underground pipelines and minor upgrades to the existing WWTP. There is no increased risk or on-going risk of wildfire beyond existing conditions associated with the Project.

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:

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

Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
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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 City of Avenal – Sanitary Sewer Collection System and Wastewater Treatment Plant Improvements 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)
Biological Resources				
BIO – 1 Protect San Joaquin Kit Fox 1. To protect San Joaquin kit fox, a qualified biologist shall conduct a preconstruction survey to identify potential dens (burrows larger than 4 inches in diameter) in suitable land cover types. If potential San Joaquin kit fox dens are present, their disturbance and destruction shall be avoided. If occupied or potentially occupied San Joaquin kit fox dens are adjacent to the work area, exclusion zones shall be implemented following USFWS procedures. Exclusion zones shall be determined based on the type of den and current use: Potential Den—50 feet; Known Den—100 feet; Natal or Pupping Den—to be determined on a case-by-case basis in coordination with USFWS and CDFW. All pipes greater than 4 inches in diameter stored on the construction site shall be capped, and exit ramps shall be installed in trenches and other excavations to avoid direct mortality. When possible, construction shall be conducted outside of the breeding season from October 1 to	City of Avenal	Prior to and/or during construction	City of Avenal and construction contractor	

Mitigation Measure	Party responsible for Implementing Mitigation	Implementation Timing	Party responsible for Monitoring	Verification (name/date)
November 30. U.S. Fish and Wildlife Service Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior or During Ground Disturbance (USFWS 2011) shall also be followed.				
BIO – 2 Protect nesting Swainson’s hawks <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. 	City of Avenal	Prior to and/or during construction	City of Avenal and construction contractor	

Mitigation Measure	Party responsible for Implementing Mitigation	Implementation Timing	Party responsible for Monitoring	Verification (name/date)
<p>BIO – 3 Protect burrowing owls</p> <ol style="list-style-type: none"> 1. Conduct focused burrowing owl surveys to assess the presence/absence of burrowing owl in accordance with guidance set forth by the California Department of Fish and Wildlife Staff Report on Burrowing Owl Mitigation (CDFG 2012). 2. If a burrowing owl or the positive sign of burrowing owl use (i.e., feathers, scat, pellets) is detected on or within 500 feet of the Project site, and a qualified biologist determines that Project activities would disrupt the owl(s), a construction-free buffer, limited operating period, or passive relocation shall be implemented in consultation with the CDFW. 	City of Avenal	Prior to and/or during construction	City of Avenal and construction contractor	
<p>BIO - 5: Protect nesting birds.</p> <ol style="list-style-type: none"> 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 	City of Avenal	Prior to and/or during construction	City of Avenal and construction contractor	

Mitigation Measure	Party responsible for Implementing Mitigation	Implementation Timing	Party responsible for Monitoring	Verification (name/date)
<p>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.</p>				
Cultural Resources				
Measure CUL - 1	City of Avenal	Prior to and/or during construction	City of Avenal and construction	

Mitigation Measure	Party responsible for Implementing Mitigation	Implementation Timing	Party responsible for Monitoring	Verification (name/date)
In the event that archaeological remains are encountered at any time during development or ground-moving activities within the entire Project area, all work in the vicinity of the find should be halted until a qualified archaeologist can assess the discovery and take appropriate actions as necessary.			contractor	

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
- Angela Costanzo

Colibri Ecological Consulting, LLC.

- Jeff Davis

ASM Affiliates

- David Whitley, Ph.D., RPA

Appendices

Appendix A

Air Emission Output Tables

Road Construction Emissions Model, Version 9.0.0

Daily Emission Estimates for -> Avenal Sewer System Improvement Project														
Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	2.77	20.84	21.97	51.02	1.02	50.00	11.29	0.89	10.40	0.05	4,246.99	0.73	0.08	4,290.28
Grading/Excavation	7.70	59.01	77.70	53.46	3.46	50.00	13.50	3.10	10.40	0.13	11,752.08	3.02	0.16	11,875.73
Drainage/Utilities/Sub-Grade	5.19	41.43	45.42	52.23	2.23	50.00	12.43	2.03	10.40	0.08	7,769.38	1.35	0.12	7,838.80
Paving	3.25	28.45	25.14	1.43	1.43	0.00	1.25	1.25	0.00	0.05	4,901.66	0.89	0.09	4,951.80
Maximum (pounds/day)	7.70	59.01	77.70	53.46	3.46	50.00	13.50	3.10	10.40	0.13	11,752.08	3.02	0.16	11,875.73
Total (tons/construction project)	0.76	5.98	7.20	5.95	0.34	5.61	1.47	0.30	1.17	0.01	1,158.85	0.26	0.02	1,170.51
Notes: Project Start Year -> 2020														
Project Length (months) -> 12														
Total Project Area (acres) -> 67														
Maximum Area Disturbed/Day (acres) -> 5														
Water Truck Used? -> Yes														
Total Material Imported/Exported Volume (yd³/day)														
Daily VMT (miles/day)														
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck								
Grubbing/Land Clearing	0	0	0	0	1,400	40								
Grading/Excavation	0	0	0	0	2,000	40								
Drainage/Utilities/Sub-Grade	0	0	0	0	1,760	40								
Paving	0	0	0	0	1,600	40								
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.														
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.														
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1, 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.														
Total Emission Estimates by Phase for -> Avenal Sewer System Improvement Project														
Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.04	0.28	0.29	0.67	0.01	0.66	0.15	0.01	0.14	0.00	56.06	0.01	0.00	51.38
Grading/Excavation	0.46	3.51	4.62	3.18	0.21	2.97	0.80	0.18	0.62	0.01	698.07	0.18	0.01	639.95
Drainage/Utilities/Sub-Grade	0.21	1.64	1.80	2.07	0.09	1.98	0.49	0.08	0.41	0.00	307.67	0.05	0.00	281.61
Paving	0.06	0.56	0.50	0.03	0.03	0.00	0.02	0.02	0.00	0.00	97.05	0.02	0.00	88.95
Maximum (tons/phase)	0.46	3.51	4.62	3.18	0.21	2.97	0.80	0.18	0.62	0.01	698.07	0.18	0.01	639.95
Total (tons/construction project)	0.76	5.98	7.20	5.95	0.34	5.61	1.47	0.30	1.17	0.01	1158.85	0.26	0.02	1,061.88
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.														
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.														
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1, 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.														
The CO2e emissions are reported as metric tons per phase.														

Appendix B

Biological Report

Biological Resource Evaluation

Avenal Sewer System Improvement Project

Kings County, California



PREPARED FOR:

City of Avenal
919 Skyline Boulevard
Avenal, CA 93204

PREPARED BY:

Colibri Ecological Consulting, LLC
9493 N Fort Washington Road, Suite 108
Fresno, CA 93730

October 2019

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Executive Summary

The City of Avenal (City) proposes to improve its sewer system by replacing and rehabilitating parts of its sewer main infrastructure and upgrading components of its wastewater treatment plant (WWTP). The proposed project will involve repairing approximately 65,229 linear feet of sewer main within the City limits and adding or replacing various components at the existing WWTP. The purpose of this project is to repair damaged and deteriorated sewer infrastructure and update the WWTP to improve wastewater treatment operations.

The City will obtain funding for the project from the Clean Water State Revolving Fund (CWSRF). The CWSRF is a state and federal partnership that helps provide communities a permanent, independent source of low-cost financing for a wide range of water quality infrastructure projects, including wastewater treatment. 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, California Department of Fish and Wildlife, and California Native Plant Society 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 less-than-significant levels. We conclude the project will have no effect on regulated habitats but could affect the state-listed as threatened Swainson's hawk (*Buteo swainsoni*), the federally listed as endangered and state-listed as threatened San Joaquin kit fox (*vulpes macrotis mutica*), and two California Species of Special Concern: burrowing owl (*Athene cunicularia*) and American badger (*Taxidea taxus*). These effects 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
CIPP	Cured-In-Place-Pipe
CWSRF	Clean Water State Revolving Fund
CNDDDB	California Natural Diversity Data Base
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
EFH	Essential Fish Habitat
EPA	Environmental Protection Agency
FE	Federally listed as Endangered
FEMA	Federal Emergency Management Agency
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
ST	State-listed as Threatened
SWRCB	State Water Resources Control Board
USACE	United States Army Corps of Engineers
USC	United States Code
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WWTP	Wastewater Treatment Plant

1.0 Introduction

1.1 Background

The City of Avenal proposes to improve their sewer system and wastewater treatment plant (WWTP) infrastructure. The City will obtain financing for this wastewater infrastructure improvements project (Project) from the Clean Water State Revolving Fund (CWSRF). Because the CWSRF is partially funded by the Environmental Protection Agency (EPA), the project will constitute a federal action. Consequently, the environmental review for the Project must meet not only state requirements under the California Environmental Quality Act (CEQA) but some federal requirements as well. To comply with applicable federal statutes and authorities, the EPA established specific “CEQA-Plus” requirements in its operating agreement with the State Water Resources Control Board (SWRCB), which administers the CWSRF program.

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

This Project will involve replacing or rehabilitating approximately 65,229 linear feet of existing sewer main pipeline within the City of Avenal and upgrading existing infrastructure at the wastewater treatment plant (WWTP). Sewer main replacement will involve traditional open trench construction methods on approximately 41,073 linear feet of sewer main. Sewer main rehabilitation will involve trenchless, cured-in-place-pipe (CIPP) construction methods on approximately 24,156 linear feet of sewer main. Using this method will reduce the amount of ground disturbance and limit the number of traffic and pedestrian detours needed to complete the Project. Upgrading infrastructure at the WWTP will involve (1) replacing manual valves at the plant’s headworks, (2) adding a screen for the headwork’s bypass, (3) replacing an oxidation basin outlet gate, (4) adding a variable frequency drive on a turbine, (5) rebuilding the gearbox on aerator #2, (6) replacing a valve to the south scum and drain pit, (7) recoating the clarifier and replace the sacrificial anodes, (8) replacing return activated sludge room valves, (9) adding rail mounted floats on the scum pit mixer, (10) installing a supervisory control and data acquisition

auto dialer, and (11) adding an effluent flow meter and a new standby effluent pump. All repairs or upgrades at the WWTP will be completed within the existing footprint and will not involve new ground disturbance.

1.3 Project Location

The Project site is within the City limits of Avenal in western Kings County, California (Figure 1). Sewer main infrastructure is dispersed throughout the City, east of State Route 33 and north and south of State Route 269 (Figure 2). The WWTP is about 1.95 miles southeast of the intersection of State Route 33 and State Route 269, on the east side of State Route 33 (Figure 2).

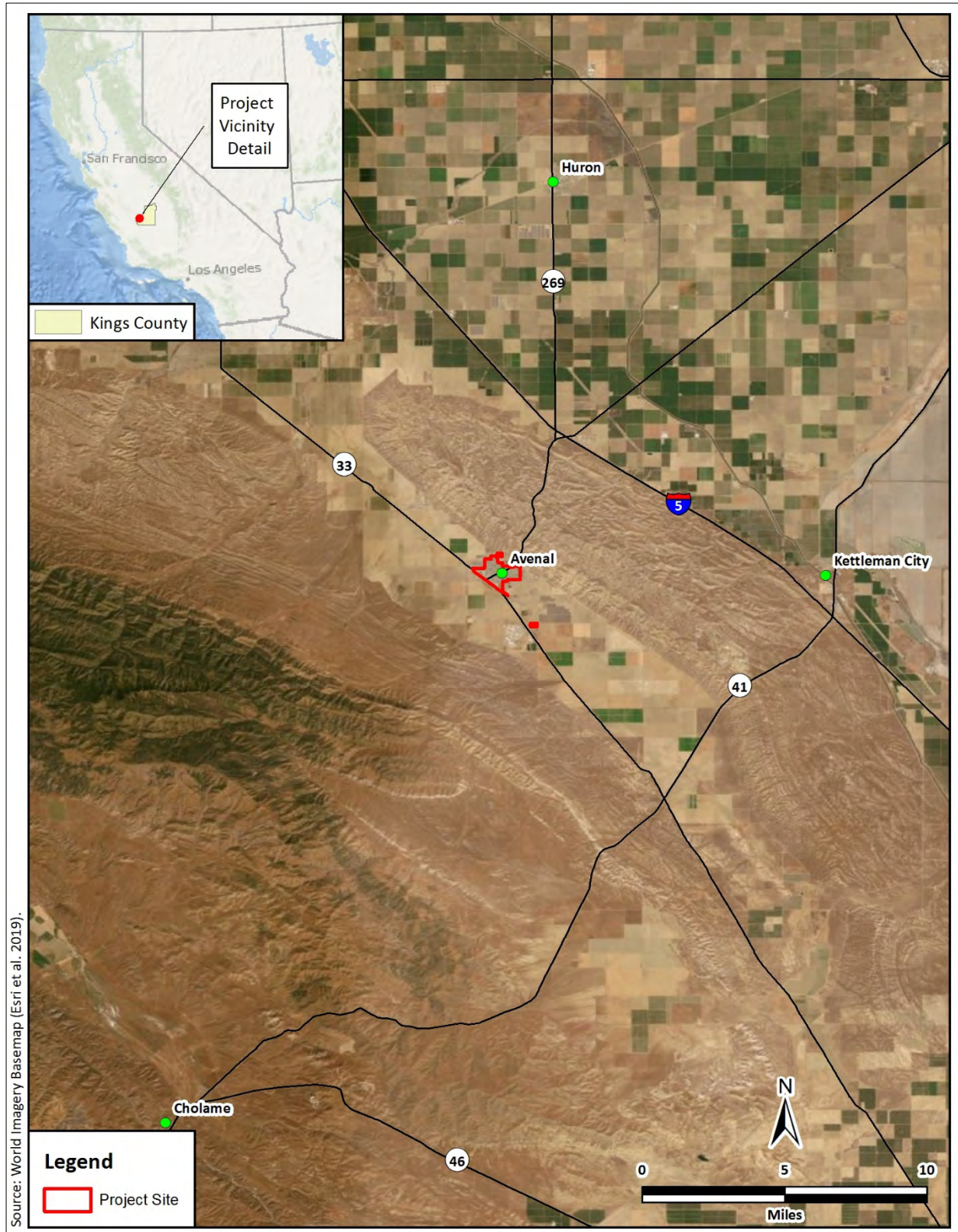


Figure 1. Site vicinity map.

