

Attachments

Appendix 4.3

**Air Quality and Greenhouse Gas Emissions
Assessment Memorandum,
ECORP Consulting, Inc**



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***Subject: Gridley Feather River Sewer Crossing Project – Air Quality and Greenhouse Gas Emissions
Assessment Memorandum***

PROJECT DESCRIPTION

The City of Gridley (City) constructed its current wastewater collection system, wastewater treatment plant and disposal system in 1967. The wastewater generated from the City is conveyed to the wastewater treatment plant through a 20" force main sitting on the bottom of the Feather River. The Project includes the replacement of this 20" force main. The new force main pipe would be installed under the Feather River just north of the existing pipe in the river utilizing microtunneling technologies. Microtunneling will require two deep, watertight shafts to tunnel the casing underneath the river. Specifically, shafts would be constructed on each side of the river to allow a minimum 48-inch diameter casing to be installed. The jacking shaft would be approximately 64 feet deep and located outside the levee prism on the south/west side of the river on the waterside of the levee. The reception shaft would be 55 feet deep, located on the north/east side of the river in the vegetated area south of the wastewater treatment plant. Once the casing is installed, two sanitary sewer force main pipes would be pulled through the casing and reconnected to the existing sanitary sewer force main system on both sides of the river. It is estimated that the microtunneling will take approximately 180 working days.

The work area to construct the shafts would be a minimum of 10,000 square feet. The levee road is proposed to be used for access to the jacking shaft, and an access road through the boat launch parking area would be used for access to the reception shaft. Minor improvements are anticipated to be made to improve accessibility for large trucks: such as widening, additional gravel and minor grading. Approximately 2,150 cubic yards of soil material is estimated to need to be exported from the shaft excavation. This material is proposed to be taken to the City's emergency overflow ponds at the wastewater treatment plant just north of the Project Site.

AIR QUALITY ANALYSIS

Environmental Setting

Air quality in a region is determined by its topography, meteorology, and existing air pollutant sources. These factors are discussed below, along with the current regulatory structure that applies to the Northern Sacramento Valley Air Basin (NSVAB), which encompasses the Project site, pursuant to the regulatory authority of the air pollution control officer for the region, the Butte County Air Quality Management District (BCAQMD).

Ambient air quality is commonly characterized by climate conditions, the meteorological influences on air quality, and the quantity and type of pollutants released. The air basin is subject to a combination of topographical and climatic factors that reduce the potential for high levels of regional and local air pollutants. The following section describes the pertinent characteristics of the air basin and provides an overview of the physical conditions affecting pollutant dispersion in the Project Area.

Northern Sacramento Air Basin

The Proposed Project is located within the NSVAB. The NSVAB consists of seven counties: Sutter, Yuba, Colusa, Butte, Glenn, Tehama, and Shasta. The NSVAB is bounded on the north and west by the Coastal Mountain Range and on the east by the southern end of the Cascade Mountain Range and the northern end of the Sierra Nevada. These mountain ranges reach heights in excess of 6,000 feet above mean sea level, with individual peaks rising much higher. The mountains form a substantial physical barrier to locally created pollution as well as to pollution transported northward on prevailing winds from the Sacramento metropolitan area (SVAQEEP 2018).

The environmental conditions of Butte County are conducive to potentially adverse air quality conditions. The basin area traps pollutants between two mountain ranges to the east and the west. This problem is exacerbated by a temperature inversion layer that traps air at lower levels below an overlying layer of warmer air. Prevailing winds in the area are generally from the south and southwest. Sea breezes flow over the San Francisco Bay Area and into the Sacramento Valley, transporting pollutants from the large urban areas. Growth and urbanization in Butte County have also contributed to an increase in emissions.

Criteria Air Pollutants

Both the U.S. Environmental Protection Agency (USEPA) and the California Air Resources Board (CARB) have established ambient air quality standards for common pollutants. These ambient air quality standards are levels of contaminants representing safe levels that avoid specific adverse health effects associated with each pollutant. The ambient air quality standards cover what are called “criteria” pollutants because the health and other effects of each pollutant are described in criteria documents. The six criteria pollutants are O₃ (precursor emissions include nitrogen oxide (NO_x) and reactive organic gases (ROG)), carbon monoxide (CO), particulate matter (PM), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and lead. Areas that meet ambient air quality standards are classified as attainment areas, while areas that do not meet these standards are classified as nonattainment areas. Butte County is designated as a

nonattainment area for the federal O₃ standards and is also a nonattainment area for the state standards for O₃, coarse particulate matter (PM₁₀), and fine particulate matter (PM_{2.5}) (CARB 2019).

Toxic Air Contaminants

In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are another group of pollutants of concern. TACs are considered either carcinogenic or noncarcinogenic based on the nature of the health effects associated with exposure to the pollutant. For regulatory purposes, carcinogenic TACs are assumed to have no safe threshold below which health impacts would not occur, and cancer risk is expressed as excess cancer cases per one million exposed individuals. Noncarcinogenic TACs differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

There are many different types of TACs, with varying degrees of toxicity. Sources of TACs include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. Additionally, diesel engines emit a complex mixture of air pollutants composed of gaseous and solid material. The solid emissions in diesel exhaust are known as diesel particulate matter (DPM). In 1998, California identified DPM as a TAC based on its potential to cause cancer, premature death, and other health problems (e.g., asthma attacks and other respiratory symptoms). Those most vulnerable are children (whose lungs are still developing) and the elderly (who may have other serious health problems). Overall, diesel engine emissions are responsible for the majority of California's known cancer risk from outdoor air pollutants. Public exposure to TACs can result from emissions from normal operations, as well as from accidental releases of hazardous materials during upset conditions. The health effects of TACs include cancer, birth defects, neurological damage, and death.

Sensitive Receptors

Sensitive receptors are defined as facilities or land uses that include members of the population who are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. CARB has identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, athletes, and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis.

The nearest sensitive receptors to the Project Site are residences located on Booth Drive approximately 3,900 feet (0.74 mile) distant.

Regulatory Setting

Federal

Clean Air Act

The Clean Air Act (CAA) of 1970 and the CAA Amendments of 1971 required the USEPA to establish the National Ambient Air Quality Standards (NAAQS), with states retaining the option to adopt more stringent standards or to include other specific pollutants. On April 2, 2007, the Supreme Court found that carbon dioxide (CO₂) is an air pollutant covered by the CAA; however, no NAAQS have been established for CO₂.

These standards are the levels of air quality considered safe, with an adequate margin of safety, to protect the public health and welfare. They are designed to protect those “sensitive receptors” most susceptible to further respiratory distress such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

The USEPA has classified air basins (or portions thereof) as being in attainment, nonattainment, or unclassified for each criteria air pollutant, based on whether or not the NAAQS have been achieved. If an area is designated unclassified, it is because inadequate air quality data were available as a basis for a nonattainment or attainment designation.

State

California Clean Air Act

The California Clean Air Act (CCAA) allows the state to adopt ambient air quality standards and other regulations provided that they are at least as stringent as federal standards. CARB, a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both federal and state air pollution control programs within California, including setting the California Ambient Air Quality Standards (CAAQS). CARB also conducts research, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. CARB also has primary responsibility for the development of California’s State Implementation Plan (SIP), for which it works closely with the federal government and the local air districts.

California State Implementation Plan

The federal CAA (and its subsequent amendments) requires each state to prepare an air quality control plan referred to as the SIP. The SIP is a living document that is periodically modified to reflect the latest emissions inventories, plans, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The CAA Amendments dictate that states containing areas violating the NAAQS

revise their SIPs to include extra control measures to reduce air pollution. The SIP includes strategies and control measures to attain the NAAQS by deadlines established by the CAA. The USEPA has the responsibility to review all SIPs to determine if they conform to the requirements of the CAA.

State law makes CARB the lead agency for all purposes related to the SIP. Local air districts and other agencies prepare SIP elements and submit them to CARB for review and approval. CARB then forwards SIP revisions to the USEPA for approval and publication in the Federal Register. The NSVAB Air Quality Attainment Plan constitutes the current SIP for the Butte County portion of the NSVAB. The plan is updated on a triennial basis and was last updated in 2018. It presents comprehensive strategies to reduce the O₃ precursor pollutants (ROG and NO_x) from stationary, area, mobile, and indirect sources.

Local

Butte County Air Quality Management District

The BCAQMD is the air pollution control agency for Butte County, including the Project Site. The agency's primary responsibility is ensuring that the federal and state ambient air quality standards are attained and maintained in the Butte County portion of the NSVAB. The BCAQMD, along with other air districts in the NSVAB, has committed to jointly prepare and implement the NSVAB Air Quality Attainment Plan for the purpose of achieving and maintaining healthful air quality throughout the air basin. The BCAQMD is also responsible for adopting and enforcing rules and regulations concerning air pollutant sources, issuing permits for stationary sources of air pollutants, inspecting stationary sources of air pollutants, responding to citizen complaints, monitoring ambient air quality and meteorological conditions, awarding grants to reduce motor vehicle emissions, and conducting public education campaigns, as well as many other activities.

Air Quality Impacts

Thresholds of Significance

Butte County Air Quality Management District

The significance criteria established by the applicable air quality management or air pollution control district (BCAQMD) may be relied upon to make impact determinations. According to the BCAQMD, an air quality impact is considered significant if the proposed project would violate any ambient air quality standard, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations. The BCAQMD has established thresholds of significance for air quality for construction and operational activities of land use development projects such as that proposed, as shown in Table 1.

Table 1. Butte County Air Quality Management District Significance Thresholds			
Air Pollutant	Construction Activities		Operations
	Pounds per Day	Tons per Year	Pound per Day
Reactive Organic Gas	137 lbs	4.5 tons	25
Carbon Monoxide	-	-	-
Nitrogen Oxide	137 lbs	4.5 tons	25
Sulfur Oxide	-	-	-
Coarse Particulate Matter	80 lbs	-	80
Fine Particulate Matter	-	-	-

Source: BCAQMD 2014

By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size, by itself, to result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's individual emissions exceed its identified significance thresholds, the project would be cumulatively considerable. Projects that do not exceed significance thresholds would not be considered cumulative considerable.

United States Environmental Protection Agency Conformity Determination Analysis

General Conformity ensures that the actions taken by federal agencies do not interfere with a state's plans to attain and maintain national standards for air quality.

Established under the Clean Air Act (section 176(c)(4)), the General Conformity rule plays an important role in helping states improve air quality in those areas that do not meet the NAAQS. Under the General Conformity rule, federal agencies must work with state and local governments in a nonattainment or maintenance area to ensure that federal actions conform to the air quality plans established in the applicable state or tribal implementation plan. The overall purpose of the General Conformity rule is to ensure that:

- Federal activities do not cause or contribute to new violations of NAAQS;
- Actions do not worsen existing violations of the NAAQS; and
- Attainment of the NAAQS is not delayed.