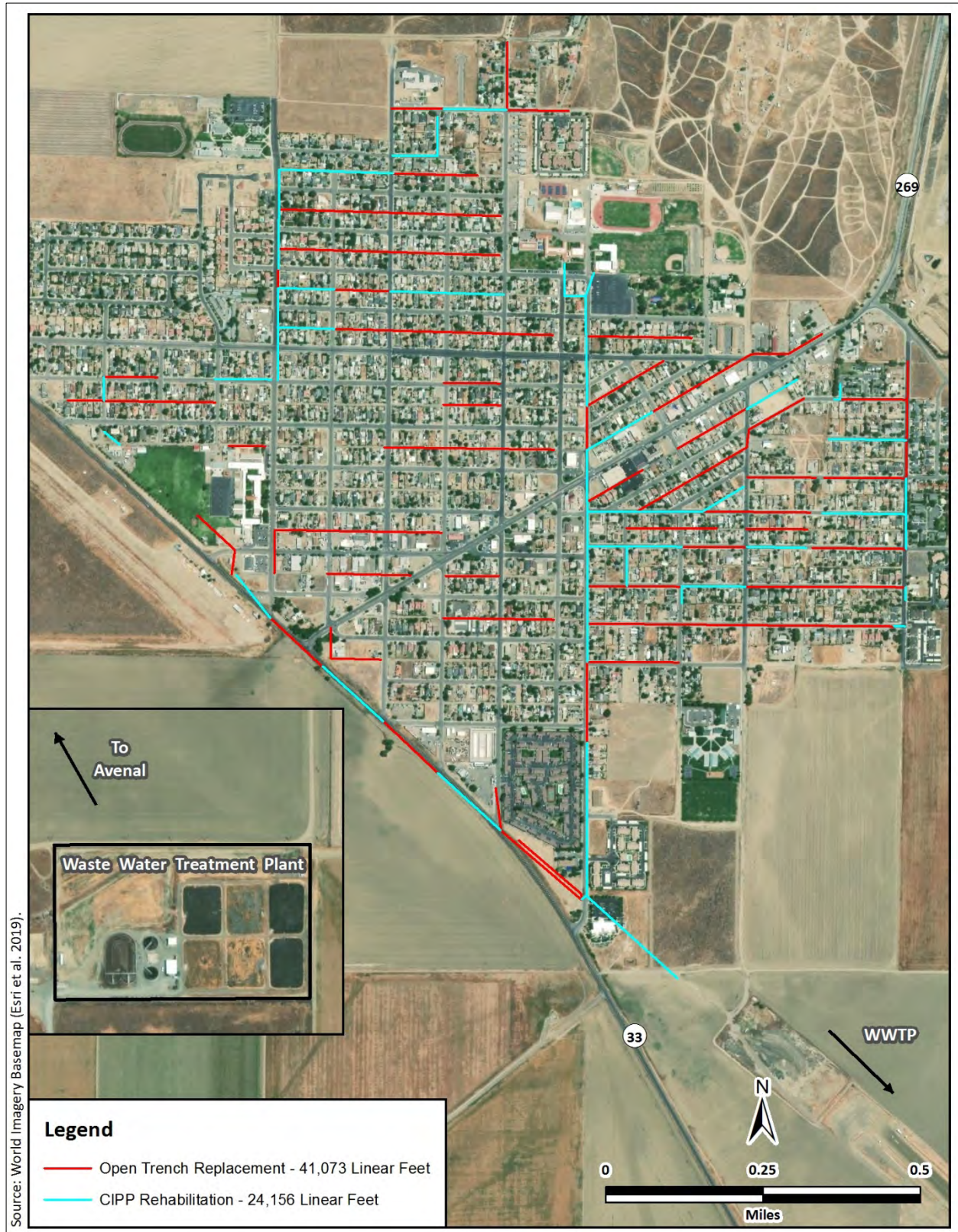


Figure 2. Project site map.

1.4 Purpose and Need of Proposed Project

The purpose of the Project is to upgrade existing sewer main pipeline infrastructure in the City of Avenal and upgrade or replace infrastructure at the existing WWTP south of the City. The Project is needed to improve deteriorated or broken sewer main pipelines to avoid sewer blockages, backups, and overflows, and increase efficiency of the WWTP.

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 Senior Scientist Chris Winchell from the United States Fish and Wildlife Service (USFWS) website (<https://ecos.fws.gov/ipac/>) on 07 October 2019 (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 § 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 United States Code [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 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 USC § 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 USC Chapter 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 § 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 CDFW 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 the California 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 2019). 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 §§ 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 Sections 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 a USFWS species list for the Project (USFWS 2019, Appendix A). In addition, we searched the California Natural Diversity Data Base (CNDDDB 2019) and the CNPS Inventory of Rare and Endangered Plants (CNPS 2019) for records of special-status plant and animal species in the vicinity of the Project. Regional lists of special-status species were compiled using USFWS, CNDDDB, and CNPS database searches confined to the Kettleman Plain 7.5-minute United States Geological Survey (USGS) topographic quad, which encompasses the Project site, and the eight surrounding quads (Avenal, Avenal Gap, Garza Peak, Kettleman City, La Cima, Los Viejos, Pyramid Hills, and Tent Hills). A local list of special-status species was compiled using CNDDDB records from within 5 miles of the Project site. Species that lack a special-status designation by state or federal regulatory agencies or other groups were omitted from the final list. Species for which the Project site does not provide habitat were eliminated from further consideration. We also reviewed aerial imagery from Google Earth (Google 2019) and other sources, USGS topographic maps, the Web Soil Survey (NRCS 2019), and relevant literature.

2.2 Reconnaissance Survey

Colibri Senior Scientist Christopher Winchell and Associate Scientist Kristofer Robison conducted a field reconnaissance survey of the Project site on 01 October 2019. 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 (Figure 3). All plants except ornamentals 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) and as defined by the CDFW (<https://www.wildlife.ca.gov/conservation/lisa>).

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:

- a) Substantially reduce the habitat of a fish or wildlife species,
- b) Cause a fish or wildlife population to drop below self-sustaining levels,
- c) Threaten to eliminate a plant or animal community, or
- d) 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 any of the following:

- e) 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;
- f) 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;
- g) 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;

- h) 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;
- i) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- j) 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.

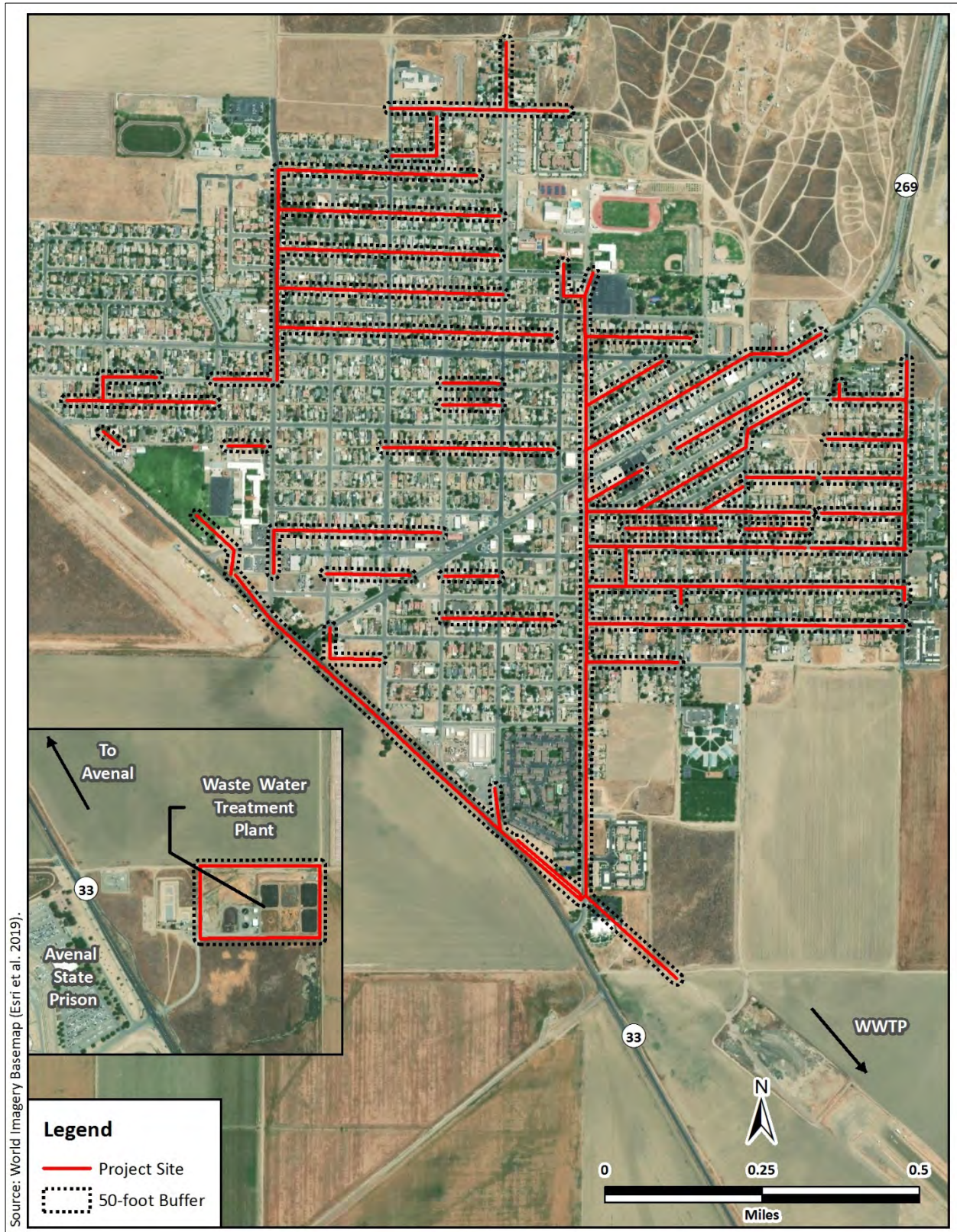


Figure 3. Reconnaissance survey area map.

3.0 Results

3.1 Desktop Review

The USFWS species list for the Project site included 13 species listed as threatened or endangered under the FESA (USFWS 2019a, Table 1, Appendix A). None of those species could occur on or near the Project site due to either a lack of habitat, the Project site being outside the current range of the species, or the presence of development that would otherwise preclude occurrence (Table 1). As identified in the species list, the Project site does not occur in USFWS-designated Critical Habitat for any species (USFWS 2019a, Appendix A).

Searching the CNDDDB for records of special-status species from within the Kettleman Plain 7.5-minute USGS topographic quad and the eight surrounding quads produced 198 records of 37 species (Table 1, Appendix B). Of those 37 species, five are not considered further because state or federal regulatory agencies or special interest groups do not recognize them through special designation (Appendix B). Of the remaining 32 species, 17 are known from within 5 miles of the Project site (Table 1, Figure 4). Of those 17 species, four could occur on or near the Project site (Table 1). In addition, Swainson's hawk (*Buteo swainsoni*), which was identified outside the 5-mile radius but within the CNDDDB 9-quad search, could also occur on or near the Project site (Table 1). All other special-status species are considered absent because the Project site is outside their current known range, the property lacks habitat for them, they were not detected during the reconnaissance survey, or a combination thereof.

Searching the CNPS inventory of rare and endangered plants of California yielded 23 species (CNPS 2019, Appendix C), 13 of which have of a CRPR of 1B (Table 1). None of those species are expected to occur 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			
California jewelflower ³ (<i>Caulanthus californicus</i>)	SE, FE, 1B.1	Chenopod scrub, pinyon and juniper woodland, and valley and foothill grassland at 150–3300 feet elevation.	None. Habitat lacking; the Project site consists of urban and disturbed lands.
Kern mallow ³ (<i>Eremalche parryi</i> ssp. <i>kernensis</i>)	FE, 1B.2	Chenopod scrub, pinyon and juniper woodland, and valley and foothill grassland	None. Habitat lacking; the Project site consists of urban and disturbed lands.

Species	Status ¹	Habitat	Potential to Occur ²
		at 200–4000 feet elevation.	
San Joaquin woollythreads ³ (<i>Monolopia congdonii</i>)	FE, 1B.2	Chenopod scrub, pinyon and juniper woodland, and valley and foothill grassland at 180–2400 feet elevation.	None. Habitat lacking; the Project site consists of urban and disturbed lands.
Vernal pool fairy shrimp (<i>Branchinecta lynchi</i>)	FT	Vernal pools; some artificial depressions, ditches, stock ponds, vernal swales, ephemeral drainages, and seasonal wetlands.	None. Habitat lacking; no vernal pools or other ephemeral aquatic habitats found in the survey area; no records from within 5 miles.
Delta smelt (<i>Hypomesus transpacificus</i>)	FT, SE	Estuarine river channels and tidally influenced sloughs.	None. Habitat lacking; no connectivity to aquatic habitats this species requires; no records from within 5 miles.
Blunt-nosed leopard lizard ³ (<i>Gambelia sila</i>)	FE, SE, FP	Upland scrub and sparsely vegetated grassland with small mammal burrows.	None. Habitat lacking; the Project site consists of urban and disturbed lands.
Giant gartersnake (<i>Thamnophis gigas</i>)	FT, ST	Marshes, sloughs, drainage canals, irrigation ditches, and slow-moving creeks.	None. Habitat lacking; no potential aquatic breeding habitat found in the survey area; no records from within 5 miles.
Green Sea Turtle (<i>Chelonia mydas</i>)	FT	Pacific Ocean.	None. Habitat lacking; no connectivity to the Pacific Ocean; no records from within 5 miles.
California red-legged frog (<i>Rana draytonii</i>)	FT, SSSC	Creeks, ponds, and marshes for breeding; burrows for upland refuge.	None. Habitat lacking; no potential aquatic breeding habitat found in the survey area; no records from within 5 miles.
California tiger salamander (<i>Ambystoma californiense</i>)	FT, ST	Vernal pools or seasonal ponds for breeding; small	None. Habitat lacking; no potential aquatic breeding habitat found in the

Species	Status ¹	Habitat	Potential to Occur ²
		mammal burrows for upland refugia.	survey area; no records from within 5 miles.
California condor (<i>Gymnogyps californianus</i>)	FE, SE	Rocky, open-scrubland, conifer forest and oak savanna; cliffs, rocky outcrops or large trees for nesting.	None. Habitat lacking; although this species is known to occur in the mountains west of the Project site, no habitat is present on the Project site that could support this species; no records from within 5 miles.
Tricolored blackbird ³ (<i>Agelaius tricolor</i>)	ST	Freshwater emergent wetland, prickly terrestrial vegetation, or silage crops for nesting; freshwater emergent wetlands, agricultural fields, irrigated pastures, grassland, and cattle feedlots for foraging.	None. Habitat lacking; although a small patch of cattail was found at the wastewater treatment plant, the patch was not large enough to support nesting.
Swainson's hawk (<i>Buteo swainsoni</i>)	ST	Medium to large trees for nesting with adjacent grasslands, prairie, or annual crop fields for foraging.	Low. Potential nest trees found in the survey area among residential development; agricultural foraging habitat is adjacent to the survey area; no records from within 5 miles.
Giant kangaroo rat (<i>Dipodomys ingens</i>)	FE, SE	Chenopod scrub and valley and foothill grassland with mostly level terrain and sandy loam soils.	None. Habitat lacking; the Project site consists of urban and disturbed lands; no records from within 5 miles.
San Joaquin antelope squirrel ³ (<i>Ammospermophilus nelsoni</i>)	ST	Dry, sparsely vegetated loam soils in chenopod scrub with widely scattered shrubs, forbs and grasses in broken terrain with gullies and washes.	None. Habitat lacking; no suitable land cover types present in the survey area.

Species	Status ¹	Habitat	Potential to Occur ²
San Joaquin kit fox ³ (<i>Vulpes macrotis mutica</i>)	FE, ST	Grassland and upland scrub.	Low. No potential or natal dens found in the survey area; this species could occur in the surrounding hills and valley, but no habitat is present in the survey area that could support this species. Agricultural and grassland foraging habitat adjoins the periphery of a portion of the Project site, and individuals may occasionally travel through or near the Project site.
Tipton kangaroo rat (<i>Dipodomys nitratoideus nitratoideus</i>)	FE, SE	Upland scrub, grassland, and alkali sink plant communities in level or nearly level terrain.	None. Habitat lacking; the Project site consists of urban and disturbed lands; no records from within 5 miles.
State Species of Special Concern			
Northern California legless lizard ³ (<i>Anniella pulchra</i>)	SSSC	Moist warm loose soil in sparsely vegetated areas of beach dunes, chaparral, pine-oak woodland, desert scrub, and sandy wash.	None. Habitat lacking; no suitable land cover types present in the survey area.
San Joaquin coachwhip ³ (<i>Masticophis flagellum ruddocki</i>)	SSSC	Chenopod scrub and valley and foothill grassland with small mammal burrows for refuge and reproduction.	Low. A ruderal field south of the WWTP and two ground squirrel burrows on the north side of the WWTP could provide habitat for this species.
Western spadefoot (<i>Spea hammondi</i>)	SSSC	Rain pools for breeding and small mammal burrows or other suitable refugia for nonbreeding upland cover.	None. Habitat lacking; no rain pools or other potential breeding habitat found in the survey area; no records from within 5 miles.

Species	Status ¹	Habitat	Potential to Occur ²
Burrowing owl ³ (<i>Athene cunicularia</i>)	SSSC	Grassland and upland scrub with friable soil; some agricultural or other developed and disturbed areas with ground squirrel burrows.	Low. Two suitably sized ground squirrel burrows were found in the survey area at the WWTP; no sign of use such as pellets, whitewash, or feathers was observed. Foraging habitat is limited in the survey area due to agriculture and urbanization, but adjacent lands may be suitable.
Loggerhead shrike (<i>Lanius ludovicianus</i>)	SSSC	Open areas with short vegetation and widely spaced shrubs or low trees for nesting.	None. Habitat lacking; although foraging habitat was found in the survey area, no nesting habitat is present; no records from within 5 miles.
American badger ³ (<i>Taxidea taxus</i>)	SSSC	Open, dry grassland, woodland, conifer forest, farms, meadows, and desert with friable soils and a small mammal prey base.	Low. No dens or prey excavations observed in the survey area; foraging habitat is limited in the survey area. However, adjacent grassland and fallowed fields may provide suitable conditions for this species.
Short-nosed kangaroo rat (<i>Dipodomys nitratoideus brevinasus</i>)	SSSC	Chenopod scrub and valley and foothill grassland plant communities with friable soils in flat to gently sloping terrain.	None. Habitat lacking; no suitable land cover types present in the survey area; no records from within 5 miles.
Tulare grasshopper mouse ³ (<i>Onychomys torridus tularensis</i>)	SSSC	Chenopod scrub with friable soil.	None. Habitat lacking; no suitable land cover types present in the survey area.
California Rare Plants			
Howell's onion (<i>Allium howellii</i> var. <i>howellii</i>)	4.3	Valley and foothill grassland with clay or serpentinite soils at 150–6600 feet elevation.	None. Habitat lacking; the Project site consists of urban and disturbed lands.

Species	Status ¹	Habitat	Potential to Occur ²
Forked fiddleneck (<i>Amsinckia furcata</i>)	4.2	Cismontane woodland and valley and foothill grassland at 150–3300 feet elevation.	None. Habitat lacking; the Project site consists of urban and disturbed lands.
California androsace (<i>Androsace elongata</i> ssp. <i>acuta</i>)	4.2	Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, and valley and foothill grassland at 450–4000 feet elevation.	None. Habitat lacking; the Project site consists of urban and disturbed lands.
Oval-leaved snapdragon (<i>Antirrhinum ovatum</i>)	4.2	Chaparral, cismontane woodland, pinyon and juniper woodland, and valley and foothill grassland at 600–3300 feet elevation.	None. Habitat lacking; the Project site consists of urban and disturbed lands.
Crownscale (<i>Atriplex coronata</i> var. <i>coronata</i>)	4.2	Chenopod scrub and valley and foothill grassland from sea level to 1800 feet elevation.	None. Habitat lacking; the Project site consists of urban and disturbed lands.
Lost Hills crownscale (<i>Atriplex coronata</i> var. <i>vallicola</i>)	1B.2	Chenopod scrub, valley and foothill grassland at 150–2000 feet elevation.	None. Habitat lacking; the Project site consists of urban and disturbed lands.
Lemmon's jewelflower ³ (<i>Caulanthus lemmonii</i>)	1B.2	Pinyon and juniper woodland, and valley and foothill grassland at 240–4800 feet elevation.	None. Habitat lacking; the Project site consists of urban and disturbed lands.
Potbellied spineflower (<i>Chorizanthe ventricosa</i>)	4.3	Cismontane woodland and valley and foothill grassland at 200–3900 feet elevation.	None. Habitat lacking; the Project site consists of urban and disturbed lands.
Small-flowered morning-glory (<i>Convolvulus simulans</i>)	4.2	Chaparral, coastal scrub, and valley and foothill grassland at 90–2200 feet elevation.	None. Habitat lacking; the Project site consists of urban and disturbed lands.

Species	Status ¹	Habitat	Potential to Occur ²
Hall's tarplant (<i>Deinandra halliana</i>)	1B.2	Chenopod scrub, cismontane woodland, and valley and foothill grassland at 700–3000 feet elevation.	None. Habitat lacking; the Project site consists of urban and disturbed lands.
Recurved larkspur ³ (<i>Delphinium recurvatum</i>)	1B.2	Chenopod scrub, cismontane woodland, and valley and foothill grassland at 10–2800 feet elevation.	None. Habitat lacking; the Project site consists of urban and disturbed lands.
Hoover's eriastrum (<i>Eriastrum hooveri</i>)	4.2	Chenopod scrub, pinyon and juniper woodland, valley and foothill grassland at 150–3000 feet elevation.	None. Habitat lacking; the Project site consists of urban and disturbed lands.
Protruding buckwheat (<i>Eriogonum nudum</i> var. <i>indictum</i>)	4.2	Chaparral, chenopod scrub, cismontane woodland at 450–4500 feet elevation.	None. Habitat lacking; the Project site consists of urban and disturbed lands.
Temblor buckwheat ³ (<i>Eriogonum temblorense</i>)	1B.2	Valley and foothill grassland at 900–3300 feet elevation.	None. Habitat lacking; the Project site consists of urban and disturbed lands.
Pale-yellow layia ³ (<i>Layia heterotricha</i>)	1B.1	Cismontane woodland, coastal scrub, pinyon and juniper woodland, and valley and foothill grassland 900–5100 feet elevation.	None. Habitat lacking; the Project site consists of urban and disturbed lands.
Munz's tidy-tips (<i>Layia munzii</i>)	1B.2	Chenopod scrub, valley and foothill grassland at 300–2100 feet elevation.	None. Habitat lacking; the Project site consists of urban and disturbed lands.
Showy golden madia ³ (<i>Madia radiata</i>)	1B.1	Cismontane woodland, valley and foothill grassland at 700–3000 feet elevation.	None. Habitat lacking; the Project site consists of urban and disturbed lands.
Shining navarretia (<i>Navarretia nigelliformis</i> ssp. <i>radians</i>)	1B.2	Vernal pools in cismontane woodland and valley and foothill grassland at 190–3300 feet elevation.	None. Habitat lacking; the Project site consists of urban and disturbed lands.

Species	Status ¹	Habitat	Potential to Occur ²
San Joaquin bluecurls (<i>Trichostema ovatum</i>)	4.2	Chenopod scrub and valley and foothill grassland at 190–1000 feet elevation.	None. Habitat lacking; the Project site consists of urban and disturbed lands.
Kings gold (<i>Tropidocarpum californicum</i>)	1B.1	Chenopod scrub and valley and foothill grassland at 190–600 feet elevation.	None. Habitat lacking; the Project site consists of urban and disturbed lands.

CNDDDB (2019), CNPS (2019), USFWS (2019a).

Status ¹	Potential to Occur ²
FE = Federally listed Endangered	None: Neither species nor sign observed; conditions unsuitable for occurrence.
FT = Federally listed Threatened	Low: Neither species nor sign observed; conditions marginal for occurrence.
FP = Fully Protected	Moderate: Neither species nor sign observed, but conditions suitable for occurrence.
SE = State-listed Endangered	
ST = State-listed Threatened	
SSSC = State Species of Special Concern	

CNPS California Rare Plant Rank ¹ :	Threat Ranks ¹ :
1B – plants rare, threatened, or endangered in California and elsewhere.	0.1 – seriously threatened in California (> 80% of occurrences).
4 – plants have limited distribution in California.	0.2 – moderately threatened in California (20-80% of occurrences).
	0.3 – not very threatened in California (<20% of occurrences).

³Known from CNDDDB records from within 5 miles of the Project site.

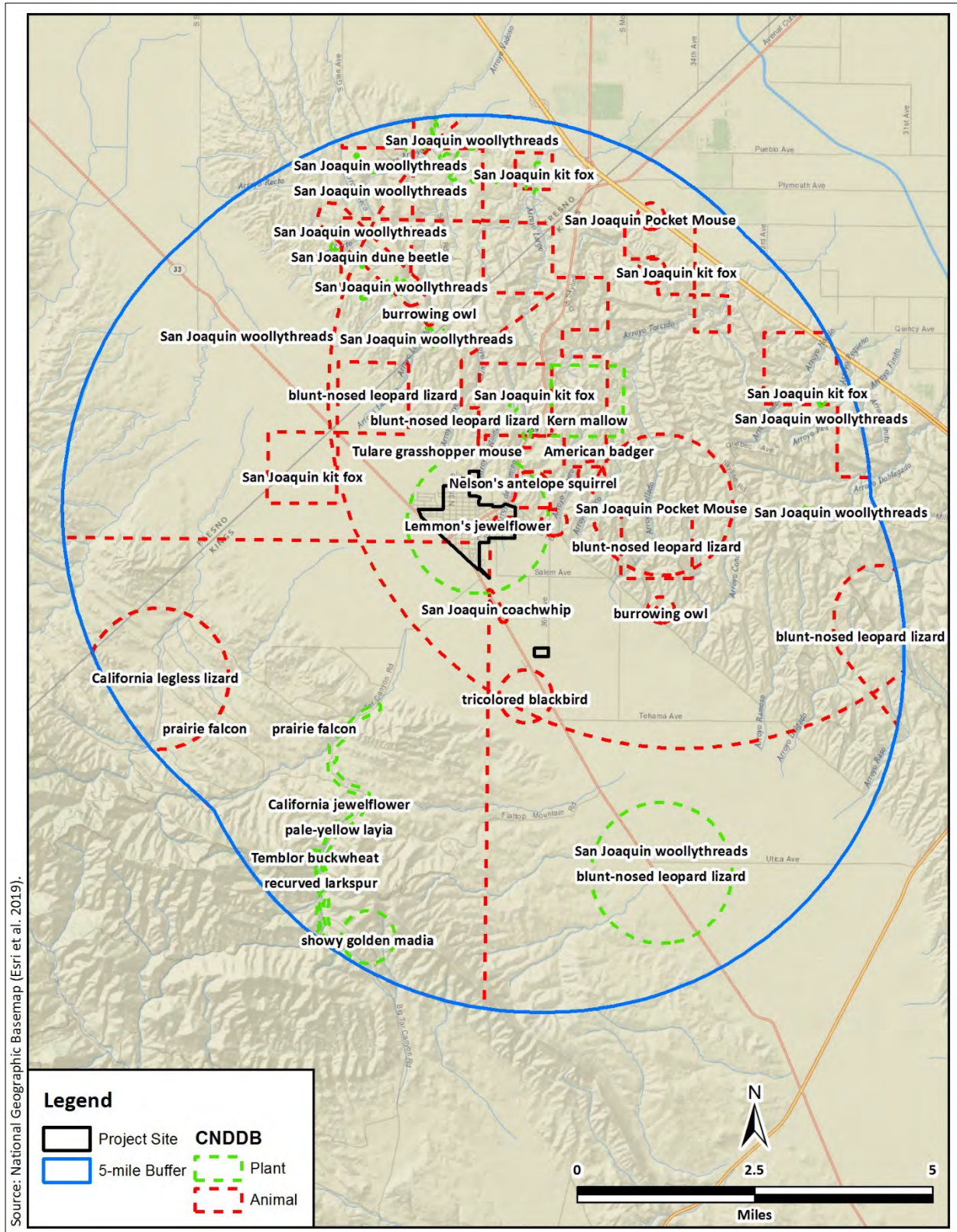


Figure 4. CNDDDB occurrence map.

3.2 Reconnaissance Survey

3.2.1 Land Use and Habitats

The Project site is synonymous with the City of Avenal and consists of residential and commercial development, paved streets, and dirt alleyways (Figures 2, 5, and 6). The Project site also includes the existing WWTP south of the City, which supports disturbed (dirt and gravel) land cover surrounded by fallow agriculture and a ruderal field to the south (Figures 7 and 8). The Project site in the City is bordered by agricultural development on all sides, a small airport to the south, and a small patch of disturbed, nonnative grassland to the north. The WWTP is bordered by fallowed agricultural development and a solar farm to the north and east, a private gun range to the west, and a ruderal field to the south that supports weeds including mainly tumbleweed (*Salsola tragus*) and mustard (*Brassica nigra* and *B. tournefortii*) (Figure 8). The Project site is underlain by Urban Land and Panoche loam 0 to 2% slopes in the City and Panoche loam 0 to 2% slopes at the WWTP (NRCS 2019). Elevation in the City ranges from 725 feet to 900 feet above mean sea level, and the elevation at the WWTP ranges from 720 to 730 feet above mean sea level.



Figure 5. Photograph showing a paved street in a residential neighborhood.



Figure 6. Photograph showing a dirt alley where sewer main will be replaced.



Figure 7. Photograph showing disturbed land cover at the WWTP.



Figure 8. Photograph showing a field with ruderal land cover just south of the WWTP.

3.2.2 Plant and Animal Species Observed

A total of 45 plant species (16 native and 30 nonnative) were found during the reconnaissance survey (Table 2). Twenty bird species, three mammal species, and one lizard species were also detected (Table 2).

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

Common Name	Scientific Name	Status
Plants		
Family Amaranthaceae		
Prostrate pigweed	<i>Amaranthus blitoides</i>	Native
Tumbleweed	<i>Amaranthus albus</i>	Nonnative
Family Arecaceae		
Mexican fan palm	<i>Washingtonia robusta</i>	Nonnative
Family Asteraceae		
Annual burweed	<i>Ambrosia acanthicarpa</i>	Native
Tocalote	<i>Centaurea melitensis</i>	Nonnative
Yellow star-thistle	<i>Centaurea solstitialis</i>	Nonnative
Common spikeweed	<i>Centromadia pungens</i>	Native

Canada horseweed	<i>Erigeron canadensis</i>	Native
Common sunflower	<i>Helianthus annuus</i>	Native
Heermann's tarweed	<i>Holocarpha heermannii</i>	Native
Prickly lettuce	<i>Lactuca serriola</i>	Nonnative
Spiny cocklebur	<i>Xanthium spinosum</i>	Nonnative
Family Boraginaceae		
Common fiddleneck	<i>Amsinckia intermedia</i>	Native
Family Brassicaceae		
Black mustard	<i>Brassica nigra</i>	Nonnative
Saharan mustard	<i>Brassica tournefortii</i>	Nonnative
London rocket	<i>Sisymbrium irio</i>	Nonnative
Family Chenopodiaceae		
Silverscale saltbush	<i>Atriplex argentea</i> var. <i>argentea</i>	Native
Allscale saltbush	<i>Atriplex polycarpa</i>	Native
Lambs quarters	<i>Chenopodium album</i>	Nonnative
Russian thistle	<i>Salsola tragus</i>	Nonnative
Family Euphorbiaceae		
Doveweed	<i>Croton setiger</i>	Native
Contura Creek spurge	<i>Euphorbia ocellate</i>	Native
Family Fabaceae		
Annual yellow sweetclover	<i>Melilotus indicus</i>	Nonnative
Family Geraneaceae		
Red stemmed filaree	<i>Erodium cicutarium</i>	Nonnative
Family Malvaceae		
Dwarf mallow	<i>Malva neglecta</i>	Nonnative
Cheeseweed mallow	<i>Malva parviflora</i>	Nonnative
Family Onagraceae		
Willow herb	<i>Epilobium brachycarpum</i>	Native
Family Poaceae		
Wild oat	<i>Avena fatua</i>	Nonnative
Ripgut brome	<i>Bromus diandrus</i>	Nonnative
Foxtail chess	<i>Bromus madritensis</i>	Nonnative
Bermudagrass	<i>Cynodon dactylon</i>	Nonnative
Barnyard grass	<i>Echinochloa crus-galli</i>	Nonnative
Rattail sixweeks grass	<i>Festuca myuros</i>	Nonnative
Farmer's foxtail	<i>Hordeum murinum</i> ssp. <i>leporinum</i>	Nonnative
Barley	<i>Hordeum marinum</i> ssp. <i>gussoneanum</i>	Nonnative
Sprangletop	<i>Leptochloa fusca</i>	Native
Johnsongrass	<i>Sorghum halepense</i>	Nonnative
Family Polygonaceae		
Prostrate knotweed	<i>Polygonum aviculare</i>	Nonnative
Curly dock	<i>Rumex crispus</i>	Nonnative