The General Conformity process begins with an "applicability analysis," whereby it must be determined how and to what degree the Conformity Rules apply. According to USEPA's General Conformity Guidance: Questions and Answers (1994), before any approval is given for a Federal Action to go forward, the federal agency must apply the applicability requirements found at 40 CFR § 93.153 to the Federal Action and/or determine on a pollutant-by-pollutant basis, whether a determination of General Conformity is required. During the applicability analysis, the federal agency determines the following:

- Whether the action will occur in a nonattainment or maintenance area;
- Whether one or more of the specific exemptions apply to the action;

- Whether the federal agency has included the action on its list of presumed-to-conform actions;
- Whether the total direct and indirect emissions are below or above the de minimis levels; and/or
- Where a facility has an emissions budget approved by the State or Tribe as part of the State Implementation Plan or Tribal Implementation Plan, the federal agency determines that the emissions from the proposed action are within the budget.

The General Conformity Rule allows for exemptions for emissions that are not reasonably foreseeable, will not result in an increase in emissions, are below de minimis limits, are the result of emergency actions, are included in stationary source air permits, are for routine maintenance and repair of existing structures, or are included in a transportation conformity determination undertaken by Federal Highway Administration or Federal Transit Administration (40 CFR 93.153(c)).

A conformity determination would be required if the annual emissions of non-attainment pollutants generated by the Proposed Project were to exceed the General Conformity de minimis thresholds. The de minimis limits represent a level of emissions that the USEPA has determined will have only de minimis impacts to the air quality of an area and are thus exempted from the General Conformity Rule. If the overall predicted increase in emissions of a criteria pollutant due to a federal action in a nonattainment area exceeds the de minimis limits as shown in Table 2, the lead federal agency is required to make a conformity determination. As previously described, the Project Site is located in the Butte County portion of the NSVAB. Table 2 lists the attainment status for each criteria air pollutant and the De Minimis threshold based on the NAAQS designation and classification.

Table 2. Federal General Conformity <i>De Minimis</i> Emissions Levels in Butte County			
Pollutant	Attainment Status	Classification	USEPA General Conformity Threshold (tons/year)
VOC (O ₃ precursor)	Nonattainment	Marginal	100
NO _x (O ₃ precursor)	Nonattainment	Marginal	100
PM ₁₀	Attainment	Maintenance	100
PM _{2.5}	Unclassified/Attainment	Maintenance	100
CO	Unclassified/Attainment	Maintenance	100
NO ₂	Unclassified/Attainment	N/A	100
SO ₂	Unclassified/Attainment	N/A	100

Source: USEPA 2020

Methodology

Air quality impacts were assessed in accordance with methodologies recommended by the BCAQMD. Where Project-related criteria air pollutant quantification was required, emissions from off-road equipment and ground disturbance were modeled using the California Emissions Estimator Model (CalEEMod), version 2020.4.0. Emissions from worker commute trips were also calculated with CalEEMod. CalEEMod is a statewide land use emissions computer model designed to quantify potential criteria pollutant emissions associated with both construction and operations from a variety of land use projects. All CalEEMod output files can be found in Attachment A.

Impact Discussion

Would the Project Conflict with or Obstruct Implementation of the Applicable Air Quality Plan?

As part of its enforcement responsibilities, the USEPA requires each state with nonattainment areas to prepare and submit a SIP that demonstrates the means to attain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution in nonattainment areas, using a combination of performance standards and market-based programs. Similarly, under state law, the CCAA requires an air quality attainment plan to be prepared for areas designated as nonattainment with regard to the NAAQS and CAAQS. Air quality attainment plans outline emissions limits and control measures to achieve and maintain these standards by the earliest practical date.

The 2018 Air Quality Attainment Plan constitutes the current SIP for the Butte County portion of the NSVAB and is the most recent air quality planning document covering Butte County. Air quality attainment plans are a compilation of new and previously submitted plans, programs (such as monitoring, modeling, permitting, etc.), district rules, state regulations, and federal controls describing how the state will attain ambient air quality standards. State law makes CARB the lead agency for all purposes related to the Air Quality Attainment Plan. Local air districts prepare air quality attainment plans and submit them to CARB for review and approval. The 2018 Air Quality Attainment Plan includes forecast ROG and NO_x emissions (O₃ precursors) for the entire NSVAB through the year 2020. The plan also includes control strategies necessary to attain the California O₃ standard at the earliest practicable date, as well as developed emissions inventories and associated emissions projections for the region showing a downtrend for both ROG and NO_x.

The consistency of the Project with the 2018 Air Quality Attainment Plan is determined by Project-induced development's consistency with air pollutant emission projections in the plan. The 2018 Air Quality Attainment Plan is based on information derived from projected growth in Butte County in order to project future emissions and then determine strategies and regulatory controls for the reduction of emissions. Growth projections are based on the general plans developed by Butte County and the incorporated cities in the county. As such, projects that propose development consistent with the growth anticipated by the respective general plan and zoning classification of the jurisdiction in which the proposed development is located would be consistent with the 2018 Air Quality Attainment Plan. In the event that a project would propose a development that is less dense than that associated with the general

plan and zoning code, the project would likewise be consistent with the Air Quality Attainment Plan. If a project, however, proposes a development that is denser than that assumed in the general plan and zoning code, the project may be in conflict with the Air Quality Attainment Plan and could therefore result in a significant impact on air quality.

The Proposed Project does not conflict with any of the land use assumptions in the Butte County General Plan. Specifically, the Project does not propose to amend the General Plan, does not include development of new housing or employment centers and would not induce population or employment growth. Therefore, the Project would not affect local plans for population growth, and the Proposed Project would be considered consistent with the population, housing, and employment growth projections utilized in the preparation of the 2018 Air Quality Attainment Plan. Furthermore, once the Project is completed, there will be no resultant increase in automobile trips to the area because the proposed improvements would not require daily visits.

Would the Project Result in a Cumulative Considerable Net Increase of Any Criteria Pollutant for which the Project Region is Nonattainment Under an Applicable Federal or State Ambient Air Quality Standard?

The Proposed Project would result in short-term emissions from construction activities. Construction generated emissions are short term and of temporary duration, lasting only as long as construction activities occur. Construction activities such as grading operations, construction vehicle traffic, and wind blowing over exposed soils would generate exhaust emissions and fugitive PM emissions that affect local air quality at various times during construction. Effects would be variable depending on the weather, soil conditions, the amount of activity taking place, and the nature of dust control efforts. The dry climate of the area during the summer months creates a high potential for dust generation.

Construction-generated emissions associated the Proposed Project were calculated using the CARB-approved CalEEMod computer program, which is designed to model emissions for land use development projects, based on typical construction requirements. See Attachment A for more information regarding the construction assumptions, including construction equipment and duration, used in this analysis.

BCAQMD Significance Threshold

Predicted maximum daily construction-generated emissions for the Proposed Project are summarized in Table 3. Construction-generated emissions are short-term and of temporary duration, lasting only as long as construction activities occur, but would be considered a significant air quality impact if the volume of pollutants generated exceeds the BCAQMD's thresholds of significance.

Table 3. Construction-Related Emissions			
Construction Year	ROG	NO_x	PM₁₀
Pounds per Day			
Construction Year One	2.04	20.29	0.97
<i>BCAQMD Daily Significance Threshold</i>	<i>137</i>	<i>137</i>	<i>82</i>
Exceed BCAQMD Daily Threshold?	No	No	No
Tons per Year			
Construction Year One	0.18	1.82	0.08
<i>BCAQMD Annual Significance Threshold</i>	<i>4.5</i>	<i>4.5</i>	<i>N/A</i>
Exceed BCAQMD Annual Threshold?	No	No	No

Source: CalEEMod version 2020.4.0. Refer to Attachment A for Model Data Outputs.

As shown in Table 3, emissions generated during Project construction would not exceed the BCAQMD's thresholds of significance.

Operational emissions impacts are long-term air emissions impacts that are associated with any changes in the permanent use of the Project Site by onsite stationary and offsite mobile sources that substantially increase emissions. The Project proposes the replacement of a 20" force main currently sitting on the bottom of the Feather River with a new force main installed underneath the Feather River. Once installation is complete it would not be a source of operational emissions. Therefore, the Proposed Project would not change the permanent use of the Project Site or contribute to on- or offsite emissions.

Criteria pollutant emissions generated by the Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an ambient air quality standard.

USEPA Conformity Determination Thresholds

As previously described, the Project Site is located in the Butte County portion of the NSVAB and is in nonattainment for the O₃ precursors, ROG and NO_x. Emissions generated during Project implementation would be short term and of temporary duration, lasting only as long as construction activities occur, but would be considered a significant air quality impact if the volume of pollutants generated exceeds the Conformity Determination thresholds.

Table 4. Implementation-Related Emissions (USEPA Conformity Determination Analysis)						
Construction Year	Pollutant (tons per year)					
	VOC (ROG)	NO_x	CO	SO₂	PM₁₀	PM_{2.5}
Construction Year One	0.18	1.82	1.92	0.00	0.08	0.07
<i>USEPA Conformity Determination Thresholds (40 CFR 93.153)</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>
<i>Exceed USEPA Conformity Determination Thresholds?</i>	No	No	No	No	No	No

Source: CalEEMod version 2020.4.0. Refer to Attachment A for Model Data Outputs.

As shown in Table 4, emissions from implementation of the Proposed Project do not exceed the USEPA Conformity Determination thresholds for the region.

Would the Project Expose Sensitive Receptors to Substantial Pollutant Concentrations?

Sensitive receptors are defined as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. CARB has identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, athletes, and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis. The nearest sensitive receptors to the Project Site are residences located on Booth Drive approximately 3,900 feet (0.74 mile) distant.

Construction Generated Air Contaminants

Construction-related activities would result in temporary, short-term Proposed Project-generated emissions of diesel particulate matter (DPM), ROG, NO_x, CO, and PM₁₀ from the exhaust of off-road, heavy-duty diesel equipment for site preparation (e.g., clearing, grading); soil hauling truck traffic; paving; and other miscellaneous activities. The portion of the NSVAB which encompasses the Project Area is designated as a nonattainment area for federal O₃ standards and is also a nonattainment area for the state standards for O₃, PM_{2.5}, and PM₁₀ standards (CARB 2019). Thus, existing O₃, PM_{2.5}, and PM₁₀ levels in the Butte County portion of the NSVAB are at unhealthy levels during certain periods. However, as shown in Table 3 and Table 4, the Project would not exceed the BCAQMD significance thresholds for emissions or the USEPA Conformity Determination thresholds for the region.

The health effects associated with O₃ are generally associated with reduced lung function. Because the Project would not involve construction activities that would result in O₃ precursor emissions (ROG or NO_x) in excess of the BCAQMD thresholds, the Project is not anticipated to substantially contribute to regional O₃ concentrations and the associated health impacts.

CO tends to be a localized impact associated with congested intersections. In terms of adverse health effects, CO competes with oxygen, often replacing it in the blood, reducing the blood's ability to transport oxygen to vital organs. The results of excess CO exposure can include dizziness, fatigue, and impairment of central nervous system functions. The Project would not involve construction activities that would result in CO emissions in excess of the BCAQMD thresholds. Thus, the Project's CO emissions would not contribute to the health effects associated with this pollutant.