Family Solanaceae		
Jimson weed	<i>Datura wrightii</i>	Native
Tomato	<i>Lycopersicon esculentum</i>	Nonnative
Tree tobacco	<i>Nicotiana glauca</i>	Nonnative
White nightshade	<i>Solanum americanum</i>	Native
Family Typhaceae		
Cattail	<i>Typha latifolia</i>	Native
Family Zygophyllaceae		
Puncture vine	<i>Tribulus terrestris</i>	Nonnative
Reptiles		
Family Phrynosomatidae		
Side-blotched lizard	<i>Uta stansburiana</i>	Native
Birds		
Family Accipitridae		
Red-tailed hawk	<i>Buteo jamaicensis</i>	MBTA, CFGC
Family Charadriidae		
Killdeer	<i>Charadrius vociferus</i>	MBTA, CFGC
Family Columbidae		
Eurasian collared-dove	<i>Streptopelia decaocto</i>	Nonnative
Mourning dove	<i>Zenaida macroura</i>	MBTA, CFGC
Rock pigeon	<i>Columba livia</i>	Nonnative
Family Corvidae		
American crow	<i>Corvus brachyrhynchos</i>	MBTA, CFGC
California scrub-jay	<i>Aphelocoma californica</i>	MBTA, CFGC
Common raven	<i>Corvus corax</i>	MBTA, CFGC
Family Falconidae		
American kestrel	<i>Falco sparverius</i>	MBTA, CFGC
Family Fringillidae		
House finch	<i>Haemorhous mexicanus</i>	MBTA, CFGC
Family Icteridae		
Brewer's blackbird	<i>Euphagus cyanocephalus</i>	MBTA, CFGC
Western meadowlark	<i>Sturnella neglecta</i>	MBTA, CFGC
Family Mimidae		
Northern mockingbird	<i>Mimus polyglottos</i>	MBTA, CFGC
Passerellidae		
Savannah sparrow	<i>Passerculus sandwichensis</i>	MBTA, CFGC
Family Passeridae		
House sparrow	<i>Passer domesticus</i>	Nonnative
Family Picidae		
Northern flicker	<i>Colaptes auratus</i>	MBTA, CFGC
Family Sturnidae		
European starling	<i>Sturnus vulgaris</i>	Nonnative

Family Trochilidae		
Anna's hummingbird	<i>Calypte anna</i>	MBTA, CFGC
Family Tyranidae		
Black phoebe	<i>Sayornis nigricans</i>	MBTA, CFGC
Say's phoebe	<i>Sayornis saya</i>	MBTA, CFGC
Mammals		
Family Geomyidae		
Botta's pocket gopher	<i>Thomomys bottae</i>	Native
Family Leporidae		
Black-tailed jackrabbit	<i>Lepus californicus</i>	Native
Family Sciuridae		
California ground squirrel	<i>Otospermophilus beecheyi</i>	Native

MBTA = Protected under the Migratory Bird Treaty Act (16 USC § 703 et seq.); CFGC = Protected under the California Fish and Game Code (FGC §§ 3503 and 3513).

3.2.3 Nesting Birds

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*), and common raven (*Corvus corax*).

3.2.4 Regulated Habitats

One potentially regulated habitat, Arroyo del Camino, crosses the east end of the Project site. This feature is an ephemeral stream that drains south along State Route 269 from the Kettleman Hills to uplands south of the City. It has earthen banks and flows through culverts under east-west oriented City roads. No impacts to this feature are anticipated.

No stretch of any Wild and Scenic River are near the Project site; the nearest stretch is associated with the Big Sur River, approximately 95 miles west-northwest of the Project site (USFWS 2019b).

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.

Most of the Project site is in flood zone X, an area with a 0.2% annual chance of flood hazard (Federal Emergency Management Agency 2019). A drainage channel (Arroyo del Camino) bisects the east end of the Project site. This channel is considered a regulatory floodway, designated as flood zone AE; no impacts to this feature are anticipated. The nearest zone A flood hazard area is immediately west and south of the City, associated with several ephemeral waterways that drain east from the Kreyenhagen Hills; no impacts to this zone are anticipated.

3.3 Special-Status Species

3.3.1 San Joaquin coachwhip (*Coluber flagellum ruddocki*) (SSSC)

San Joaquin coachwhip is a reptile in the family Colubridae recognized as a species of special concern by CDFW (Nafis 2019, CDFW 2019). San Joaquin coachwhip occurs in Central Valley grassland, saltbush scrub, and other arid habitats including fallow agricultural fields (C. Winchell personal observation). It shelters in rodent burrows near vegetation and surface debris (Stebbins and McGinnis 2012). The San Joaquin coachwhip hunts by crawling along the ground with its head elevated to a height that affords a good view of the surrounding habitat (Stebbins and McGinnis 2012). Its prey includes small mammals, nestling and adult birds, eggs of various species, reptiles, and amphibians. This snake can ascend into trees and shrubs where it sometimes consumes the contents of bird nests (Stebbins and McGinnis 2012).

One CNDDDB record, from 1985, is known from within 5 miles of the Project (CNDDDB 2019). Although the Project site consists mainly of urban land cover, the ruderal field south of the WWTP could support this species if small mammal burrows are present. However, no ground disturbance will occur at this location. Therefore, no impacts to this species are expected.

3.3.2 Burrowing owl (*Athene cunicularia*) (SSSC)

Burrowing owl is a member of the family Strigidae recognized as a species of special concern by the CDFW (CDFW 2019). Burrowing owl depends on burrow systems excavated by other species such as California ground squirrel (*Otospermophilus beecheyi*) and American badger (*Taxidea taxus*) (Poulin et al. 2011). Burrowing owl uses burrows for protection from predators, weather, as roosting sites, and dwellings to raise young (Poulin et al. 2011). It commonly perches outside burrows on mounds of soil or nearby fence posts. Prey types include insects, especially grasshoppers and crickets, small mammals, frogs, toads, and lizards (Poulin et al. 2011). The nesting season begins in March, and incubation lasts 28–30 days. The female incubates the eggs while the male forages and delivers food items to the burrow-nest; young then fledge between 44 and 53 days after hatching (Poulin et al. 2011). Adults can live up to 8 years in the wild.

There are two CNDDDB records, from 1980 and 2005, of burrowing owl from within 5 miles of the Project site (CNDDDB 2019). Two California ground squirrel burrows that could support this species were found on the north edge of the WWTP in disturbed land cover. An agricultural field to the north and a ruderal field to the south could provide foraging habitat. Therefore, the Project site could support this species.

3.3.3 Swainson's hawk (*Buteo swainsoni*) (ST)

Swainson's hawk is a state-listed as threatened raptor in the family Accipitridae (CDFW 2019). Swainson's hawk is a gregarious, migratory, breeding resident of Central California where it uses open areas including grassland, sparse shrubland, pasture, open woodland, and annual agricultural fields such as grain and alfalfa to forage on small mammals, birds, and reptiles. After breeding, it eats mainly insects, especially grasshoppers (Bechard et al. 2010). Swainson's hawk

builds a small to medium-sized nest in medium to large trees near foraging habitat along roadsides, in fields, and on the edge of some urban areas. The nesting season begins in March or April in Central California when this species returns to its breeding grounds from wintering areas in Mexico and Central and South America. Nest building commences within one to two weeks of arrival to the breeding area and lasts about one week (Bechard et al. 2010). One to four eggs are laid and incubated for about 35 days. Young typically fledge in about 38–46 days and tend to leave the nest territory within 10 days of fledging (Bechard et al. 2010). All Swainson's hawks depart for their non-breeding grounds between August and September.

Although no CNDDDB records for Swainson's hawk are known from within 5 miles of the Project site, medium to large trees on the Project site could support nesting, and open grassland and agricultural fields nearby could support foraging. For those reasons and because this species is expanding its range in Central California (Battistone et al. 2019), it could occur on or near the Project site.

3.3.4 San Joaquin kit fox (*Vulpes macrotis mutica*) (FE, ST)

San Joaquin kit fox is a federally listed as endangered and state-listed as threatened member of the family Canidae (USFWS 1998, CDFW 2019). San Joaquin kit fox is primarily nocturnal and typically occupies valley grassland or mixed shrub/grassland habitats in low, rolling hills and valleys (Morrell 1972). The San Joaquin kit fox will use grazed grasslands as well as grasslands with scattered structures such as power poles and wind turbines. This species also lives adjacent to, and forages in, tilled and fallow fields and irrigated row crops. However, large tracts of higher quality grassland or rangeland nearby is required to support the species (Warrick et al. 2007). The diet of the San Joaquin kit fox varies geographically, seasonally, and annually, but throughout most of its range consists primarily of rodents, rabbits, ground-nesting birds, and insects (Scrivner et al. 1987, Spiegel et al. 1996). Giant kangaroo rat is a favored prey item (Cypher et al. 2000).

The San Joaquin kit fox requires underground dens to regulate its temperature and for shelter, reproduction, and predator avoidance (Morrell 1972). It commonly modifies and uses dens constructed by other animals, such as ground squirrels and badgers, and will use human-made structures as well (USFWS 1998). Dens are usually made in loose-textured soils on slopes of less than 40 degrees, but the number of openings, entrance shape, and the slope of the ground on which they occur vary across the geographic range of the species (USFWS 1998). San Joaquin kit fox changes den locations often, typically using numerous dens each year. Koopman et al. (1998) estimated that a San Joaquin kit fox will use an average of about 12 dens over the course of a year and will often not use the same dens the following year. This species is subject to predation or competitive exclusion by other species such as coyote (*Canis latrans*), domestic dog (*Canis familiaris*), bobcat (*Felis rufus*), and nonnative red fox (*Vulpes vulpes*), as well as large raptors (Benedict and Forbes 1979; Cypher and Spencer 1998; Clark et al. 2005, 2007).

There are eight CNDDDB records from within 5 miles of the Project site, dating from 1981 to 1990 (CNDDDB 2019). Although the Project site supports mostly urban and disturbed land cover,

surrounding grassland and agricultural land could support a rodent prey base and facilitate movement between more natural habitat patches. No potential dens were found during the reconnaissance survey. However, the outskirts of the survey area could support foraging. Therefore, this species could occur on the Project site.

3.3.5 American badger (*Taxidea taxus*) (SSSC)

American badger is a member of the family Mustelidae recognized as a species of special concern by the CDFW (CDFW 2019). American badger is a wide-ranging species that typically uses open areas such as grassland with little cover. It hunts for prey by excavating the burrow systems of fossorial rodents, such as gophers, ground squirrels, and kangaroo rats (Helgen and Reid 2016). Other prey items include lizards, snakes, amphibians, and insects. The species occasionally forages cooperatively with other animals such as canids (Clark et al. 2015). American badger is generally nocturnal but will occasionally forage during the day. Breeding occurs during the summer after delayed implantation, with females giving birth in late March to early April (Helgen and Reid 2016). Males do not assist with raising young. Population density averages one individual per square mile in optimal habitat (Long 1973).

One CNDDDB record, from 1939, is known from within 5 miles of the Project site (CNDDDB 2019). A ruderal field south of the WWTP could support this species. Although no prey excavations or other badger sign were observed during the reconnaissance survey, the species could occur based on the presence of habitat near the Project site.

4.0 Environmental Impacts

4.1 Effects Determinations

4.1.1 Critical Habitat

We conclude the Project will have **no effect** on designated or proposed critical habitat as no such habitat has been designated on or near the Project site.

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, the federally listed as endangered and state-listed as threatened San Joaquin kit fox, or two California Species of Special Concern: burrowing owl and American badger. The Project is not expected to affect any other special-status species due to the lack of habitat or known occurrence records for those species near the Project site.

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. Although one such regulated habitat was identified in the survey area, no impacts to that feature are anticipated.

4.2 Significance Determinations

This Project, which will result in temporary impacts to urban and previously disturbed land, will not: (1) substantially reduce the habitat of a fish or wildlife species (criterion a) as no such habitat is present on the Project site; (2) cause a fish or wildlife population to drop below self-sustaining levels (criterion b) as no such potentially vulnerable population is known from the area; (3) threaten to eliminate a plant or animal community (criterion c) as no such potentially vulnerable communities are known from the area; (4) substantially reduce the number or restrict the range of a rare or endangered plant or animal (criterion d) as no such potentially vulnerable species are known from the area; (5) 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 (criterion f) as no riparian habitat or other sensitive natural community was present in the survey area; (6) 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 (criterion g) as no impacts to wetlands will occur; (7) conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (criterion i) as no trees or biologically sensitive areas will be impacted; or (8) 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 j) 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 (significance criterion e).
- 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 (significance criterion h).

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 could adversely effect, either directly or through habitat modifications, several special-status animals that occur or may occur on or near the Project site. Construction activities such as excavating, trenching, or using other heavy equipment that disturbs or harms a special-status species or substantially modifies its habitat could constitute a significant impact. We recommend that Mitigation Measures BIO-1–BIO-4 (below) be included in the conditions of approval to reduce the potential impact to a less-than-significant level.

Mitigation Measure BIO-1. Protect San Joaquin kit fox.

1. To protect San Joaquin kit fox, a qualified biologist shall conduct a pre-construction survey to identify potential dens (burrows larger than 4 inches in diameter) in suitable land cover types. If potential San Joaquin kit fox dens are present, their disturbance and destruction shall be avoided. Exclusion zones shall be determined based on the type of den and current use: Potential Den—50 feet; Known Den—100 feet; Natal or Pupping Den—to be determined on a case-by-case basis in coordination with USFWS and CDFW. All pipes greater than 4 inches in

diameter stored on the construction site shall be capped, and exit ramps shall be installed in trenches and other excavations to avoid direct mortality. When possible, construction shall be conducted outside of the breeding season from October 1 to November 30. *U.S. Fish and Wildlife Service Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior or During Ground Disturbance* (USFWS 2011) shall also be followed.

Mitigation Measure BIO-2. 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 0.5 miles of the Project site no more than 14 days prior to the start of construction. If an active nest is found within 0.5 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 BIO-3. Protect burrowing owls.

1. Conduct focused burrowing owl surveys to assess the presence/absence of burrowing owl in accordance with guidelines in the CDFW's *Staff Report on Burrowing Owl Mitigation* (CDFG 2012).
2. If a burrowing owl or sign of burrowing owl use (e.g., feathers, guano, pellets) is detected on or within 500 feet of the Project site, and the qualified biologist determines that Project activities would disrupt the owl(s), a construction-free buffer, limited operating period, or passive relocation shall be implemented in consultation with the CDFW.

Mitigation Measure BIO-4. Protect American badger.

1. To protect American badger, a qualified biologist shall conduct a pre-construction survey in suitable land cover types. If American badger activity (dens, digging, or direct observation) is detected, the qualified biologist shall establish an exclusion zone of 50 feet between active dens and the work area. Exclusion fencing shall be installed around the work area to prevent American badgers from entering. If a 50-foot exclusion zone cannot be established, a site-specific plan shall be developed by the qualified biologist to minimize the potential to affect the survival or reproductive success of American badger.

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

The Project could 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. We recommend that the mitigation measure BIO-5 (below) be included in the conditions of approval to reduce the potential impact to a less-than-significant level.

Mitigation Measure BIO-5. 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 rehabilitating and replacing sewer main pipeline in the City of Avenal and updating existing WWTP infrastructure to better serve the City's wastewater needs. Although most land near the Project site is developed and disturbed by residential, commercial, and agricultural development, it still provides potential foraging and breeding habitat for the state-listed as threatened Swainson's hawk, and surrounding lands could provide foraging and breeding habitat for the federally listed as endangered and state-listed as threatened San Joaquin kit fox, as well as two California Species of Special Concern: burrowing owl and American badger. Nevertheless, Mitigation Measures BIO-1 through BIO-5 would reduce any contribution to cumulative impacts on biological resources to a less-than-significant level. The primary goal of this Project is to make the City's existing wastewater infrastructure more reliable. The City's wastewater system will not be expanded to accommodate future City expansion, and therefore, no additional unforeseen cumulative impacts are anticipated from this Project.

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Appendix A. USFWS list 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:

October 07, 2019

Consultation Code: 08ESMF00-2020-SLI-0046

Event Code: 08ESMF00-2020-E-00134

Project Name: City of Avenal Sanitary Sewer Collection System and WWTP 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: 08ESMF00-2020-SLI-0046

Event Code: 08ESMF00-2020-E-00134

Project Name: City of Avenal Sanitary Sewer Collection System and WWTP Improvements Project

Project Type: WASTEWATER PIPELINE

Project Description: City of Avenal Sanitary Sewer Collection System and WWTP Improvements Project, in Kings County, California. The project will involve replacing 41,073 linear feet of gravity sewer mains using the conventional “dig and replace” construction method, rehabilitating 24,156 linear feet of gravity sewer mains using the trenchless “cured-in-place” construction method, and making minor repairs to the existing wastewater treatment plan, including recoating the existing clarifiers.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/35.989461686088845N120.1262288520166W>



Counties: Kings, CA

Endangered Species Act Species

There is a total of 13 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
Giant Kangaroo Rat <i>Dipodomys ingens</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6051	Endangered
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
Tipton Kangaroo Rat <i>Dipodomys nitratooides nitratooides</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7247 Species survey guidelines: https://ecos.fws.gov/ipac/guideline/survey/population/40/office/11420.pdf	Endangered

Birds

NAME	STATUS
California Condor <i>Gymnogyps californianus</i> Population: U.S.A. only, except where listed as an experimental population There is final critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8193	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
Green Sea Turtle <i>Chelonia mydas</i> Population: East Pacific DPS No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6199	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 Species survey guidelines: https://ecos.fws.gov/ipac/guideline/survey/population/205/office/11420.pdf	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

Flowering Plants

NAME	STATUS
California Jewelflower <i>Caulanthus californicus</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4599	Endangered
San Joaquin Woolly-threads <i>Monolopia (=Lembertia) congdonii</i> No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3746	Endangered

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 (Avenal (3612012) OR Avenal Gap (3511978) OR Garza Peak (3512082) OR Kettleman City (3611918) OR Kettleman Plain (3512081) OR La Cima (3612011) OR Los Viejos (3511988) OR Pyramid Hills (3512071) OR Tent Hills (3512072))
 AND Taxonomic Group IS (Fish OR Amphibians OR Reptiles OR Birds OR Mammals OR Mollusks OR Arachnids OR Crustaceans OR Insects OR Ferns OR Gymnosperms OR Monocots OR Dicots OR Lichens OR Bryophytes)

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>Agelaius tricolor</i> tricolored blackbird	G2G3 S1S2	None Threatened	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_EN-Endangered NABCI_RWL-Red Watch List USFWS_BCC-Birds of Conservation Concern	180 739	955 S:4	0	0	2	0	0	2	1	3	4	0	0
<i>Ammospermophilus nelsoni</i> Nelson's antelope squirrel	G2 S2S3	None Threatened	BLM_S-Sensitive IUCN_EN-Endangered	182 1,980	283 S:8	0	0	1	0	1	6	8	0	7	0	1
<i>Anniella sp.</i> California legless lizard	G3G4 S3S4	None None	CDFW_SSC-Species of Special Concern	1,100 1,100	119 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Antirrhinum ovatum</i> oval-leaved snapdragon	G3 S3	None None	Rare Plant Rank - 4.2	1,220 1,220	16 S:1	0	0	0	0	0	1	1	0	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	180 1,195	1988 S:20	4	2	8	4	1	1	5	15	19	1	0
<i>Atriplex coronata var. vallicola</i> Lost Hills crownscale	G4T2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_SBBG-Santa Barbara Botanic Garden	340 575	106 S:2	0	0	0	0	0	2	0	2	2	0	0
<i>Bombus caliginosus</i> obscure bumble bee	G4? S1S2	None None	IUCN_VU-Vulnerable	1,600 1,600	181 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>Buteo swainsoni</i> Swainson's hawk	G5 S3	None Threatened	BLM_S-Sensitive IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	513 1,300	2510 S:3	0	0	0	0	1	2	2	1	2	1	0
<i>Caulanthus californicus</i> California jewelflower	G1 S1	Endangered Endangered	Rare Plant Rank - 1B.1 SB_RSABG-Rancho Santa Ana Botanic Garden SB_SBBG-Santa Barbara Botanic Garden SB_UCBBG-UC Berkeley Botanical Garden	700 1,150	67 S:4	0	0	0	0	4	0	4	0	0	4	0
<i>Caulanthus lemmonii</i> Lemmon's jewelflower	G3 S3	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_SBBG-Santa Barbara Botanic Garden USFS_S-Sensitive	1,475 2,660	91 S:4	1	0	0	0	0	3	2	2	4	0	0
<i>Coelus gracilis</i> San Joaquin dune beetle	G1 S1	None None	BLM_S-Sensitive IUCN_VU-Vulnerable	350 1,100	11 S:4	0	0	0	0	0	4	4	0	4	0	0
<i>Deinandra halliana</i> Hall's tarplant	G3 S3	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_RSABG-Rancho Santa Ana Botanic Garden SB_SBBG-Santa Barbara Botanic Garden		56 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Delphinium recurvatum</i> recurved larkspur	G2? S2?	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_SBBG-Santa Barbara Botanic Garden	350 1,500	100 S:4	0	0	1	0	0	3	3	1	4	0	0
<i>Dipodomys ingens</i> giant kangaroo rat	G1G2 S1S2	Endangered Endangered	IUCN_EN-Endangered	350 400	137 S:2	0	0	0	0	0	2	2	0	2	0	0
<i>Dipodomys nitratoides brevinasus</i> short-nosed kangaroo rat	G3T1T2 S1S2	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable	520 540	64 S:4	0	0	4	0	0	0	0	4	4	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>Dipodomys nitratoideus nitratoideus</i> Tipton kangaroo rat	G3T1T2 S1S2	Endangered Endangered	IUCN_VU-Vulnerable	290 530	79 S:2	0	0	0	0	0	2	2	0	2	0	0
<i>Eremalche parryi ssp. kernensis</i> Kern mallow	G3G4T3 S3	Endangered None	Rare Plant Rank - 1B.2 SB_RSABG-Rancho Santa Ana Botanic Garden SB_SBBG-Santa Barbara Botanic Garden	900 900	184 S:2	0	0	0	0	0	2	2	0	2	0	0
<i>Eriogonum temblorense</i> Temblor buckwheat	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	1,450 1,650	16 S:2	0	1	0	0	0	1	1	1	2	0	0
<i>Falco mexicanus</i> prairie falcon	G5 S4	None None	CDFW_WL-Watch List IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	840 2,120	460 S:5	0	0	0	0	0	5	5	0	5	0	0
<i>Gambelia sila</i> blunt-nosed leopard lizard	G1 S1	Endangered Endangered	CDFW_FP-Fully Protected IUCN_EN-Endangered	260 1,825	324 S:22	1	1	4	2	0	14	19	3	22	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	320 320	110 S:1	0	0	1	0	0	0	0	1	1	0	0
<i>Layia heterotricha</i> pale-yellow layia	G2 S2	None None	Rare Plant Rank - 1B.1 BLM_S-Sensitive SB_SBBG-Santa Barbara Botanic Garden USFS_S-Sensitive	1,800 1,800	125 S:2	0	0	0	0	0	2	2	0	2	0	0
<i>Layia munzii</i> Munz's tidy-tips	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive		59 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Lytta molesta</i> molestan blister beetle	G2 S2	None None		360 360	17 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>Madia radiata</i> showy golden madia	G3 S3	None None	Rare Plant Rank - 1B.1 BLM_S-Sensitive SB_RSABG-Rancho Santa Ana Botanic Garden SB_SBBG-Santa Barbara Botanic Garden	1,400 1,600	100 S:3	0	0	0	0	0	3	3	0	3	0	0
<i>Malacothamnus aboriginum</i> Indian Valley bush-mallow	G3 S3	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_RSABG-Rancho Santa Ana Botanic Garden SB_SBBG-Santa Barbara Botanic Garden		63 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Masticophis flagellum ruddocki</i> San Joaquin coachwhip	G5T2T3 S2?	None None	CDFW_SSC-Species of Special Concern	320 890	96 S:3	0	2	0	0	0	1	1	2	3	0	0
<i>Monolopia congdonii</i> San Joaquin woollythreads	G2 S2	Endangered None	Rare Plant Rank - 1B.2 SB_UCBBG-UC Berkeley Botanical Garden	250 1,130	111 S:36	0	16	7	4	3	6	23	13	33	3	0
<i>Navarretia nigelliformis ssp. radians</i> shining navarretia	G4T2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	1,400 1,425	103 S:2	0	0	0	0	0	2	0	2	2	0	0
<i>Onychomys torridus tularensis</i> Tulare grasshopper mouse	G5T1T2 S1S2	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern	900 900	53 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Perognathus inornatus</i> San Joaquin Pocket Mouse	G2G3 S2S3	None None	BLM_S-Sensitive IUCN_LC-Least Concern	360 860	127 S:12	0	4	5	1	0	2	5	7	12	0	0
<i>Rana draytonii</i> California red-legged frog	G2G3 S2S3	Threatened None	CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable	375 375	1540 S:1	0	1	0	0	0	0	0	1	1	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	463 463	1057 S:1	0	0	1	0	0	0	0	1	1	0	0
<i>Taxidea taxus</i> American badger	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	900 900	591 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>Trigonoscuta sp.</i> Doyen's trigonoscuta dune weevil	G1Q S1	None None		375 375	1 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Tropidocarpum californicum</i> Kings gold	G1 S1	None None	Rare Plant Rank - 1B.1	575 590	8 S:2	0	2	0	0	0	0	0	2	2	0	0
<i>Vulpes macrotis mutica</i> San Joaquin kit fox	G4T2 S2	Endangered Threatened		240 1,000	1018 S:33	1	3	12	1	0	16	28	5	33	0	0

Appendix C. CNPS plant list.

*The database used to provide updates to the Online Inventory is under construction. [View updates and changes made since May 2019 here.](#)

Plant List

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

Search Criteria

Found in Quads 3612012, 3612011, 3611918, 3512082, 3512081, 3511988, 3512072 3512071 and 3511978;

[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
Allium howellii var. howellii	Howell's onion	Alliaceae	perennial bulbiferous herb	Mar-Apr	4.3	S3	G3G4T3
Amsinckia furcata	forked fiddleneck	Boraginaceae	annual herb	Feb-May	4.2	S4	G4
Androsace elongata ssp. acuta	California androsace	Primulaceae	annual herb	Mar-Jun	4.2	S3S4	G5? T3T4
Antirrhinum ovatum	oval-leaved snapdragon	Plantaginaceae	annual herb	May-Nov	4.2	S3	G3
Atriplex coronata var. coronata	crownscale	Chenopodiaceae	annual herb	Mar-Oct	4.2	S3	G4T3
Atriplex coronata var. vallicola	Lost Hills crownscale	Chenopodiaceae	annual herb	Apr-Sep	1B.2	S2	G4T2
Caulanthus californicus	California jewelflower	Brassicaceae	annual herb	Feb-May	1B.1	S1	G1
Caulanthus lemmonii	Lemmon's jewelflower	Brassicaceae	annual herb	Feb-May	1B.2	S3	G3
Chorizanthe ventricosa	potbellied spineflower	Polygonaceae	annual herb	May-Sep	4.3	S3	G3
Convolvulus simulans	small-flowered morning-glory	Convolvulaceae	annual herb	Mar-Jul	4.2	S4	G4
Deinandra halliana	Hall's tarplant	Asteraceae	annual herb	(Mar)Apr-May	1B.2	S3	G3
Delphinium recurvatum	recurved larkspur	Ranunculaceae	perennial herb	Mar-Jun	1B.2	S2?	G2?
Eremalche parryi ssp. kernensis	Kern mallow	Malvaceae	annual herb	Jan,Mar,Apr,May(Feb)	1B.2	S3	G3G4T3
Eriastrum hooveri	Hoover's eriastrum	Polemoniaceae	annual herb	(Feb)Mar-Jul	4.2	S3	G3
Eriogonum nudum var. indictum	protruding buckwheat	Polygonaceae	perennial herb	(Apr)May-Oct(Dec)	4.2	S4	G5T4
Eriogonum temblorense	Temblor buckwheat	Polygonaceae	annual herb	(Apr)May-Sep	1B.2	S2	G2
Layia heterotricha	pale-yellow layia	Asteraceae	annual herb	Mar-Jun	1B.1	S2	G2

<u>Layia munzii</u>	Munz's tidy-tips	Asteraceae	annual herb	Mar-Apr	1B.2	S2	G2
<u>Madia radiata</u>	showy golden madia	Asteraceae	annual herb	Mar-May	1B.1	S3	G3
<u>Monolopia congdonii</u>	San Joaquin woollythreads	Asteraceae	annual herb	(Jan)Feb-May	1B.2	S2	G2
<u>Navarretia nigelliformis</u> <u>ssp. radians</u>	shining navarretia	Polemoniaceae	annual herb	(Mar)Apr-Jul	1B.2	S2	G4T2
<u>Trichostema ovatum</u>	San Joaquin bluecurls	Lamiaceae	annual herb	Jul-Oct	4.2	S3	G3
<u>Tropidocarpum</u> <u>californicum</u>	Kings gold	Brassicaceae	annual herb	Feb-Mar	1B.1	S1	G1

Suggested Citation

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Questions and Comments

rareplants@cnps.org

Appendix C

Cultural Resources Report

**PHASE I CULTURAL RESOURCES SURVEY,
AVENAL SEWER COLLECTION SYSTEM PROJECT,
KINGS COUNTY, CALIFORNIA**

Prepared for:

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

Prepared by:

David S. Whitley, Ph.D., RPA

and

Robert Azpitarte, B.A.

ASM Affiliates, Inc.
20424 West Valley Blvd., Suite A
Tehachapi, California 93561

December 2019
PN 33840.00

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MANAGEMENT SUMMARY

An intensive Phase I cultural resources survey was conducted for the Avenal Sewer Collection Project, Avenal, Kings County, California. The Project area of potential effect (APE) consists of 65,299 linear feet (ft), or approximately 12.35 miles (mi), of sewer line within the developed portions of the City of Avenal, northeast of Highway 33. ASM Affiliates, Inc., conducted this study, with David S. Whitley, Ph.D., RPA, serving as principal investigator. The study was undertaken to assist with compliance with the California Environmental Quality Act (CEQA).

A records search of site files and maps was conducted at the Southern San Joaquin Valley Archaeological Information Center, California State University, Bakersfield. A Sacred Lands File Request was also completed by the Native American Heritage Commission (NAHC). These investigations determined that the study area had not been previously surveyed in its entirety and that no cultural or tribal cultural resources had been recorded within it. Outreach letters were sent to the tribal organizations on the NAHC-provided contact list. Follow-up phone calls were also made. One comment was received: the Santa Rosa Rancheria – Tachi Yokuts requested that a tribal monitor be present during ground-surface disturbance due to the potential sensitivity of the study area.