PM₁₀ and PM_{2.5} contain microscopic solids or liquid droplets that are so small that they can get deep into the lungs and cause serious health problems. PM exposure has been linked to a variety of problems, including premature death in people with heart or lung disease, nonfatal heart attacks, irregular heartbeat, aggravated asthma, decreased lung function, and increased respiratory symptoms such as irritation of the airways, coughing, or difficulty breathing. For construction activity, DPM is the primary TAC of concern. The potential cancer risk from the inhalation of DPM outweighs the potential for all other health impacts (i.e., non-cancer chronic risk, short-term acute risk) and health impacts from other TACs. PM₁₀ exhaust is considered a surrogate for DPM as all diesel exhaust is considered to be DPM. As with O₃ and NO_x, the Project would not generate emissions of PM₁₀ or PM_{2.5} that would exceed the BCAQMD's thresholds. Accordingly, the Project's PM₁₀ and PM_{2.5} emissions are not expected to cause any increase in related regional health effects for these pollutants.

In summary, the Project would not result in a potentially significant contribution to regional concentrations of nonattainment pollutants and would not result in a significant contribution to the adverse health impacts associated with those pollutants.

Operational Air Contaminants

Operation of the proposed Project would not result in the development of any substantial sources of air toxics. There are no stationary sources associated with the operations of the Project; nor would the Project attract mobile sources that spend long periods queuing and idling at the site. Thus, by its very nature, the Project would not be a source of TAC concentrations during Proposed Project operations.

Would the Project Result in Other Emissions (Such as Those Leading to Odors) Adversely Affecting a Substantial Number of People?

Typically, odors are regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache).

With respect to odors, the human nose is the sole sensing device. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor; in fact, an odor that is offensive to one person (e.g., from a fast-food restaurant) may be perfectly acceptable to another. It is also important to note that an unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. This is because of the phenomenon known as odor

fatigue, in which a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity.

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word "strong" to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

During construction, the Proposed Project presents the potential for generation of objectionable odors in the form of diesel exhaust in the immediate vicinity of the site. However, these emissions are short-term in nature and will rapidly dissipate and be diluted by the atmosphere downwind of the emission sources. Additionally, odors would be localized and generally confined to the construction area. Therefore, construction odors would result in a less than significant impact related to odor emissions.

CARB's *Air Quality and Land Use Handbook* (2005) identifies the sources of the most common operational odor complaints received by local air districts. Typical sources include facilities such as sewage treatment plants, landfills, recycling facilities, petroleum refineries, and livestock operations. The Project does not contain any of the land uses identified as typically associated with emissions of objectionable odors.

GREENHOUSE GAS EMISSIONS ANALYSIS

Environmental Setting

Greenhouse gas (GHG) emissions are released as byproducts of fossil fuel combustion, waste disposal, energy use, land use changes, and other human activities. This release of gases, such as carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), and chlorofluorocarbons, creates a blanket around the earth that allows light to pass through but traps heat at the surface, preventing its escape into space. While this is a naturally occurring process known as the greenhouse effect, human activities have accelerated the generation of GHGs beyond natural levels. The overabundance of GHGs in the atmosphere has led to an unexpected warming of the earth and has the potential to severely impact the earth's climate system.

Each GHG differs in its ability to absorb heat in the atmosphere based on the lifetime, or persistence, of the gas molecule in the atmosphere. CH₄ traps over 25 times more heat per molecule than CO₂, and N₂O absorbs 298 times more heat per molecule than CO₂. Often, estimates of GHG emissions are presented in carbon dioxide equivalents (CO₂e). Expressing GHG emissions in carbon dioxide equivalents takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO₂ were being emitted.

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and TACs, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about one day), GHGs have long atmospheric lifetimes (one to several thousand years). GHGs persist in the atmosphere for long enough time periods to be dispersed around the globe. Although the exact lifetime of any particular GHG molecule is dependent on multiple variables and cannot be pinpointed, it is understood that more CO₂ is emitted into the atmosphere than is sequestered by ocean uptake, vegetation, or other forms. Of the total annual human-caused CO₂ emissions, approximately 55 percent is sequestered through ocean and land uptakes every year, averaged over the last 50 years, whereas the remaining 45 percent of human-caused CO₂ emissions remains stored in the atmosphere.

The quantity of GHGs that it takes to ultimately result in climate change is not precisely known; it is sufficient to say the quantity is enormous, and no single project alone would measurably contribute to a noticeable incremental change in the global average temperature or to global, local, or microclimates. From the standpoint of CEQA, GHG impacts to global climate change are inherently cumulative.

In 2021, the California Air Resources Board (CARB) released the 2021 edition of the California GHG inventory covering calendar year 2019 emissions. In 2019, California emitted 418.2 million gross metric tons of CO₂e including from imported electricity. Combustion of fossil fuel in the transportation sector was the single largest source of California's GHG emissions in 2019, accounting for approximately 40 percent of total GHG emissions in the State. When emissions from extracting, refining and moving transportation fuels in California are included, transportation is responsible for over 50 percent of statewide emissions in 2019. Continuing the downward trend from 2018, transportation emissions decreased 3.5 million metric tons of CO₂e in 2019, only being outpaced by electricity, which reduced emissions by 4.3 million metric tons of CO₂e in 2019. Emissions from the electricity sector account for 14

percent of the inventory and have shown a substantial decrease in 2019 due to increases in renewables. California's industrial sector accounts for the second largest source of the State's GHG emissions in 2019, accounting for 21 percent (CARB 2021).

Regulatory Setting

State

Executive Order S-3-05

Executive Order (EO) S-3-05, signed by Governor Arnold Schwarzenegger in 2005, proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra Nevada snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the EO established total GHG emission targets for the state. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80 percent below the 1990 level by 2050.

Assembly Bill 32 Climate Change Scoping Plan and Updates

In 2006, the California legislature passed Assembly Bill (AB) 32 (Health and Safety Code § 38500 et seq., or AB 32), also known as the Global Warming Solutions Act. AB 32 required CARB to design and implement feasible and cost-effective emission limits, regulations, and other measures, such that statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25 percent reduction in emissions). Pursuant to AB 32, CARB adopted a Scoping Plan in December 2008, which outlined measures to meet the 2020 GHG reduction goals. California exceeded the target of reducing GHG emissions to 1990 levels by the year 2017.

The Scoping Plan is required by AB 32 to be updated at least every five years. The latest update, the 2017 Scoping Plan Update, addresses the 2030 target established by Senate Bill (SB) 32 as discussed below and establishes a proposed framework of action for California to meet a 40 percent reduction in GHG emissions by 2030 compared to 1990 levels. The key programs that the Scoping Plan Update builds on include increasing the use of renewable energy in the State, the Cap-and-Trade Regulation, the Low Carbon Fuel Standard, and reduction of methane emissions from agricultural and other wastes.

Senate Bill 32 and Assembly Bill 197 of 2016

In August 2016, Governor Brown signed SB 32 and AB 197, which serve to extend California's GHG reduction programs beyond 2020. SB 32 amended the Health and Safety Code to include § 38566, which contains language to authorize CARB to achieve a statewide GHG emission reduction of at least 40 percent below 1990 levels by no later than December 31, 2030.

Senate Bill 100 of 2018

In 2018, SB 100 was signed codifying a goal of 60 percent renewable procurement by 2030 and 100 percent by 2045 Renewables Portfolio Standard.

Local

Butte County Air Quality Management District

The BCAQMD is the air pollution control agency for Butte County, including the Project Site. The agency's primary responsibility is ensuring that the federal and state ambient air quality standards are attained and maintained in the Butte County portion of the NSVAB. The BCAQMD does not promulgate thresholds for GHG emissions.

County of Butte Climate Action Plan

The 2021 County of Butte Climate Action Plan (CAP) is Butte County's strategic plan to reduce GHG emissions in the unincorporated county. The 2021 CAP allows Butte County (County) decision makers, staff, and the community to understand the sources and magnitude of local GHG emissions, reduce GHG emissions, and prioritize steps to achieve reduction targets. The 2021 CAP is an update of the 2014 CAP, providing updated information, an expanded set of GHG reduction strategies, and a planning horizon out to 2050. The 2021 CAP contains an inventory of the community's GHG emissions from the agriculture, transportation, energy, solid waste, off-road equipment, water and wastewater, and stationary source sectors. The 2021 CAP also includes informational GHG emissions from the land use and sequestration sector and the wildfire and controlled burn sector. The 2021 CAP also presents a work plan and monitoring program for the County to track progress over time, and allows community members, County staff and officials, and other stakeholders to understand the County's existing planning efforts and strategies to achieve its GHG reduction goals.

Greenhouse Gas Emissions Impacts

Thresholds of Significance

The CEQA Guidelines Appendix G thresholds for GHG's do not prescribe specific methodologies for performing an assessment, do not establish specific thresholds of significance, and do not mandate specific mitigation measures. Rather, the CEQA Guidelines emphasize the lead agency's discretion to determine the appropriate methodologies and thresholds of significance consistent with the manner in which other impact areas are handled in CEQA. With respect to GHG emissions, the CEQA Guidelines § 15064.4(a) states that lead agencies "shall make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate" GHG emissions resulting from a project. The CEQA Guidelines note that an agency has the discretion to either quantify a project's GHG emissions or rely on a "qualitative analysis or other performance-based standards." (14 California Code of Regulations [CCR] 15064.4(b)). A lead agency may use a "model or methodology" to estimate GHG emissions and has the discretion to select the model or methodology it considers "most appropriate to enable decision makers to intelligently take into account the project's incremental contribution to climate change." (14 CCR 15064.4(c)). Section 15064.4(b) provides that the lead agency should consider the following when determining the significance of impacts from GHG emissions on the environment:

1. The extent a project may increase or reduce GHG emissions as compared to the existing environmental setting.

2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
3. The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions (14 CCR 15064.4(b)).

In addition, Section 15064.7(c) of the CEQA Guidelines specifies that “[w]hen adopting or using thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies, or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence” (14 CCR 15064.7(c)). The CEQA Guidelines also clarify that the effects of GHG emissions are cumulative and should be analyzed in the context of CEQA’s requirements for cumulative impact analysis (see CEQA Guidelines § 15130(f)). As a note, the CEQA Guidelines were amended in response to SB 97. In particular, the CEQA Guidelines were amended to specify that compliance with a GHG emissions reduction plan renders a cumulative impact insignificant.

Per CEQA Guidelines § 15064(h)(3), a project’s incremental contribution to a cumulative impact can be found not cumulatively considerable if the project would comply with an approved plan or mitigation program that provides specific requirements that would avoid or substantially lessen the cumulative problem within the geographic area of the project. To qualify, such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources through a public review process to implement, interpret, or make specific the law enforced or administered by the public agency. Examples of such programs include a “water quality control plan, air quality attainment or maintenance plan, integrated waste management plan, habitat conservation plan, natural community conservation plans [and] plans or regulations for the reduction of greenhouse gas emissions.” Put another way, CEQA Guidelines § 15064(h)(3) allows a lead agency to make a finding of less than significant for GHG emissions if a project complies with adopted programs, plans, policies and/or other regulatory strategies to reduce GHG emissions.