The APE for the Project primarily consists of existing road right-of-ways (ROW). The Phase I survey fieldwork was conducted with transects walked on both sides of the roads. A segment of the main sewer collection line running to the Waste Water Treatment Plant also crosses open fields. Two parallel 15 meter (m) wide transects were walked along this segment. No cultural resources of any kind were discovered during the survey. Based on these results, the Avenal Sewer Collection Project does not have the potential to result in significant impacts to historical resources, and no additional archaeological work is recommended. Following the request of the Santa Rosa Rancheria – Tachi Yokuts, it is recommended that a tribal monitor be present for construction grading.

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1. INTRODUCTION AND REGULATORY CONTEXT

ASM Affiliates, Inc., was retained by Crawford and Bowen Planning, to conduct an intensive Phase I cultural resources survey for the Avenal Sewer Collection Line Project, Avenal, Kings County, California (Figure 1). The study was undertaken to assist with compliance with the California Environmental Quality Act (CEQA). The investigation was conducted, specifically, to ensure that significant impacts or adverse effects to historical resources or historic properties do not occur as a result of project construction.

This current study included:

- A background records search and literature review to determine if any known cultural resources were present in the project zone and/or whether the area had been previously and systematically studied by archaeologists;
- An on-foot, intensive inventory of the study area to identify and record previously undiscovered cultural resources and to examine known sites; and
- A preliminary assessment of any such resources found within the subject property.

David S. Whitley, Ph.D., RPA, served as principal investigator and Robert Azpitarte, B.A., ASM Associate Archaeologist, and Tim Polkinghorne, B.A., ASM Assistant Archaeologist, conducted the fieldwork.

This document constitutes a report on the Phase I survey. Subsequent chapters provide background to the investigation, including historic context studies; the findings of the archival records search; Native American consultation; a summary of the field surveying techniques employed; and the results of the fieldwork. We conclude with management recommendations for the study area.

1.1 PROJECT LOCATION, DESCRIPTION & APE

The Avenal Sewer Collection Line Project is located within the developed portions of the City of Avenal, north and east of Highway 33, Kings County, California. This places the Project area on the open flats of the Kettleman Plain, a westward extension of the San Joaquin Valley located immediately west of the Kettleman Hills. Elevation within the Project area ranges from approximately 750-ft to 900-ft above mean sea level (amsl), sloping slightly from southwest to northeast, where the City abuts the edges of the Kettleman Hills.

The proposed Project involves replacing 41,073 linear feet of gravity sewer mains using the conventional dig and replace construction method; rehabilitating 24,156 linear feet of gravity sewer mains using the trenchless cured-in-place pipeline (CIPP) method; and miscellaneous repairs to the wastewater treatment plant (WWTP). The repairs to WWTP are minor with no excavation involved.

The Project APE is entirely within existing, previously disturbed ROWs. All access, staging, lay-down and work areas will be within these ROWs. With the exception of a segment of the main collection pipeline running to the WWTP, these ROWs are currently paved. The horizontal APE

for the project, approximately 12.35-mi long and 45-ft wide, is about 67 acres (ac) in total area. The vertical area, consisting of the maximum depth of excavation, is 6-ft.

1.2 REGULATORY CONTEXT

1.2.1 CEQA

CEQA is applicable to discretionary actions by state or local lead agencies. Under CEQA, lead agencies must analyze impacts to cultural resources. Significant impacts under CEQA occur when “historically significant” or “unique” cultural resources are adversely affected, which occurs when such resources could be altered or destroyed through project implementation. Historically significant cultural resources are defined by eligibility for or by listing in the California Register of Historical Resources (CRHR). In practice, the federal NRHP criteria (below) for significance applied under Section 106 are generally (although not entirely) consistent with CRHR criteria (see PRC § 5024.1, Title 14 CCR, Section 4852 and § 15064.5(a)(3)).

Significant cultural resources are those archaeological resources and historical properties that:

- (A) Are associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage;
- (B) Are associated with the lives of persons important in our past;
- (C) Embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possess high artistic values; or
- (D) Have yielded, or may be likely to yield, information important in prehistory or history.

Unique resources under CEQA, in slight contrast, are those that represent:

An archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- (1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
- (2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- (3) Is directly associated with a scientifically recognized important prehistoric or historic event or person (PRC § 21083.2(g)).

Preservation in place is the preferred approach under CEQA to mitigating adverse impacts to significant or unique cultural resources.

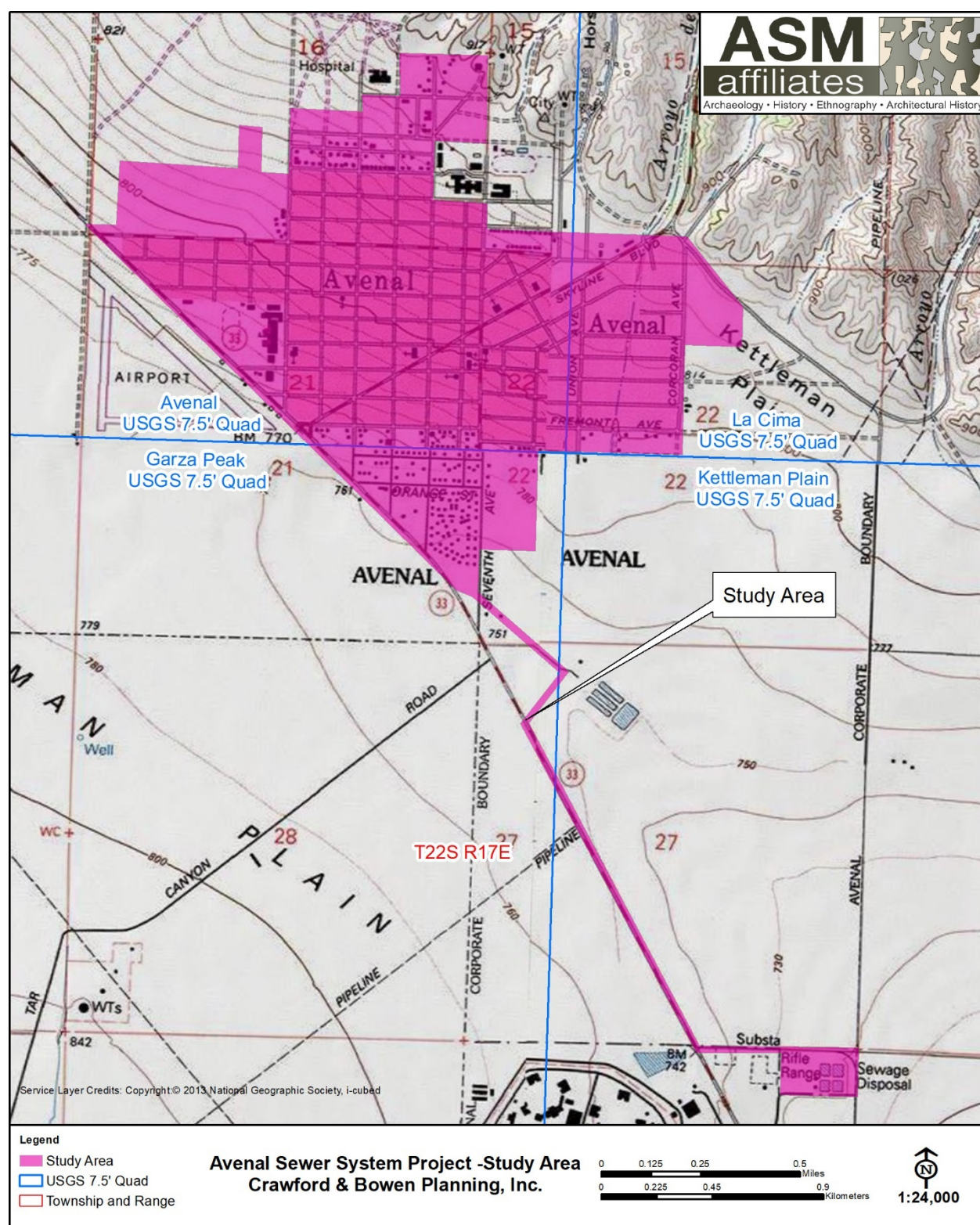


Figure 1. Location of the Avenal Sewer Collection Line Project, Avenal, Kings County, California.

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2. ENVIRONMENTAL AND CULTURAL BACKGROUND

2.1 ENVIRONMENTAL BACKGROUND AND GEOARCHAEOLOGICAL SENSITIVITY

As noted above, the Project APE is located at an elevation ranging from 750 to 900-ft amsl on the open flats of the Kettleman Plain. With the exception of the agricultural fields to the south of the City of Avenal, this location is entirely developed with single family residences and business/industrial properties. Prior to development, this area most likely contained a saltbrush scrub plant community, as was common on the west side of the San Joaquin Valley (Schoenherr 1992).

According to the geoarchaeological model developed by Meyer et al. (2010), the Project APE has a moderate potential for buried archaeological deposits. Buried sites and cultural resources therefore potentially may be present.

2.2 ETHNOGRAPHIC BACKGROUND

Penutian-speaking Yokuts tribal groups occupied the southern San Joaquin Valley region and much of the nearby Sierra Nevada. Ethnographic information about the Yokuts was collected primarily by Powers (1971, 1976 [originally 1877]), Kroeber (1925), Gayton (1930, 1948), Driver (1937), Latta (1977) and Harrington (n.d.). For a variety of historical reasons, existing research information emphasizes the central Yokuts tribes who occupied both the valley and particularly the foothills of the Sierra. The northernmost tribes suffered from the influx of Euro-Americans during the Gold Rush and their populations were in substantial decline by the time ethnographic studies began in the early twentieth century. In contrast, the southernmost tribes were partially removed by the Spanish to missions and eventually absorbed into multi-tribal communities on the Sebastian Indian Reservation (on Tejon Ranch), and later the Tule River Reservation and Santa Rosa Rancheria to the north. The result is an unfortunate scarcity of ethnographic detail on southern Valley tribes, especially in relation to the rich information collected from the central foothills tribes where native speakers of the Yokuts dialects are still found. Regardless, the general details of indigenous life-ways were similar across the broad expanse of Yokuts territory, particularly in terms of environmentally influenced subsistence and adaptation and with regard to religion and belief, which were similar everywhere.

Kroeber (1925), Gayton (1948) and Latta (1977) place the Project APE within Tachi Yokuts territory. No historical villages are identified by these authors within the immediate region, however. The Yokuts settlement pattern was largely consistent, regardless of specific tribe involved. Winter villages were typically located along lakeshores and major stream courses (as these existed circa AD 1800), with dispersal phase family camps located at elevated spots on the valley floor and near gathering areas in the foothills.

Most Yokuts groups, again regardless of specific tribal affiliation, were organized as a recognized and distinct tribelet; a circumstance that almost certainly pertained to the tribal groups noted above. Tribelets were land-owning groups organized around a central village and linked by shared territory and descent from a common ancestor. The population of most tribelets ranged from about 150 to 500 peoples (Kroeber 1925).

Each tribelet was headed by a chief who was assisted by a variety of assistants, the most important of whom was the *winatum*, a herald or messenger and assistant chief. A shaman also served as religious officer. While shamans did not have any direct political authority, as Gayton (1930) has illustrated, they maintained substantial influence within their tribelet.

Shamanism is a religious system common to most Native American tribes. It involves a direct and personal relationship between the individual and the supernatural world enacted by entering a trance or hallucinatory state (usually based on the ingestion of psychotropic plants, such as jimsonweed or more typically native tobacco). Shamans were considered individuals with an unusual degree of supernatural power, serving as healers or curers, diviners, and controllers of natural phenomena (such as rain or thunder). Shamans also produced the rock art of this region, depicting the visions they experienced in vision quests believed to represent their spirit helpers and events in the supernatural realm (Whitley 1992, 2000).

The centrality of shamanism to the religious and spiritual life of the Yokuts was demonstrated by the role of shamans in the yearly ceremonial round. The ritual round, performed the same each year, started in the spring with the jimsonweed ceremony, followed by rattlesnake dance and (where appropriate) first salmon ceremony. After returning from seed camps, fall rituals began in the late summer with the mourning ceremony, followed by first seed and acorn rites and then bear dance (Gayton 1930:379). In each case, shamans served as ceremonial officials responsible for specific dances involving a display of their supernatural powers (Kroeber 1925).

Subsistence practices varied from tribelet to tribelet based on the environment of residence. Throughout Native California, and Yokuts territory in general, the acorn was a primary dietary component, along with a variety of gathered seeds. Valley tribes augmented this resource with lacustrine and riverine foods, especially fish and wildfowl. As with many Native California tribes, the settlement and subsistence rounds included the winter aggregation into a few large villages, where stored resources (like acorns) served as staples, followed by dispersal into smaller camps, often occupied by extended families, where seasonally available resources would be gathered and consumed.

Although population estimates vary and population size was greatly affected by the introduction of Euro-American diseases and social disruption, the Yokuts were one of the largest, most successful groups in Native California. Cook (1978) estimates that the Yokuts region contained 27 percent of the aboriginal population in the state at the time of contact; other estimates are even higher. Many Yokuts people continue to reside in the southern San Joaquin Valley today.

2.3 PRE-CONTACT ARCHAEOLOGICAL BACKGROUND

The southern San Joaquin Valley region has received minimal archaeological attention compared to other areas of the state. In part, this is because the majority of California archaeological work has concentrated in the Sacramento Delta, Santa Barbara Channel, and central Mojave Desert areas (see Moratto 1984). Although knowledge of the region's prehistory is limited, enough is known to determine that the archaeological record is broadly similar to south-central California as a whole (see Gifford and Schenk 1926; Hewes 1941; Wedel 1941; Fenenga 1952; Elsasser 1962; Fredrickson and Grossman 1977; Schiffman and Garfinkel 1981). Based on these sources, the general prehistory of the region can be outlined as follows.

Initial occupation of the region occurred at least as early as the *Paleoindian Period*, or prior to about 10,000 years before present (YBP). Evidence of early use of the region is indicated by characteristic fluted and stemmed points found around the margin of Tulare Lake, in the foothills of the Sierra, and in the Mojave Desert proper.

Both fluted and stemmed points are particularly common around lake margins, suggesting a terminal Pleistocene/early Holocene lakeshore adaptation similar to that found throughout the far west at the same time; little else is known about these earliest peoples. Over 250 fluted points have been recovered from the Witt Site (CA-KIN-32), located along the western shoreline of ancient Tulare Lake east of the study area, demonstrating the importance of this early occupation in the San Joaquin Valley specifically (see Fenenga 1993). Additional finds consist of a Clovis-like projectile point discovered in a flash-flood cut-bank near White Oak Lodge in 1953 on Tejon Ranch (Glennan 1987a, 1987b). More recently, a similar fluted point was found near Bakersfield (Zimmerman et al. 1989), and a number are known from the Edwards Air Force Base and Boron area of the western Mojave Desert. Although human occupation of the state is well-established during the Late Pleistocene, relatively little can be inferred about the nature and distribution of this occupation with a few exceptions. First, little evidence exists to support the idea that people at that time were big-game hunters, similar to those found on the Great Plains. Second, the western Mojave Desert evidence suggests small, very mobile populations that left a minimal archaeological signature. The evidence from the ancient Tulare Lake shore, in contrast, suggests much more substantial population and settlements which, instead of relying on big game hunting, were tied to the lacustrine lake edge. Variability in subsistence and settlement patterns is thus apparent in California, in contrast to the Great Plains.