The significance of the Project’s GHG emissions is evaluated consistent with CEQA Guidelines § 15064.4(b)(2) by considering whether the Project complies with applicable plans, policies, regulations and requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions. Specifically, the Project is evaluated for consistency with the County of Butte CAP. According to the CAP, if a proposed development within unincorporated Butte County is consistent with the emission-reduction strategies included in the 2021 CAP, the project would have a less-than-significant impact on climate change and emissions (County of Butte 2021).

Methodology

GHG-related impacts were assessed in accordance with methodologies recommended by the County of Butte. Where GHG emission quantification was required, emissions were modeled using the California Emissions Estimator Model (CalEEMod), version 2020.4.0. CalEEMod is a statewide land use emissions computer model designed to quantify potential GHG emissions associated with both construction and

operations from a variety of land use projects. Project GHG emissions were calculated predominately using CalEEMod model defaults for Butte County.

Impact Discussion

Would the Project Generate Greenhouse Gas Emissions, Either Directly or Indirectly, That May Have a Significant Impact on the Environment and/or Conflict with an Applicable Plan, Policy, or Regulation Adopted for the Purpose of Reducing the Emissions of Greenhouse Gases?

A potent source of GHG emissions associated with the proposed Project would be combustion of fossil fuels during construction activities. The construction phase of the Proposed Project is temporary but would result in GHG emissions from the use of heavy construction equipment and construction-related vehicle trips. Construction-related activities that would generate GHGs include worker commute trips, haul trucks carrying supplies and materials to and from the Project Site, and off-road construction equipment. Table 5 illustrates the specific construction generated GHG emissions that would result from construction of the Project.

Table 5. Construction-Related Greenhouse Gas Emissions	
Emission Source	CO₂e (Metric Tons/ Year)
Construction Year One	377

Source: CalEEMod version 2020.4.0. Refer to Attachment A for Model Data Outputs.

As shown in Table 5, Project construction would result in the generation of approximately 377 metric tons of CO₂e over the course of construction. Once construction is complete, the generation of these GHG emissions would cease.

As previously described, the County of Butte CAP is a strategic planning document that identifies sources of GHG emissions within the boundaries of the unincorporated county, presents current and future emissions estimates, identifies a GHG reduction target for future years, and presents strategic emission-reduction strategies to reduce emissions from the agriculture, transportation, energy, solid waste, off-road equipment, water and wastewater, and stationary source sectors. The GHG-reduction strategies in the CAP build on inventory results and key opportunities prioritized by County staff and members of the public. According to the CAP, if a proposed development within unincorporated Butte County is consistent with the emission-reduction strategies included in the 2021 CAP, the project would have a less-than-significant impact on climate change and emissions (County of Butte 2021).

All development in the unincorporated County, including the Project, is required to adhere to all County-adopted policy provisions, including those contained in the adopted CAP. The County ensures all applicable provisions of the CAP are incorporated into projects and their permits through development review and applications of conditions of approval as applicable. Nonetheless, a review of the emission-reduction strategies included in the 2021 CAP show that none are directly applicable to a project with no operational component, such as the Proposed Project. The Project proposes the replacement of the force main currently sitting on the bottom of the Feather River with a new force main pipe installed underneath

the Feather River just north of the existing pipe and would therefore not include new permanent sources of GHG emissions and would not generate new or unplanned permanent GHG emissions. Once construction is complete, the generation of all Project GHG emissions would cease. Therefore, the Proposed Project would not conflict with the County CAP.

REFERENCES

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Daily and Annual Criteria Air Pollutant & Greenhouse Gas Emissions Modeling Output

Gridley Feather River Sewer Crossing - Butte County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**Gridley Feather River Sewer Crossing****Butte County, Summer****1.0 Project Characteristics****1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	10.00	1000sqft	0.23	10,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	71
Climate Zone	3			Operational Year	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	CH4 Intensity (lb/MWhr)	0.033	N2O Intensity (lb/MWhr)	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Implementation anticipated to last 180 days

Off-road Equipment -

Grading - 2,150 cubic yards of soil to be exported. Minimal grading necessary.

Trips and VMT - Distance to overflow ponds = 4.25 miles at greatest

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	1.00	180.00
tblConstructionPhase	PhaseEndDate	4/14/2022	12/21/2023
tblConstructionPhase	PhaseStartDate	4/14/2022	4/14/2023
tblGrading	AcresOfGrading	90.00	0.50

Gridley Feather River Sewer Crossing - Butte County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblGrading	MaterialExported	0.00	2,150.00
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.42	0.42
tblOffRoadEquipment	OffRoadEquipmentType		Bore/Drill Rigs
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Rough Terrain Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblTripsAndVMT	HaulingTripLength	20.00	4.25

2.0 Emissions Summary

Unmitigated Construction

[illegible]

Gridley Feather River Sewer Crossing - Butte County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**2.2 Overall Operational****Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.7800e-003	1.0000e-005	1.0200e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	4.7800e-003	1.0000e-005	1.0200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005	0.0000	2.3300e-003

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	4.7800e-003	1.0000e-005	1.0200e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3300e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	4.7800e-003	1.0000e-005	1.0200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005	0.0000	2.3300e-003

Gridley Feather River Sewer Crossing - Butte County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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

3.0 Construction Detail**Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Microtunneling	Site Preparation	4/14/2023	12/21/2023	5	180	

Acres of Grading (Site Preparation Phase): 0.5**Acres of Grading (Grading Phase): 0****Acres of Paving: 0.23****Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Microtunneling	Bore/Drill Rigs	2	6.00	221	0.50
Microtunneling	Generator Sets	1	8.00	84	0.74
Microtunneling	Rough Terrain Forklifts	1	8.00	100	0.40
Microtunneling	Other Construction Equipment	2	8.00	172	0.42
Microtunneling	Graders	1	8.00	187	0.41
Microtunneling	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Gridley Feather River Sewer Crossing - Butte County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Microtunneling	8	20.00	0.00	269.00	7.30	6.00	4.25	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction**3.2 Microtunneling - 2023****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.3000e-003	0.0000	4.3000e-003	5.2000e-004	0.0000	5.2000e-004			0.0000			0.0000
Off-Road	1.9605	20.1856	20.8741	0.0463		0.8536	0.8536		0.7955	0.7955		4,464.3277	4,464.3277	1.2698		4,496.0717
Total	1.9605	20.1856	20.8741	0.0463	4.3000e-003	0.8536	0.8579	5.2000e-004	0.7955	0.7961		4,464.3277	4,464.3277	1.2698		4,496.0717

Gridley Feather River Sewer Crossing - Butte County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**3.2 Microtunneling - 2023****Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.4100e-003	0.0668	0.0309	2.3000e-004	5.5900e-003	4.2000e-004	6.0100e-003	1.5400e-003	4.0000e-004	1.9400e-003		24.1465	24.1465	1.1000e-004	3.8000e-003	25.2803
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0793	0.0385	0.5265	1.0800e-003	0.1111	6.8000e-004	0.1118	0.0295	6.3000e-004	0.0301		108.7229	108.7229	4.4200e-003	3.5600e-003	109.8939
Total	0.0817	0.1053	0.5574	1.3100e-003	0.1167	1.1000e-003	0.1178	0.0310	1.0300e-003	0.0321		132.8693	132.8693	4.5300e-003	7.3600e-003	135.1742

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.3000e-003	0.0000	4.3000e-003	5.2000e-004	0.0000	5.2000e-004			0.0000			0.0000
Off-Road	1.9605	20.1856	20.8741	0.0463		0.8536	0.8536		0.7955	0.7955	0.0000	4,464.3277	4,464.3277	1.2698		4,496.0717
Total	1.9605	20.1856	20.8741	0.0463	4.3000e-003	0.8536	0.8579	5.2000e-004	0.7955	0.7961	0.0000	4,464.3277	4,464.3277	1.2698		4,496.0717

Gridley Feather River Sewer Crossing - Butte County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**3.2 Microtunneling - 2023****Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.4100e-003	0.0668	0.0309	2.3000e-004	5.5900e-003	4.2000e-004	6.0100e-003	1.5400e-003	4.0000e-004	1.9400e-003		24.1465	24.1465	1.1000e-004	3.8000e-003	25.2803
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0793	0.0385	0.5265	1.0800e-003	0.1111	6.8000e-004	0.1118	0.0295	6.3000e-004	0.0301		108.7229	108.7229	4.4200e-003	3.5600e-003	109.8939
Total	0.0817	0.1053	0.5574	1.3100e-003	0.1167	1.1000e-003	0.1178	0.0310	1.0300e-003	0.0321		132.8693	132.8693	4.5300e-003	7.3600e-003	135.1742

Gridley Feather River Sewer Crossing - Butte County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**4.0 Operational Detail - Mobile****4.1 Mitigation Measures Mobile**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

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

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	6.00	6.00	6.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.472261	0.055474	0.192534	0.153517	0.048775	0.009027	0.010426	0.015165	0.000769	0.000412	0.034743	0.001204	0.005693

Gridley Feather River Sewer Crossing - Butte County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**5.0 Energy Detail**

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas**Unmitigated**

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

Gridley Feather River Sewer Crossing - Butte County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**5.2 Energy by Land Use - NaturalGas****Mitigated**

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

6.0 Area Detail**6.1 Mitigation Measures Area**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4.7800e-003	1.0000e-005	1.0200e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3300e-003
Unmitigated	4.7800e-003	1.0000e-005	1.0200e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3300e-003

Gridley Feather River Sewer Crossing - Butte County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**6.2 Area by SubCategory****Unmitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.1400e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.5400e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.0000e-005	1.0000e-005	1.0200e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3300e-003
Total	4.7700e-003	1.0000e-005	1.0200e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3300e-003

Gridley Feather River Sewer Crossing - Butte County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**6.2 Area by SubCategory****Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.1400e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.5400e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.0000e-005	1.0000e-005	1.0200e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3300e-003
Total	4.7700e-003	1.0000e-005	1.0200e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3300e-003

7.0 Water Detail**7.1 Mitigation Measures Water**

Gridley Feather River Sewer Crossing - Butte County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**8.0 Waste Detail**

8.1 Mitigation Measures Waste**9.0 Operational Offroad**

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

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

11.0 Vegetation

Gridley Feather River Sewer Crossing - Butte County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**Gridley Feather River Sewer Crossing****Butte County, Annual****1.0 Project Characteristics****1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	10.00	1000sqft	0.23	10,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	71
Climate Zone	3			Operational Year	2023
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	CH4 Intensity (lb/MWhr)	0.033	N2O Intensity (lb/MWhr)	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Implementation anticipated to last 180 days

Off-road Equipment -

Grading - 2,150 cubic yards of soil to be exported. Minimal grading necessary.