Substantial evidence for human occupation across California, however, first occurs during the middle Holocene, roughly 7,500 to 4,000 YBP. This period is known as the *Early Horizon*, or alternatively as the Early Millingstone along the Santa Barbara Channel. In the south, populations concentrated along the coast with minimal visible use of inland areas. Adaptation emphasized hard seeds and nuts with tool-kits dominated by mullers and grindstones (manos and metates). Additionally, little evidence for Early Horizon occupation exists in most inland portions of the state, partly due to a severe cold and dry paleoclimatic period occurring at this time, although a site deposit dating to this age has been identified along the ancient Buena Vista shoreline in Kern County to the south (Rosenthal et al. 2007). Regardless of specifics, Early Horizon population density was low with a subsistence adaptation more likely tied to plant food gathering than hunting.

Environmental conditions improved dramatically after about 4,000 YBP during the *Middle Horizon* (or Intermediate Period). This period is known climatically as the Holocene Maximum (circa 3,800 YBP) and was characterized by significantly warmer and wetter conditions than previously experienced. It was marked archaeologically by large population increase and radiation into new environments along coastal and interior south-central California and the Mojave Desert (Whitley 2000). In the Delta region to the north, this same period of favorable environmental conditions was characterized by the appearance of the Windmill culture which exhibited a high degree of ritual elaboration (especially in burial practices) and perhaps even a rudimentary mound-building tradition (Meighan, personal communication, 1985). Along with ritual elaboration, Middle Horizon times experienced increasing subsistence specialization, perhaps correlating with the appearance of acorn processing technology. Penutian speaking peoples (including the Yokuts) are also posited to have entered the state roughly at the beginning of this period and, perhaps to have brought this technology with them (cf. Moratto 1984). Likewise, it appears the so-called "Shoshonean Wedge" in southern California, the Takic speaking groups that include the Gabrielino/Fernandeño, Tataviam and Kitanemuk, may have moved into the region at that time (Sutton 2009, rather than at about 1500 YBP as first suggested by Kroeber (1925).

Evidence for Middle Horizon occupation of interior south-central California is substantial. For example, in northern Los Angeles County along the upper Santa Clara River, to the south of the San Joaquin Valley, the Agua Dulce village complex indicates occupation extending back to the Intermediate Period, when the population of the village may have been 50 or more people (King et al n.d.). Similarly, inhabitation of the Hathaway Ranch region near Lake Piru, and the Newhall Ranch near Valencia, appears to date to the Intermediate Period (W & S Consultants 1994). To the west, little or no evidence exists for pre-Middle Horizon occupation in the upper Sisquoc and Cuyama River drainages; populations first appear there at roughly 3,500 YBP (Horne 1981). The Carrizo Plain, the valley immediately west of the San Joaquin, experienced a major population expansion during the Middle Horizon (W & S Consultants 2004; Whitley et al. 2007), and recently collected data indicates the Tehachapi Mountains region was first significantly occupied during the Middle Horizon (W & S Consultants 2006). A parallel can be drawn to the inland Ventura County region where a similar pattern has been identified (Whitley and Beaudry 1991), as well as the western Mojave Desert (Sutton 1988a, 1988b), the southern Sierra Nevada (W & S Consultants 1999), and the Coso Range region (Whitley et al. 1988). In all of these areas a major expansion in settlement, the establishment of large site complexes and an increase in the range of environments exploited appear to have occurred sometime roughly around 4,000 years ago. Although most efforts to explain this expansion have focused on local circumstances and events, it is increasingly apparent this was a major southern California-wide occurrence and any explanation must be sought at a larger level of analysis (Whitley 2000). Additionally, evidence from the Carrizo Plain suggests the origins of the tribelet level of political organization developed during this period (W & S Consultants 2004; Whitley et al. 2007). Whether this same demographic process holds for the southern San Joaquin Valley, including the study area, is yet to be determined.

The beginning of the *Late Horizon* is set variously at 1,500 and 800 YBP, with a growing archaeological consensus for the shorter chronology. Increasing evidence suggests the importance of the Middle-Late Horizons transition (AD 800 to 1200) in the understanding of south-central California prehistory. This corresponds to the so-called Medieval Climatic Anomaly, followed by the Little Ice Age, and this general period of climatic instability extended to about A.D. 1860. It

included major droughts matched by intermittent “mega-floods,” and resulted in demographic disturbances across much of the west (Jones et al. 1999). It is believed to have resulted in major population decline and abandonments across south-central California, involving as much as 90% of the interior populations in some regions, including the Carrizo Plain (Whitley et al. 2007). It is not clear whether site abandonment was accompanied by a true reduction in population or an agglomeration of the same numbers of peoples into fewer but larger villages in more favorable locations. Population along the Santa Barbara coast appears to have spiked at about the same time that it collapsed on the Carrizo Plain (ibid). Along Buena Vista Lake, in Kern County, population appears to have been increasingly concentrated towards the later end of the Medieval Climatic Anomaly (Culleton 2006), and population intensification also appears to have occurred in the well-watered Tehachapi Mountains during this same period (W & S Consultants 2006).

What is then clear is that Middle Period villages and settlements were widely dispersed across the south-central California landscape, including in the Sierras and the Mojave Desert. Many of these sites are found at locations that lack existing or known historical fresh water sources. Late Horizon sites, in contrast, are typically concentrated in areas where fresh water was available during the historical period, if not currently.

One extensively studied site that shows evidence of intensive occupation during the Middle-Late Horizons transition (~1,500 – 500 YBP) is the Redtfeldt Mound (CA-KIN-66/H), located south of the current study area, near the north shore of ancient Tulare Lake. There, Siefkin (1999) reported on human burials and a host of artifacts and ecofacts excavated from a modest-sized mound. He found that both Middle Horizon and Middle-Late Horizons transition occupations were more intensive than Late Horizon occupations, which were sporadic and less intensive (Siefkin 1999:110-111).

The Late Horizon can then be understood as a period of recovery from a major demographic collapse. One result is the development of regional archaeological cultures as the precursors to ethnographic Native California; suggesting that ethnographic life-ways recorded by anthropologists extend roughly 800 years into the past.

The position of southern San Joaquin Valley prehistory relative to patterns seen in surrounding areas is still somewhat unknown. The presence of large lake systems in the valley bottoms appears to have mediated some of the desiccation seen elsewhere. But, as the reconstruction of Soda Lake in the nearby Carrizo Plain demonstrates (see Whitley et al. 2007) environmental perturbations had serious impacts on lake systems too. Identifying certain of the prehistoric demographic trends for the southern San Joaquin Valley, and determining how these trends (if present) correlate with those seen elsewhere, is a current important research objective.

2.4 HISTORICAL BACKGROUND

Spanish explorers first visited the San Joaquin Valley in 1772, but its lengthy distance from the missions and presidios along the Pacific Coast delayed permanent settlement for many years, including during the Mexican period of control over the Californian region. In the 1840s, Mexican rancho owners along the Pacific Coast allowed their cattle to wander and graze in the San Joaquin Valley (JRP Historical Consulting 2009). The Mexican government granted the first ranchos in

the southern part of the San Joaquin Valley in the early 1840s, but these did not result in permanent settlement. It was not until the annexation of California in 1848 that the exploitation of the San Joaquin Valley began (Pacific Legacy 2006).

The discovery of gold in northern California in 1848 resulted in a dramatic increase of population, consisting in good part of fortune seekers and gold miners, who began to scour other parts of the state. After 1851, when gold was discovered in the Sierra Nevada Mountains in eastern Kern County, the population of the area grew rapidly. Some new immigrants began ranching in the San Joaquin Valley to supply the miners and mining towns. Ranchers grazed cattle and sheep, and farmers dry-farmed or used limited irrigation to grow grain crops, leading to the creation of small agricultural communities throughout the valley (JRP Historical Consulting 2009).

After the American annexation of California, the San Joaquin Valley became significant as a center of food production for this new influx of people in California. The expansive unfenced and principally public foothill spaces were well suited for grazing both sheep and cattle (Boyd 1997). As the Sierra Nevada gold rush presented extensive financial opportunities, ranchers introduced new breeds of livestock, consisting of cattle, sheep and pig (Boyd 1997).

With the increase of ranching in the San Joaquin came the dramatic change in the landscape, as non-native grasses more beneficial for grazing and pasture replaced native flora (Preston 1981). After the passing of the Arkansas Act in 1850, efforts were made to reclaim small tracts of land in order to create more usable spaces for ranching. Eventually, as farming supplanted ranching as a more profitable enterprise, large tracts of land began to be reclaimed for agricultural use, aided in part by the extension of the railroad in the 1870s (Pacific Legacy 2006).

Following the passage of state wide ‘No-Fence’ laws in 1874, ranching practices began to decline, while farming expanded in the San Joaquin Valley in both large land holdings and smaller, subdivided properties. As the farming population grew, so did the demand for irrigation. Settlers began reclamation of swampland in 1866, and built small dams across the Kern River to divert water into the fields. By 1880, 86 different groups were taking water from the Kern River. Ten years later, 15 major canals provided water to thousands of acres in Kern County.

During the period of reclaiming unproductive land in the San Joaquin Valley, grants were given to individuals who had both the resources and the finances to undertake the operation alone. One small agricultural settlement, founded by Colonel Thomas Baker in 1861 after procuring one such grant, took advantage of reclaimed swampland along the Kern River. This settlement became the City of Bakersfield in 1869, and quickly became the center of activity in the southern San Joaquin Valley, and in the newly formed Kern County. Located on the main stage road through the San Joaquin Valley, the town became a primary market and transportation hub for stock and crops, as well as a popular stopping point for travelers on the Los Angeles and Stockton Road. The Southern Pacific Railroad reached the Bakersfield area in 1873, connecting it with important market towns elsewhere in the state, dramatically impacting both agriculture and oil production (Pacific Legacy 2006).

Three competing partnerships developed during this period which had a great impact on control of water, land reclamation and ultimately agricultural development in the San Joaquin Valley:

Livermore and Chester, Haggin and Carr, and Miller and Lux, perhaps the most famous of the enterprises. Livermore and Chester were responsible, among other things, for developing the large Hollister plow (three feet wide by two feet deep), pulled by a 40-mule team, which was used for ditch digging. Haggin and Carr were largely responsible for reclaiming the beds of the Buena Vista and Kern lakes, and for creating the Calloway Canal, which drained through the Rosedale area in Bakersfield to Goose Lake (Morgan 1914). Miller and Lux ultimately became one of the biggest private property holders in the country, controlling the rights to over 22,000 square miles. Miller and Lux's impact extended beyond Kern County, however. They recognized early-on that control of water would have important economic implications, and they played a major role in the water development of the state. They controlled, for example, over 100 miles of the San Joaquin River with the San Joaquin and Kings River Canal and Irrigation System. They were also embroiled for many years in litigation against Haggin and Carr over control of the water rights to the Kern River. Descendants of Henry Miller continue to play a major role in California water rights, with his great grandson, George Nickel, Jr., the first to develop the concept of water banking, thus creating a system to buy and sell water (<http://exiledonline.com/california-class-war-history-meet-the-oligarch-family-thats-been-scamming-taxpayers-for-150-years-and-counting/>).

Due to a lack of water relative to the Sierra foothills, the west side of the San Joaquin Valley was later to develop than the eastern. Coal was putatively discovered in the hills above the Coalinga area in the 1870s and, in 1888, a railroad was constructed to connect the mines to coaling stations on the flats. The town name Coalinga is derived from one of these stops, Coaling Station A (Taylor 2018).

The impetus for the development of the region ultimately however was oil. (Much of the early mined "coal" may actually have been heavily-saturated oil shales, which would burn but not produce ashes.) Asphaltum had been mined in the Coalinga area by the Yokuts, prior to Euro-American contact. This activity continued, more systematically, by Euro-American interests. A test well for petroleum was first drilled in the Coalinga area in 1867 at an "oil seep" northeast of the town in an area that became known as Oil City. The first successful well, however, was spud in 1891 by Milton McWhorter. The Southern Pacific Railroad extended a line into the area at that time, with a post office established in 1899 and the town incorporated in 1906 (Latta 1949).

Oil in this area occurs in the Coalinga Anticline, which extends from Lost Hills north through the Kettleman Hills to the Coalinga area (Arnold and Anderson 1908). The Coalinga Oil Field boomed in the early 1900s and in 1910 was the richest producing field in California. By 1912, production had decreased, and it has continued to steadily decrease ever since (Weddle 1951).

The Kettleman North Dome Oil Field, near Avenal and the Project APE, subsequently playing a major role in regional development, especially with the decline in production in the Coalinga Oil Field after 1912. The Kettleman Hills in general and the North Dome Oil Field specifically were long suspected to contain oil but the geological structure of the location prevented early development: nine separate but unsuccessful attempts were made to strike oil before 1910, all of which were failures because of their inability to reach the depth of the oil in the field, below 7,000-ft (ASM Affiliates 2015).

The first successful well, the Elliot No. 1 drilled by the Milham Company, struck oil in 1928 at a depth of 7,108-ft. The gusher took three years to control and, within a few years, the field was producing 3,670 barrels per day. A small camp was developed near the discovery well. Peak production in the field occurred in 1936, when 29 million barrels were pumped, making it one of the most productive fields in the country. Production had fallen to about 128,000 barrels by 2006, however, perhaps in part because the depth of the oil prevented the use of enhanced recovery techniques. A series of efforts to unitize the oil field occurred, starting in 1931. At that point, the Standard Oil Company was the largest lease holder, with smaller operators syndicated into the Kettleman North Dome Association and the Kettleman Hills Royalty Association. The JP Oil Company, Inc., took over the operations of the field in 1997, with Chevron subsequently replacing them. CRC replaced Chevron as the field operator in 2013 (ASM Affiliates 2015).

Avenal (“oat fields” in Spanish) was originally called Milham City, after the oil company. Initially a boomtown oil field camp, Standard Oil surveyed the area and laid out a company town in 1929. By 1940, Avenal was the second biggest town in Kings County. Although the importance of oil to the local economy has fluctuated over time, the construction of the California Aqueduct and the Interstate 5 freeway both boosted local development. The town incorporated in 1979, with the addition of a state prison contributing to the economic base of the city (<https://www.cityofavenal.com/386/History-of-Avenal>; accessed 12/09/2019).

2.5 RESEARCH DESIGN

2.5.1 Pre-Contact Archaeology

Previous research and the nature of the pre-contact archaeological record suggest two significant NRHP themes, both of which fall under the general Pre-Contact Archaeology area of significance. These are the Expansion of Pre-Contact Populations and Their Adaptation to New Environments; and Adaptation to Changing Environmental Conditions.

The Expansion of Pre-Contact Populations and Their Adaptation to New Environments theme primarily concerns the Middle Horizon/Holocene Maximum. Its period of significance runs from about 4,000 to 1,500 YBP. It involves a period during which the prehistoric population appears to have expanded into a variety of new regions, developing new adaptive strategies in the process.

The Adaptation to Changing Environmental Conditions theme is partly related to the Holocene Maximum, but especially to the Medieval Climatic Anomaly. The period of significance for this theme, accordingly, extends from about 4,000 to 800 YBP. This theme involves the apparent collapse of many inland populations, presumably with population movements to better environments such as the coast. It is not yet known whether the southern San Joaquin Valley, with its system of lakes, sloughs and swamps, experienced population decline or, more likely, population increase due to the relatively favorable conditions of this region during this period of environmental stress.

The range of site types that are present in this region include:

- Villages, primarily located on or near permanent water sources, occupied by large groups during the winter aggregation season;
- Seasonal camps, again typically located at water sources, occupied during other parts of the year tied to locally and seasonally available food sources;
- Special activity areas, especially plant processing locations containing bedrock mortars (BRMs), commonly (though not exclusively) near existing oak woodlands, and invariably at bedrock outcrops or exposed boulders;
- Stone quarries and tool workshops, occurring in two general contexts: at or below naturally occurring chert exposures on the eastern front of the Tumbler Range; and at quartzite cobble exposures, often on hills or ridges;
- Ritual sites, most commonly pictographs (rock art) found at rockshelters or large exposed boulders, and cemeteries, both commonly associated with villages; and
- A variety of small lithic scatters (low density surface scatters of stone tools).