Trips and VMT - Distance to overflow ponds = 4.25 miles at greatest

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	1.00	180.00
tblConstructionPhase	PhaseEndDate	4/14/2022	12/21/2023
tblConstructionPhase	PhaseStartDate	4/14/2022	4/14/2023
tblGrading	AcresOfGrading	90.00	0.50

Gridley Feather River Sewer Crossing - Butte County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblGrading	MaterialExported	0.00	2,150.00
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.42	0.42
tblOffRoadEquipment	OffRoadEquipmentType		Bore/Drill Rigs
tblOffRoadEquipment	OffRoadEquipmentType		Generator Sets
tblOffRoadEquipment	OffRoadEquipmentType		Rough Terrain Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Other Construction Equipment
tblTripsAndVMT	HaulingTripLength	20.00	4.25

2.0 Emissions Summary

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction

[illegible]

Gridley Feather River Sewer Crossing - Butte County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
5	3-31-2023	6-29-2023	0.6142	0.6142
6	6-30-2023	9-29-2023	0.7338	0.7338
		Highest	0.7338	0.7338

2.2 Overall Operational**Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	8.6000e-004	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8000e-004	1.8000e-004	0.0000	0.0000	1.9000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	8.6000e-004	0.0000	9.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.8000e-004	1.8000e-004	0.0000	0.0000	1.9000e-004

Gridley Feather River Sewer Crossing - Butte County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	8.6000e-004	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8000e-004	1.8000e-004	0.0000	0.0000	1.9000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	8.6000e-004	0.0000	9.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.8000e-004	1.8000e-004	0.0000	0.0000	1.9000e-004

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Microtunneling	Site Preparation	4/14/2023	12/21/2023	5	180	

Acres of Grading (Site Preparation Phase): 0.5

Gridley Feather River Sewer Crossing - Butte County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**Acres of Grading (Grading Phase): 0****Acres of Paving: 0.23****Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)****OffRoad Equipment**

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Microtunneling	Bore/Drill Rigs	2	6.00	221	0.50
Microtunneling	Generator Sets	1	8.00	84	0.74
Microtunneling	Rough Terrain Forklifts	1	8.00	100	0.40
Microtunneling	Other Construction Equipment	2	8.00	172	0.42
Microtunneling	Graders	1	8.00	187	0.41
Microtunneling	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Microtunneling	8	20.00	0.00	269.00	7.30	6.00	4.25	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Gridley Feather River Sewer Crossing - Butte County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**3.2 Microtunneling - 2023****Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.9000e-004	0.0000	3.9000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1765	1.8167	1.8787	4.1600e-003		0.0768	0.0768		0.0716	0.0716	0.0000	364.4973	364.4973	0.1037	0.0000	367.0891
Total	0.1765	1.8167	1.8787	4.1600e-003	3.9000e-004	0.0768	0.0772	5.0000e-005	0.0716	0.0717	0.0000	364.4973	364.4973	0.1037	0.0000	367.0891

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.1000e-004	6.3100e-003	2.8100e-003	2.0000e-005	4.8000e-004	4.0000e-005	5.2000e-004	1.3000e-004	4.0000e-005	1.7000e-004	0.0000	1.9760	1.9760	1.0000e-005	3.1000e-004	2.0688
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.7500e-003	3.7800e-003	0.0407	9.0000e-005	9.5800e-003	6.0000e-005	9.6400e-003	2.5500e-003	6.0000e-005	2.6100e-003	0.0000	8.0739	8.0739	3.8000e-004	3.1000e-004	8.1750
Total	5.9600e-003	0.0101	0.0435	1.1000e-004	0.0101	1.0000e-004	0.0102	2.6800e-003	1.0000e-004	2.7800e-003	0.0000	10.0499	10.0499	3.9000e-004	6.2000e-004	10.2437

Gridley Feather River Sewer Crossing - Butte County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**3.2 Microtunneling - 2023****Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.9000e-004	0.0000	3.9000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1765	1.8167	1.8787	4.1600e-003		0.0768	0.0768		0.0716	0.0716	0.0000	364.4969	364.4969	0.1037	0.0000	367.0887
Total	0.1765	1.8167	1.8787	4.1600e-003	3.9000e-004	0.0768	0.0772	5.0000e-005	0.0716	0.0717	0.0000	364.4969	364.4969	0.1037	0.0000	367.0887

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.1000e-004	6.3100e-003	2.8100e-003	2.0000e-005	4.8000e-004	4.0000e-005	5.2000e-004	1.3000e-004	4.0000e-005	1.7000e-004	0.0000	1.9760	1.9760	1.0000e-005	3.1000e-004	2.0688
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.7500e-003	3.7800e-003	0.0407	9.0000e-005	9.5800e-003	6.0000e-005	9.6400e-003	2.5500e-003	6.0000e-005	2.6100e-003	0.0000	8.0739	8.0739	3.8000e-004	3.1000e-004	8.1750
Total	5.9600e-003	0.0101	0.0435	1.1000e-004	0.0101	1.0000e-004	0.0102	2.6800e-003	1.0000e-004	2.7800e-003	0.0000	10.0499	10.0499	3.9000e-004	6.2000e-004	10.2437

Gridley Feather River Sewer Crossing - Butte County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

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

4.2 Trip Summary Information

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

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	6.00	6.00	6.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.472261	0.055474	0.192534	0.153517	0.048775	0.009027	0.010426	0.015165	0.000769	0.000412	0.034743	0.001204	0.005693

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Historical Energy Use: N

5.1 Mitigation Measures Energy

[illegible]

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated

[illegible]

Mitigated

[illegible]

Gridley Feather River Sewer Crossing - Butte County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**5.3 Energy by Land Use - Electricity****Unmitigated**

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

Mitigated

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

6.0 Area Detail**6.1 Mitigation Measures Area**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	8.6000e-004	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8000e-004	1.8000e-004	0.0000	0.0000	1.9000e-004
Unmitigated	8.6000e-004	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8000e-004	1.8000e-004	0.0000	0.0000	1.9000e-004

6.2 Area by SubCategory**Unmitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.1000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	6.5000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8000e-004	1.8000e-004	0.0000	0.0000	1.9000e-004
Total	8.7000e-004	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8000e-004	1.8000e-004	0.0000	0.0000	1.9000e-004

Gridley Feather River Sewer Crossing - Butte County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**6.2 Area by SubCategory****Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.1000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	6.5000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8000e-004	1.8000e-004	0.0000	0.0000	1.9000e-004
Total	8.7000e-004	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8000e-004	1.8000e-004	0.0000	0.0000	1.9000e-004

7.0 Water Detail**7.1 Mitigation Measures Water**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

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

7.2 Water by Land Use**Unmitigated**

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

Gridley Feather River Sewer Crossing - Butte County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**7.2 Water by Land Use****Mitigated**

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

8.0 Waste Detail**8.1 Mitigation Measures Waste****Category/Year**

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

Gridley Feather River Sewer Crossing - Butte County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**8.2 Waste by Land Use****Unmitigated**

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

Mitigated

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

9.0 Operational Offroad

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

Gridley Feather River Sewer Crossing - Butte County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied**10.0 Stationary Equipment**

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

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

11.0 Vegetation

Attachment 4.4

**Biological Resources Assessment,
ECORP Consulting, Inc.**

Biological Resources Assessment

Gridley Feather River Sewer Crossing Project

Butte County, California

Prepared For:

Bennett Engineering

Prepared By:



2525 Warren Drive
Rocklin, California 95677

September 14, 2022

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Attachment C – Wildlife Observed Onsite

LIST OF ACRONYMS AND ABBREVIATIONS

Term	Description
Act	Rivers and Harbors Act
BA	Biological Assessment
BCC	Birds of Conservation Concern
BMPs	Best Management Practices

LIST OF ACRONYMS AND ABBREVIATIONS

Term	Description
BO	Biological Opinion
BRA	Biological Resources Assessment
BRCP	Butte Regional Conservation Plan
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
CWA	Clean Water Act
DPS	Distinct population segment
EFH	Essential Fish Habitat
EPIC	Environmental Protection Information Center
ESA	Endangered Species Act
ESU	Evolutionarily significant unit
FR	Federal Register
HCP	Habitat Conservation Plan
MBTA	Migratory Bird Treaty Act
MSL	Mean sea level
NCCP	Natural Community Conservation Plan
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
Project	Gridley Feather River Sewer Crossing Project
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
Section 404 Permit	Section 404 of the federal CWA
SSC	Species of Special Concern
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USEPA	U.S. Environmental Protection Agency
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VELB	Valley elderberry longhorn beetle
WWTP	Wastewater Treatment Plant

1.0 INTRODUCTION

On behalf of Bennett Engineering, ECorp Consulting, Inc. conducted a biological resources assessment (BRA) for the Gridley Feather River Sewer Crossing Project (Project) located in the City of Gridley, Butte County, California. The purpose of the assessment was to collect information on the biological resources present or with the potential to occur in the Project Study Area, assess potential biological impacts related to Project activities, and identify potential mitigation measures to inform and support the Project's California Environmental Quality Act (CEQA) documentation for biological resources.

2.0 STUDY AREA

2.1 Study Area Location

The approximately 96.3-acre Study Area is located in the City of Gridley, Butte County, California. The Study Area is located south of East Gridley Road along the Feather River and includes the existing City of Gridley Wastewater Treatment Plant (WWTP), the WWTP overflow ponds, and a portion of the Feather River West Levee (Figure 1). The Study Area corresponds to a portion of the unsectioned Rancho BOGA Land Grant and a portion of Section 4, Township 17 North, Range 3 East (Mount Diablo Base and Meridian) of the "Gridley, California" 7.5-minute quadrangle (U.S. Geological Survey [USGS] 1952, photorevised 1973). The approximate center of the Study Area is located at latitude 39.357166° and longitude -121.635453° within the Honcut-Headwaters Lower Feather River Watershed (Hydrologic Unit Code #18020159; Natural Resources Conservation Service [NRCS], USGS, and U.S. Environmental Protection Agency [USEPA] 2016).

2.2 Project Description

The Project consists of replacing an existing City of Gridley wastewater sewer utility crossing of the Feather River located approximately 4,500 feet downstream from the East Gridley Road Bridge in Butte County, California. The existing utility crosses the river via an 18-inch-diameter ductile steel pipe located on the river bottom. The proposed new utility will likely be installed using microtunneling construction methods below the river bottom. The Project described herein includes the geotechnical investigation to investigate subsurface conditions and inform design, microtunneling and placement of the new sewer line, and removal of the old sewer line from the Feather River.

2.2.1 Geotechnical Investigation

Preliminary steps include five borings to further evaluate subsurface conditions within the proposed new utility alignment with in Feather River, three borings within the river and two at the proposed microtunneling entry and exit shaft locations on the west and east sides of the river.

The three exploratory borings within the Feather River will be completed with the use of a barge supported drill rig equipped with mud rotary drilling capabilities to depths up to 70 feet (minimum elevation of -10 feet) mean sea level (MSL), depending on conditions encountered. The over-water borings will be performed at least 25 feet and no more than 50 feet from the proposed new utility

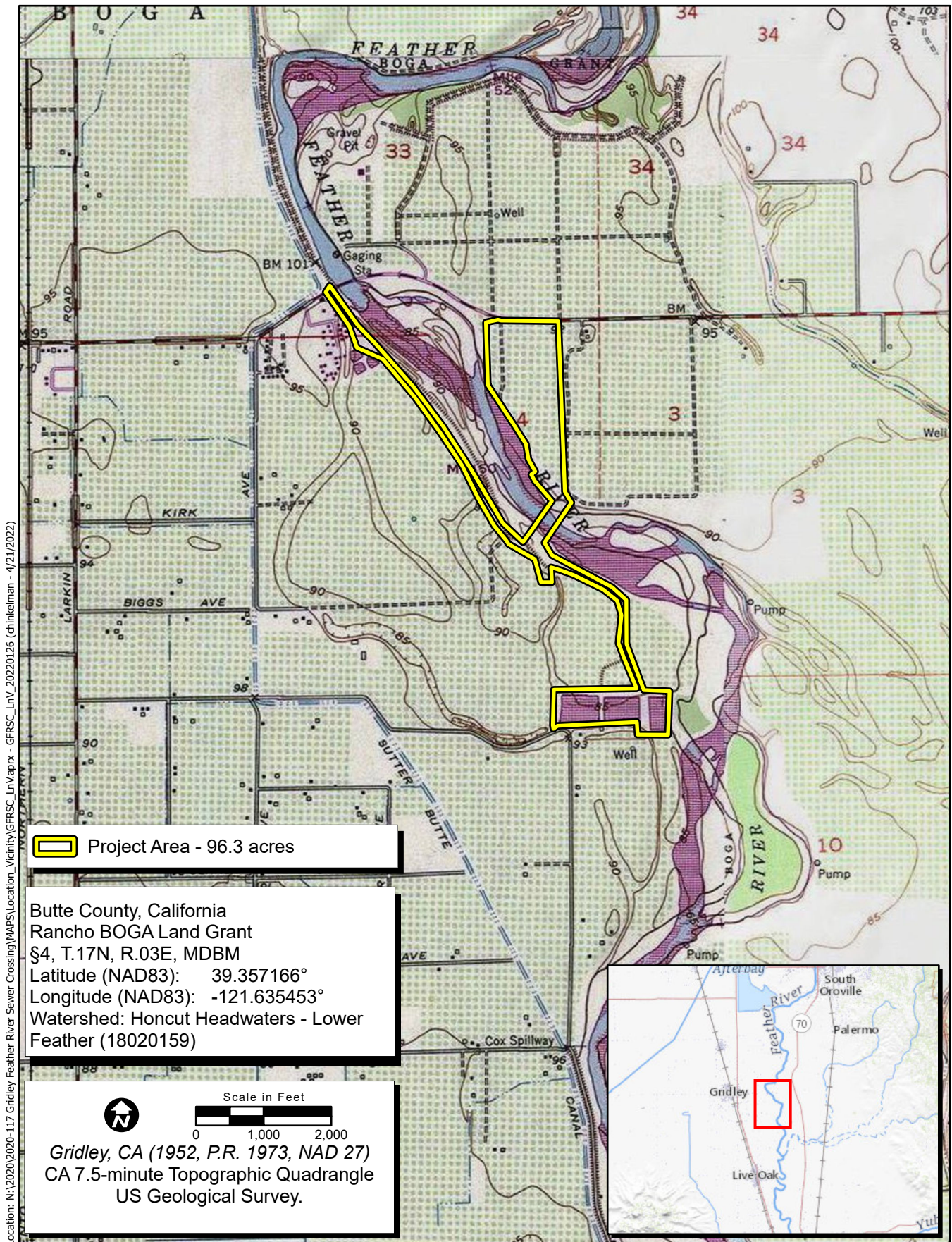


Figure 1. Study Area Location and Vicinity

alignment and maintain at least 25 feet from the existing pipeline (Figure 2). The drilling mud from the river borings will be retained in drums and removed from the site.

The two exploratory borings at the entry and exit site will be completed with a truck-mounted drill rig equipped with mud rotary drilling capabilities to depths up to 100 feet, (minimum elevation of -10 feet) MSL, depending on conditions encountered. These borings will be located adjacent to the proposed micro-tunneling entry and exit shafts, one each on the west side of the river (water side of the levee) and on the east side of the river near the wastewater treatment plant (Figure 2).

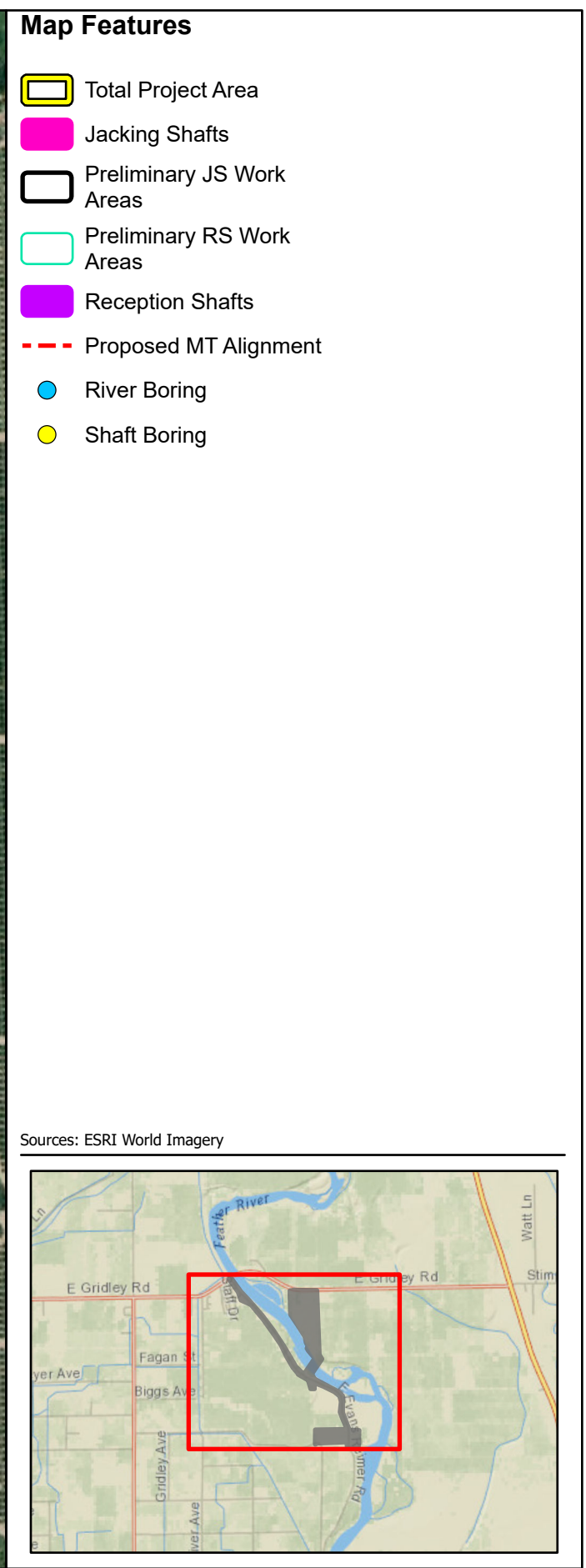
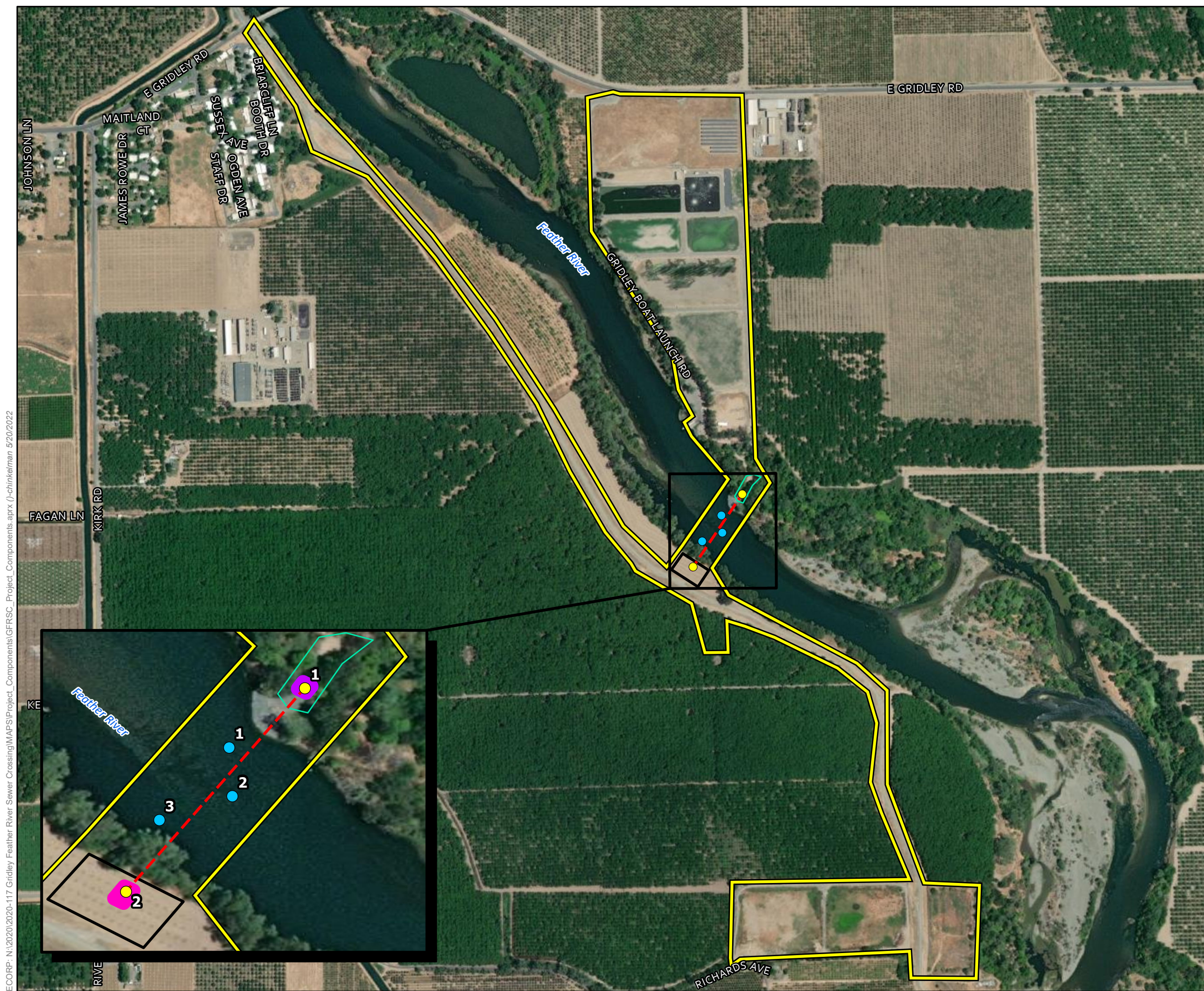
2.2.2 Microtunneling and Sewer Line Replacement

The proposed pipe replacement of the existing sewer line will be installed under the Feather River just north of the existing pipe in the river. The proposed method for installing the pipe under the river is utilizing microtunneling technologies. Shafts will be construction on each side of the river to the appropriate depth and a minimum 48-inch-diameter casing will be installed. Once the casing is installed, two sanitary sewer force main pipes will be pulled through the casing and reconnected to the existing sanitary sewer force main system on both sides of the river. It is estimated that the microtunneling activities will take approximately 180 working days.