The first requisites in any research design are the definition of site age/chronology and site function. The ability to determine either of these basic kinds of information may vary between survey and test excavation projects, and due to the nature of the sites themselves. BRM sites without associated artifacts, for example, may not be datable beyond the assumption that they post-date the Early Horizon and are thus less than roughly 4,000 years old.

A second fundamental issue involves the place of site in the settlement system, especially with respect to water sources. Because the locations of the water sources have sometimes changed over time, villages and camps are not exclusively associated with existing (or known historical) water sources (W&S Consultants 2006). The size and locations of the region's lakes, sloughs and delta channels, to cite the most obvious example, changed significantly during the last 12,000 years due to major paleoclimatic shifts. This altered the area's hydrology and thus prehistoric settlement patterns. The western shoreline of Tulare Lake was relatively stable, because it abutted the Kettleman Hills. But the northern, southern and eastern shorelines comprised the near-flat valley floor. Relatively minor fluctuations up or down in the lake level resulted in very significant changes in the areal expression of the lake on these three sides, and therefore the locations of villages and camps. Although perhaps not as systematic, similar changes occurred with respect to stream channels and sloughs, and potential site locations associated with them. This circumstance has implications for predicting site locations and archaeological sensitivity. Site sensitivity is then hardest to predict in the open valley floor, where changes in stream courses and lake levels occurred on numerous occasions.

Nonetheless, the position of southern San Joaquin Valley prehistory relative to the changing settlement and demographic patterns seen in surrounding areas is still somewhat unknown (cf. Siefkin 1999), including to the two NRHP themes identified above. The presence of large lake systems in the valley bottoms can be expected to have mediated some of the effects of desiccation seen elsewhere. But, as the reconstruction of Soda Lake in the nearby Carrizo Plain demonstrates (see Whitley et al. 2007), environmental perturbations had serious impacts on lake systems too. Identifying certain of the prehistoric demographic trends for the southern San Joaquin Valley, and determining how these trends (if present) correlate with those seen elsewhere, is another primary regional research objective.

Archaeological sites would primarily be evaluated for NRHP eligibility under Criterion D, research potential.

2.5.2 Historical Archaeology: Native American

Less research has been conducted on the regional historical archaeological record, both Native American and Euro-American. For Native American historical sites, the ethnographic and ethnohistoric periods in the southern San Joaquin Valley extended from first Euro-American contact, in AD 1772, to circa 1900, when tribal populations were first consolidated on reservations. The major significant historic NRHP themes during this period of significance involve the related topics of Historic-Aboriginal Archaeology, and Native American Ethnic Heritage. More specifically, these concern the Adaptation of the Indigenous Population to Euro-American Encroachment and Settlement, and their Acculturation to Western Society. These processes included the impact of missionization on the San Joaquin Valley (circa 1800 to about 1845); the introduction of the horse and the development of a San Joaquin Valley “horse culture,” including raiding onto the coast and Los Angeles Basin (after about 1810); the use of the region as a refuge for mission neophyte escapees (after 1820); responses to epidemics from introduced diseases (especially in the 1830s); armed resistance to Euro-American encroachment (in the 1840s and early 1850s); the origins of the reservation system and the development of new tribal organizations and ethnic identities; and, ultimately, the adoption of the Euro-American society’s economic system and subsistence practices, and acculturation into that society.

Site types that have been identified in the region dating to the ethnographic/ethnohistoric period of significance primarily include villages and habitations, some of which contain cemeteries and rock art (including pictographs and cupules). Dispersed farmsteads, dating specifically from the reservation period or post-1853, would also be expected. The different social processes associated with this historical theme may be manifest in the material cultural record in terms of changing settlement patterns and village organization (from traditional nucleated villages to single family dispersed farmsteads); the breakdown of traditional trading networks with their replacement by new economic relationships; changing subsistence practices, especially the introduction of agriculture initially via escaped mission neophytes; the use of Euro-American artifacts and materials rather than traditional tools and materials; and, possibly, changing mortuary practices.

Inasmuch as culture change is a primary intellectual interest in archaeology, ethnographic villages and habitations may be NRHP eligible under Criterion D, research potential. Rock art sites, especially pictographs, may be eligible under Criterion C as examples of artistic mastery. They may also be eligible under Criterion A, association with events contributing to broad patterns of history. Ethnographic sites, further, may be NRHP eligible as Traditional Cultural Properties due to potential continued connections to tribal descendants, and their resulting importance in traditional practices and beliefs, including their significance for historical memory, tribal- and self-identity formation, and tribal education.

For Criteria A, C and D, eligibility requires site integrity (including the ability to convey historical association for Criterion A). These may include intact archaeological deposits for Criterion D, as well as setting and feel for Criteria C and A. Historical properties may lack physical integrity, as

normally understood in heritage management, but still retain their significance to Native American tribes as Traditional Cultural Properties if they retain their tribal associations and uses.

2.5.3 Historical Archaeology: Euro-American

Approaches to historical Euro-American archaeological research relevant to the region have been summarized by Caltrans (1999, 2000, 2007, 2008). These concern the general topics of historical landscapes, agriculture and farming, irrigation (water conveyance systems), and mining. Caltrans has also identified an evaluation matrix aiding determinations of eligibility. The identified research issues include site structure and land-use (lay-out, land use, feature function); economics (self-sufficiency, consumer behavior, wealth indicators); technology and science (innovations, methods); ethnicity and cultural diversity (religion, race); household composition and lifeways (gender, children); and labor relations. Principles useful for determining the research potential of an individual site or feature are conceptualized in terms of the mnemonic AIMS-R, as follows:

1. *Association* refers to the ability to link an assemblage of artifacts, ecofacts, and other cultural remains with an individual household, an ethnic or socioeconomic group, or a specific activity or property use.
2. *Integrity* addresses the physical condition of the deposit, referring to the intact nature of the archaeological remains. In order for a feature to be most useful, it should be in much the same state as when it was deposited. However, even disturbed deposits can yield important information (e.g., a tightly dated deposit with an unequivocal association).
3. *Materials* refers to the number and variety of artifacts present. Large assemblages provide more secure interpretations as there are more datable items to determine when the deposit was made, and the collection will be more representative of the household, or activity. Likewise, the interpretive potential of a deposit is generally increased with the diversity of its contents, although the lack of diversity in certain assemblages also may signal important behavioral or consumer patterns.
4. *Stratigraphy* refers to the vertically or horizontally discrete depositional units that are distinguishable. Remains from an archaeological feature with a complex stratigraphic sequence representative of several events over time can have the added advantage of providing an independent chronological check on artifact diagnosis and the interpretation of the sequence of environmental or sociocultural events.
5. *Rarity* refers to remains linked to household types or activities that are uncommon. Because they are scarce, they may have importance even in cases where they otherwise fail to meet other thresholds of importance (Caltrans 2007:209).

For agricultural sites, Caltrans (2007) has identified six themes to guide research: Site Structure and Land Use Pattern; Economic Strategies; Ethnicity and Cultural Adaptation; Agricultural Technology and Science; Household Composition and Lifeways; and Labor History. Expected site types would include farm and ranch homesteads and facilities, line camps, and refuse dumps. In general terms, historical Euro-American archaeological sites would be evaluated for NRHP

eligibility under Criterion D, research potential. However, they also potentially could be eligible under Criteria A and B for their associate values with major historical trends or individuals. Historical landscapes might also be considered.

Historical structures, which are most likely to be pertinent to the current study area, are typically evaluated for NRHP eligibility under Criteria A and/or B, for their associate values with major historical trends or individuals, and C for potential design or engineering importance.

3. ARCHIVAL RECORDS SEARCH

3.1 ARCHIVAL RECORDS SEARCH

In order to determine whether the Turk Station study area had been previously surveyed for cultural resources, and/or whether any such resources were known to exist on any of them, an archival records search was conducted by the staff of the Southern San Joaquin Valley Information Center (IC) on 30 September 2019. The records search was completed to determine: (i) if prehistoric or historical archaeological sites had previously been recorded within the study areas; (ii) if the project area had been systematically surveyed by archaeologists prior to the initiation of this field study; and/or (iii) whether the region of the field project was known to contain archaeological sites and to thereby be archaeologically sensitive. Records examined included archaeological site files and maps, the NRHP, Historic Property Data File, California Inventory of Historic Resources, and the California Points of Historic Interest.

According to the IC records search (Confidential Appendix A), three previous studies had covered portions of the Project APE (Table 1), and no cultural resources had been recorded with this same area. An additional ten previous studies had been completed within 0.5-mi of the APE (Table 2), resulting in the recording of five cultural resources within that radius (Table 3): two prehistoric isolated artifacts and three historical sites.

Table 1. Survey Reports within the APE

Report No.	Year	Author (s)/Affiliation	Title
KI-00046	1990	RE Parr MQ Sutton/ Cultural Resource Facility, California State University, Bakersfield	An Archaeological Assessment of a Portion of Tract No. 487 in the City of Avenal, Kings County, California.
KI-00196	2010	L Leach-Palm/ Far Western and JRP Historical Consulting	Cultural Resources Inventory of Caltrans District 6 Rural Conventional Highways in Fresno, Western Kern, Kings, Madera, and Tulare Counties, Summary of Methods and Findings Contract No. 06A1106, Expenditure Authorization No. 06-0A7408
KI-00249	2010	WH Bonner/ Michael Brandman Associates	Records Search and Site Visit Results for Fidelity Towers Candidate CA8010 (Avenal), 1009 South 5th Street, Avenal, Kings County, California

Table 2. Survey Reports within the 0.5-miles of the APE

Report No.	Year	Author (s)/Affiliation	Title
KI-00013	1981	KL Cursi/ California State University Fresno, Archaeology Office	Cultural Resource Survey for 50 Unit Project in Avenal (Wien Manor), Kings County, California
KI-00015	1982	RP Hampson/ Archaeological Consulting	Preliminary Cultural Resources Reconnaissance of a Proposed Natural Gas Pipeline and Electric Transmission Lines Monterey, San Luis Obispo and Kings Counties, California

3. Archival Records Search

Report No.	Year	Author (s)/Affiliation	Title
KI-00050	1990	RA Schiffman/ Archaeological Research. Bakersfield College	Archaeological Investigation for 1.66 Acre Elderly Apartment Complex Avenal, Kings County, California
KI-00081	1999	DG Wren/ Individual Consultant	An Archaeological Survey the Reef Sunset School District's Kern Street Elementary School Project
KI-00146	2004	RW Deis/ EDAW Inc.	Archaeological Inventory for the Proposed Avenal Landfill Project Kings County, California
KI-00155	2006	K Jones/ Pacific Legacy, Inc	Archaeological Survey of Avenal DT Cell Site, Kings County. (Clayton Project No.7005649.01; PL.No. 922-140)
KI-00182	2009	WH Bonner/ Michael Brandman Associates	Cultural Resource Records Search and Site Visit Results for Cricket Communications Facility Candidate VIS-657A, (Avenal), 205 North Park Avenue, Avenal, Kings County, California
KI-00196	2010	L Leach-Palm/ Far Western and JRP Historical Consulting	Cultural Resources Inventory of Caltrans District 6 Rural Conventional Highways in Fresno, Western Kern, Kings, Madera, and Tulare Counties, Summary of Methods and Findings Contract No. 06A1106, Expenditure Authorization No. 06-0A7408
KI-00216	2006	K Roper/ Sierra Valley Cultural Planning, Three Rivers	A Cultural Resources Survey of Avenal Parcel 1 (APN 040-291-004, 005), Avenal, Kings County, California.
KI-00182	2009	WH Bonner/ Michael Brandman Associates	Cultural Resource Records Search and Site Visit Results for Cricket Communications Facility Candidate VIS-657A, (Avenal), 205 North Park Avenue, Avenal, Kings County, California
KI-00313	2018	D Merric et al./ Peak & Associates	Determination of Eligibility and Effect for the Corkern Apartments Project, City of Avenal, Kings County, California

Table 3. Resources within the 0.5-miles of the APE

Primary #	Type	Description
P-16-000119	Isolate	Prehistoric chert uniface
P-16-000214	Site	Historic refuse
P-16-000215	Site	Historic refuse
P-16-000216	Site	Historic refuse
P-16-000217	Isolate	Prehistoric cobble mano

A search of the Native American Heritage Commission (NAHC) Sacred Lands Files was also obtained. According to the NAHC records no sacred sites or tribal cultural resources are known in or near the Project APE. Outreach letters were sent to the tribal organizations on the NAHC-provided contact list. Follow-up phone calls were also made to the contact list. One comment was received: the Santa Rosa Rancheria – Tachi Yokuts requested that a tribal monitor be present during ground-surface disturbance due to the potential sensitivity of the APE.

Based on the records search results, the study area appeared to have low archaeological sensitivity.

4. METHODS AND RESULTS

4.1 FIELD METHODS

An intensive Phase I survey of the Avenal Sewer Collection Line Project study area was conducted by Robert Azpitarte, B.A., ASM Associate Archaeologist, and Tim Polkinghorne, B.A., ASM Assistant Archaeologist, on 29 October 2019. The field methods employed included intensive pedestrian examination of the ground surface for evidence of archaeological sites in the form of artifacts, surface features (such as bedrock mortars, historical mining equipment), and archaeological indicators (e.g., organically enriched midden soil, burnt animal bone); the identification and location of any discovered sites, should they be present; tabulation and recording of surface diagnostic artifacts; site sketch mapping; preliminary evaluation of site integrity; and site recording, following the California Office of Historic Preservation Instructions for Recording Historic Resources and the BLM 8100 Manual, using DPR 523 forms.

The project APE primarily consists of previously buried pipelines within existing paved roads. Survey transects were walked on both sides of these roads to examine any exposed ground surface within verges, planters, lawns and other areas. Ground surface visibility varied significantly within this portion of the APE. Some roads were bordered by maintained lawns with little to no visibility; others had dirt lawns/verges adjacent to the paved roads. Ground surface visibility was possible along at least one side of most roads (Figure 2).

A segment of the main collector line leading to the WWTP crosses open fields. This segment followed existing farm roads in some portions and was off-road, crossing agricultural fields in others. The fields had been recently disked/cleared and ground surface visibility was excellent across the entirety of this segment (Figure 3).

4.2 SURVEY RESULTS

No cultural resources of any kind were identified within the Avenal Sewer Collector Line Project APE.



Figure 2. Fifth Street looking south, with good ground surface visibility on the left and poor on the right.



Figure 3. Off-road pipeline corridor, looking southwest, showing excellent visibility.

5. SUMMARY AND RECOMMENDATIONS

An intensive Phase I survey was conducted for the Avenal Sewer Collector Line Project, located within the City of Avenal, Kings County, California. A records search was conducted at the Southern San Joaquin Valley Archaeological Information Center, California State University, Bakersfield. This indicated that the study area had not been previously surveyed in its entirety and that no cultural resources were known to exist within it. A records search of the NAHC Sacred Lands Files was also conducted and contacts with designated tribal organizations were also completed. No tribal cultural resources or sacred sites have been identified within the Project APE. The Santa Rosa Rancheria – Tachi Yokuts requested that a tribal monitor be present during ground-surface disturbance, however, due to the potential sensitivity of the study area.

The Phase I survey fieldwork was conducted on 29 October 2019. No historical or archaeological resources of any kind were identified within the Project APE.

5.1 RECOMMENDATIONS

An intensive Phase I cultural resources survey demonstrated that the Avenal Sewer Collector Line Project APE lacks cultural resources of any kind. The proposed Project therefore does not have the potential to result in adverse impacts to significant historical resources. In the unlikely event that cultural resources are encountered during project construction or use, however, it is recommended that an archaeologist be contacted to assess the discovery. It is further recommended that a tribal monitor from the Santa Rosa Rancheria – Tachi Yokuts be present during grading, as requested by the tribe.

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