Microtunneling will require two deep, watertight shafts to tunnel the casing underneath the river. The jacking shaft will be approximately 18 feet by 35 feet and 64 feet deep, located on the south/west side of the river on the waterside of the levee. The jacking shaft will be located outside the levee prism. The reception shaft will be 18 feet by 18 feet and 55 feet deep, located on the north/east side of the river in the vegetated area south of the City of Gridley WWTP. The work area to construct the shafts should be a minimum of 10,000 square feet. The levee road will be used for access to the jacking shaft, and an access road through the City of Gridley boat launch parking area will be used for access to the reception shaft. Minor improvements may need to be made to improve accessibility for large trucks; such as widening, additional gravel and minor grading. All dimensions and depths are estimated and may be modified during design and permitting.

A microtunneling machine will be installed in the bottom of the jacking shaft and will tunnel the casing with the centerline of the tunnel at approximately 35 feet MSL. At this elevation there will be approximately 17 feet of clearance from the crown of the casing to the lowest elevation of the bottom of the river. Once the casing is installed two sanitary sewer force mains will be pulled through the casing and capped until they can be tied into the sanitary sewer force main system.

Each end of the new force mains will tie into the existing force main system. Within each shaft a vertical riser system will be constructed, to meet the elevation of the existing force main system for tie-in. On the south/west side of the river, a connection to the existing sanitary sewer force main system will be made on the water side of the levee, to avoid work with in the levee. On the north/east side of the river, new piping will be installed to connect the proposed force mains to the existing force main system that delivers wastewater to the treatment plant.



Upon completion of the proposed river crossing the microtunneling shafts, and existing river crossing will require decommissioning. The microtunneling shafts will be backfilled with controlled low strength material. The existing sewer line pipe is required to be removed from the river, but the method of removal is unknown until the condition of the pipe is known. The existing crossing may be floated out of the river and removed, or drug out of the river. Both methods will require the pipe to be flushed, capped, and sealed.

Approximately 2,150 cubic yards of material will need to be off hauled from the shaft excavation and it is proposed that the material will be taken to the City's emergency WWT overflow ponds. It is approximately 0.75 traveled mile from the jacking shaft to the overflow ponds. It is also approximately 4.25 traveled miles from the reception shaft to the overflow ponds. It is assumed that the travel path from the jacking shaft to the overflow ponds will be via the levee road and the path from the reception shaft to the overflow ponds will be via Larkin Road and Richards Avenue. The leftover excavated material will be used to build up the existing emergency pond berms.

The existing levee is only being used for the proposed access point to the jacking shaft. There is no proposed construction to happen on or within the levee.

2.3 Purpose of this Biological Resources Assessment

The purpose of this BRA is to assess the potential for occurrence of special-status plant and animal species or their habitat, and sensitive habitats such as wetlands within the Study Area. This assessment does not include determinate field surveys conducted according to agency-promulgated protocols. The conclusions and recommendations presented in this report are based upon a review of the available literature and site reconnaissance.

For the purposes of this assessment, special-status species are defined as plants or animals that:

- are listed, proposed for listing, or candidates for future listing as threatened or endangered under the federal Endangered Species Act (ESA);
- are listed or candidates for future listing as threatened or endangered under the California ESA;
- meet the definitions of endangered or rare under Section 15380 of CEQA Guidelines;
- are identified as a Species of Special Concern (SSC) by the California Department of Fish and Wildlife (CDFW);
- are birds identified as Birds of Conservation Concern (BCC) by the U.S. Fish and Wildlife Service (USFWS);
- are plants considered by the California Native Plant Society (CNPS) to be "rare, threatened, or endangered in California" (California Rare Plant Rank [CRPR] 1 and 2);
- plants listed by CNPS as species about which more information is needed to determine their status (CRPR 3), and plants of limited distribution (CRPR 4);

- are plants listed as rare under the California Native Plant Protection Act (NPPA, California Fish and Game Code, § 1900 et seq.); or
- are fully protected in California in accordance with the California Fish and Game Code, §§ 3511 (birds), 4700 (mammals), 5050 (amphibians and reptiles), and 5515 (fishes).

Only species that fall into one of the above-listed groups were considered for this assessment. Other species without special status that are sometimes found in database or literature searches were not included in this analysis.

3.0 REGULATORY SETTING

3.1 Federal Regulations

3.1.1 Federal Endangered Species Act

The federal ESA protects plants and animals that are listed as endangered or threatened by the USFWS and the National Marine Fisheries Service (NMFS). Section 9 of ESA prohibits the taking of listed wildlife, where take is defined as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in such conduct" (50 Code of Federal Regulations [CFR] 17.3). For plants, this statute governs removing, possessing, maliciously damaging, or destroying any listed plant on federal land and removing, cutting, digging up, damaging, or destroying any listed plant on non-federal land in knowing violation of state law (16 U.S. Code [USC] 1538). Under Section 7 of ESA, federal agencies are required to consult with the USFWS if their actions, including permit approvals or funding, could adversely affect a listed (or proposed) species (including plants) or its critical habitat. Through consultation and the issuance of a biological opinion (BO), the USFWS may issue an incidental take statement allowing take of the species that is incidental to an otherwise authorized activity provided the activity will not jeopardize the continued existence of the species. Section 10 of ESA provides for issuance of incidental take permits where no other federal actions are necessary provided a Habitat Conservation Plan (HCP) is developed.

3.1.1.1 Section 7

Section 7 of ESA mandates that all federal agencies consult with USFWS and/or NMFS to ensure that federal agencies' actions do not jeopardize the continued existence of a listed species or adversely modify Critical Habitat for listed species. If direct and/or indirect effects will occur to Critical Habitat that appreciably diminish the value of Critical Habitat for both the survival and recovery of a species, the adverse modifications will require formal consultation with USFWS or NMFS. If adverse effects are likely, the applicant must conduct a Biological Assessment (BA) for the purpose of analyzing the potential effects of the project on listed species and critical habitat to establish and justify an "effect determination." The federal agency reviews the BA; if it concludes that the project may adversely affect a listed species or its habitat, it prepares a Biological Opinion (BO). The BO may recommend "reasonable and prudent alternatives" to the project to avoid jeopardizing or adversely modifying habitat.

3.1.1.2 Section 10

When no discretionary action is being taken by a federal agency but a project may result in the take of listed species, an incidental take permit under Section 10 of the ESA is necessary. The purpose of the incidental take permit is to authorize the take of federally listed species that may result from an otherwise lawful activity, not to authorize the activities themselves. In order to obtain an incidental take permit under Section 10, an application must be submitted that includes an HCP. In some instances, applicants, USFWS, and/or NMFS may determine that an HCP is necessary or prudent, even if a discretionary federal action will occur. The purpose of the HCP planning process associated with the permit application is to ensure that adequate minimization and mitigation for impacts to listed species and/or their habitat will occur.

3.1.1.3 Critical Habitat

Critical Habitat is defined in Section 3 of the ESA as (1) the specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the ESA, on which are found those physical or biological features essential to the conservation of the species and that may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. For inclusion in a Critical Habitat designation, habitat within the geographical area occupied by the species at the time it was listed must first have features that are essential to the conservation of the species. Critical Habitat designations identify, to the extent known and using the best scientific data available, habitat areas that provide essential life cycle needs of the species (areas on which are found the primary physical and biological features). Primary physical and biological features are features essential to the conservation of the species and that may require special management considerations or protection. These include but are not limited to the following:

- Space for individual and population growth and for normal behavior;
- Food, water, air, light, minerals, or other nutritional or physiological requirements;
- Cover or shelter;
- Sites for breeding, reproduction, or rearing (or development) of offspring; or
- Habitats that are protected from disturbance or are representative of the historic, geographical, and ecological distributions of a species.

3.1.2 Magnuson-Stevens Fishery Conservation and Management Act

The 1996 Magnuson-Stevens Fishery Conservation and Management Act, as amended (16 USC 1801), requires federal agencies to consult with NMFS whenever a proposed action has a potential to adversely affect Essential Fish Habitat (EFH). Although states are not required to consult with NMFS, NMFS is required to develop EFH conservation recommendations for any state agency activities with the potential to affect EFH. EFH is defined as "...those waters and substrates necessary to fish for spawning, breeding, feeding or growth to maturity" and includes the necessary habitat for managed fish to complete their life

cycles and contribute to a sustainable fishery and healthy ecosystem. Although the concept of EFH is similar to the ESA definition of Critical Habitat, measures recommended by NMFS or a regional fisheries management council to protect EFH are advisory, rather than prescriptive (NMFS 1998).

3.1.3 Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) implements international treaties between the United States and other nations devised to protect migratory birds, any of their parts, eggs, and nests from activities such as hunting, pursuing, capturing, killing, selling, and shipping, unless expressly authorized in the regulations or by permit. As authorized by the MBTA, the USFWS issues permits to qualified applicants for the following types of activities: falconry, raptor propagation, scientific collecting, special purposes (rehabilitation, education, migratory game bird propagation, and salvage), take of depredating birds, taxidermy, and waterfowl sale and disposal. The regulations governing migratory bird permits can be found in 50 CFR part 13 General Permit Procedures and 50 CFR part 21 Migratory Bird Permits. The State of California has incorporated the protection of birds of prey in Sections 3800, 3513, and 3503.5 of the California Fish and Game Code.

3.1.4 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act of 1940 (as amended) provides for the protection of bald eagle and golden eagle by prohibiting the take, possession, sale, purchase, barter, offer to sell, purchase or barter, transport, export or import, of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit [16 USC 668(a); 50 CFR 22]. USFWS may authorize take of bald eagles and golden eagles for activities where the take is associated with, but not the purpose of, the activity and cannot practicably be avoided (50 CFR 22.26).

3.1.5 Federal Clean Water Act

The purpose of the federal Clean Water Act (CWA) is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters." Section 404 of the CWA prohibits the discharge of dredged or fill material into "Waters of the U.S." without a permit from the U.S. Army Corps of Engineers (USACE). "Discharges of fill material" is defined as the addition of fill material into Waters of the U.S., including, but not limited to, the following: placement of fill necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; and fill for intake and outfall pipes, and subaqueous utility lines" (33 CFR § 328.2(f)). In addition, Section 401 of the CWA (33 USC 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into Waters of the U.S. to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards.

Substantial impacts to wetlands (over 0.5 acre of impact) may require an individual permit. Projects that only minimally affect wetlands (less than 0.5 acre of impact) may meet the conditions of one of the existing Nationwide Permits. A Water Quality Certification or waiver pursuant to Section 401 of the CWA is required for Section 404 permit actions; this certification or waiver is issued by the Regional Water Quality Control Board (RWQCB).

3.1.6 Rivers and Harbors Act

Section 10 of the Rivers and Harbors Act of 1899 (Act) requires authorization from the Secretary of the Army, acting through the USACE, for the construction of any structure in or over any navigable Waters of the U.S. Structures or work outside the limits defined for navigable Waters of the U.S. require a Section 10 permit if the structure or work affects the course, location, or condition of the water body. The law applies to any dredging or disposal of dredged materials, excavation, filling, re-channelization, or any other modification of a navigable water of the U.S., and applies to all structures, from the smallest floating dock to the largest commercial undertaking. It further includes, without limitation, any wharf, dolphin, weir, boom breakwater, jetty, groin, bank protection (e.g., riprap, revetment, bulkhead), mooring structures such as pilings, aerial or subaqueous power transmission lines, intake or outfall pipes, permanently moored floating vessel, tunnel, artificial canal, boat ramp, aids to navigation, and any other permanent, or semi-permanent obstacle or obstruction. The alteration of a USACE federally authorized civil works project requires a permit pursuant to Section 14 of the Act, as amended and codified in 33 USC 408. Projects with minimal impacts require approval by the USACE Sacramento District Construction Operations Group; however projects with more substantial impacts may require USACE Headquarters review. Coordination with the Central Valley Flood Protection Board, who serve as the Non-Federal Sponsor, is required as a part of the process of obtaining a Section 408 permit.

3.2 State Regulations

3.2.1 California Fish and Game Code

3.2.1.1 California Endangered Species Act

The California ESA (California Fish and Game Code §§ 2050-2116) generally parallels the main provisions of the ESA, but unlike its federal counterpart, the California ESA applies the take prohibitions to species proposed for listing (called “candidates” by the state). Section 2080 of the California Fish and Game Code prohibits the taking, possession, purchase, sale, and import or export of endangered, threatened, or candidate species, unless otherwise authorized by permit or in the regulations. Take is defined in Section 86 of the California Fish and Game Code as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” The California ESA allows for take incidental to otherwise lawful development projects. State lead agencies are required to consult with CDFW to ensure that any action they undertake is not likely to jeopardize the continued existence of any endangered, threatened or candidate species or result in destruction or adverse modification of essential habitat.

3.2.1.2 Fully Protected Species

The State of California first began to designate species as “fully protected” prior to the creation of the federal and California ESAs. Lists of fully protected species were initially developed to provide protection to those animals that were rare or faced possible extinction and included fish, amphibians and reptiles, birds, and mammals. Most fully protected species have since been listed as threatened or endangered under the federal and/or California ESAs. The regulations that implement the Fully Protected Species Statute (California Fish and Game Code § 4700 for mammals, § 3511 for birds, § 5050 for reptiles and

amphibians, and § 5515 for fish) provide that fully protected species may not be taken or possessed at any time. Furthermore, the CDFW prohibits any state agency from issuing incidental take permits for fully protected species. The CDFW will issue licenses or permits for take of these species for necessary scientific research or live capture and relocation pursuant to the permit.

3.2.1.3 Native Plant Protection Act

The NPPA of 1977 was created with the intent to “preserve, protect and enhance rare and endangered plants in this State.” The NPPA is administered by CDFW and provided in California Fish and Game Code §§ 1900-1913. The Fish and Wildlife Commission has the authority to designate native plants as “endangered” or “rare” and to protect endangered and rare plants from take. The California ESA of 1984 (California Fish and Game Code § 2050-2116) provided further protection for rare and endangered plant species, but the NPPA remains part of the California Fish and Game Code.

3.2.1.4 Birds of Prey

Sections 3800, 3513, and 3503 of the California Fish and Game Code specifically protect birds of prey. Section 3800 states that it is unlawful to take nongame birds, such as those occurring naturally in California that are not resident game birds, migratory game birds, or fully protected birds, except when in accordance with regulations of the commission or a mitigation plan approved by CDFW for mining operations. Section 3513 specifically prohibits the take or possession of any migratory nongame bird as designated in the MBTA.

Section 3503 of the California Fish and Game Code prohibits the take, possession, or needless destruction of the nest or eggs of any bird. Additionally, Subsection 3503.5 prohibits the take, possession, or destruction of any birds and their nests in the orders Strigiformes (owls) or Falconiformes (hawks and eagles). These provisions, along with the federal MBTA, serve to protect nesting native birds.

3.2.2 Species of Special Concern

The CDFW defines SSC as a species, subspecies, or distinct population of an animal native to California that are not legally protected under ESA, the California ESA or the California Fish and Game Code, but currently satisfy one or more of the following criteria:

- The species has been completely extirpated from the state or, as in the case of birds, it has been extirpated from its primary seasonal or breeding role;
- The species is listed as federally (but not state) threatened or endangered, or meets the state definition of threatened or endangered but has not formally been listed;
- The species has or is experiencing serious (nonscyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for state threatened or endangered status;

- The species has naturally small populations that exhibit high susceptibility to risk from any factor that if realized, could lead to declines that would qualify it for state threatened or endangered status.

SSC are typically associated with habitats that are threatened. Project-related impacts to SSC, state-threatened, or endangered species are considered “significant” under CEQA.

3.2.3 California Rare Plant Ranks

The CNPS maintains the Inventory of Rare and Endangered Plants of California (CNPS 2022), which provides a list of plant species native to California that are threatened with extinction, have limited distributions, and/or low populations. Plant species meeting one of these criteria are assigned to one of six CRPRs. The rank system was developed in collaboration with government, academia, non-governmental organizations, and private sector botanists, and is jointly managed by CDFW and the CNPS. The CRPRs are currently recognized in the California Natural Diversity Database (CNDDB). The following are definitions of the CNPS CRPRs:

- Rare Plant Rank 1A – presumed extirpated in California and either rare or extinct elsewhere
- Rare Plant Rank 1B – rare, threatened, or endangered in California and elsewhere
- Rare Plant Rank 2A – presumed extirpated in California, but more common elsewhere
- Rare Plant Rank 2B – rare, threatened, or endangered in California but more common elsewhere
- Rare Plant Rank 3 – a review list of plants about which more information is needed
- Rare Plant Rank 4 – a watch list of plants of limited distribution

Additionally, the CNPS has defined Threat Ranks that are added to the CRPR as an extension. Threat Ranks designate the level of threat on a scale of 1 through 3, with 1 being the most threatened and 3 being the least threatened. Threat Ranks are generally present for all plants ranked 1B, 2B, or 4, and for the majority of plants ranked 3. Plant species ranked 1A and 2A (presumed extirpated in California), and some species ranked 3, which lack threat information, do not typically have a Threat Rank extension. The following are definitions of the CNPS Threat Ranks:

- Threat Rank 0.1 – Seriously threatened in California (more than 80 percent of occurrences threatened/high degree and immediacy of threat)
- Threat Rank 0.2 – Moderately threatened in California (20 to 80 percent occurrences threatened/moderate degree and immediacy of threat)
- Threat Rank 0.3 – Not very threatened in California (less than 20 percent of occurrences threatened/low degree and immediacy of threat or no current threats known)

Factors such as habitat vulnerability and specificity, distribution, and condition of occurrences, are considered in setting the Threat Rank; and differences in Threat Ranks do not constitute additional or different protection (CNPS 2020). Depending on the policy of the lead agency, substantial impacts to

plants ranked 1A, 1B, or 2 are typically considered significant under CEQA Guidelines § 15380. Significance under CEQA is typically evaluated on a case-by-case basis for plants ranked 3 or 4.

3.2.4 Porter-Cologne Water Quality Act

The RWQCB implements water quality regulations under the federal CWA and the Porter-Cologne Water Quality Act. These regulations require compliance with the National Pollutant Discharge Elimination System (NPDES), including compliance with the California Storm Water NPDES General Construction Permit for discharges of stormwater runoff associated with construction activities. General Construction Permits for projects that disturb one or more acres of land require development and implementation of a Stormwater Pollution Prevention Plan. Under the Porter-Cologne Water Quality Act, the RWQCB regulates actions that would involve “discharging waste, or proposing to discharge waste, with any region that could affect the water of the state” (Water Code 13260(a)). Waters of the State are defined as “any surface water or groundwater, including saline waters, within the boundaries of the state” (Water Code 13050 (e)). The RWQCB regulates all such activities, as well as dredging, filling, or discharging materials into Waters of the State, that are not regulated by USACE due to a lack of connectivity with a navigable water body. The RWQCB may require issuance of a Waste Discharge Requirements for these activities.

3.2.5 California Environmental Quality Act

In accordance with CEQA Guidelines § 15380, a species not protected on a federal or state list may be considered rare or endangered if the species meets certain specified criteria. These criteria follow the definitions in ESA, the California ESA, and §§ 1900-1913 of the California Fish and Game Code, which deal with rare or endangered plants or animals. Section 15380 was included in the CEQA Guidelines primarily to deal with situations where a project under review may have a significant effect on a species that has not yet been listed by either USFWS or CDFW.

3.2.5.1 CEQA Significance Criteria

Sections 15063-15065 of the CEQA Guidelines address how an impact is identified as significant and are particularly relevant to SSC. Generally, impacts to rare, threatened, or endangered species are considered significant, requiring thorough analysis in a CEQA document and often requiring mitigation to avoid or minimize potential impacts. Assessment of “impact significance” to populations of nonlisted species (e.g., SSC) usually considers the proportion of the species’ range that will be affected by a project, impacts to habitat, and the regional and population level effects.

Specifically, § 15064.7 of CEQA Guidelines encourages local agencies to develop and publish the thresholds that the agency uses in determining the significance of environmental effects caused by projects under its review. However, agencies may also rely upon the guidance provided by the expanded Initial Study checklist contained in Appendix G of the CEQA Guidelines. Appendix G provides examples of impacts that would normally be considered significant. Based on these examples, impacts to biological resources would normally be considered significant if the project would:

- 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 CDFW or USFWS;
- have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFW or USFWS;
- have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means;
- 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;
- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- conflict with the provisions of an adopted HCP, Natural Community Conservation Plan (NCCP), or other approved local, regional or state HCP.

An evaluation of whether or not an impact on biological resources would be substantial must consider both the resource itself and how that resource fits into a regional or local context. Substantial impacts would be those that would diminish, or result in the loss of, an important biological resource, or those that would obviously conflict with local, state, or federal resource conservation plans, goals, or regulations. Impacts are sometimes locally important but not significant according to CEQA. The reason for this is that although the impacts would result in an adverse alteration of existing conditions, they would not substantially diminish or result in the permanent loss of an important resource on a population- or region-wide basis.

3.3 Local Plans and Ordinances

3.3.1 City of Gridley General Plan Conservation Element

The General Plan is the City's overarching policy and planning document. The General Plan indicates Gridley's long-range objectives for physical development and conservation within the City. The General Plan provides decision makers, City staff, property owners, interested property developers and builders, and the public-at-large with the City's policy direction for managing land use change. The General Plan is comprehensive in scope, addressing land use, transportation, housing, conservation of resources, economic development, public facilities and infrastructure, public safety, and open space, among many other subjects.

A General Plan Conservation Element broadly addresses the management, development and use of natural resources, including water, soils, wildlife, minerals, and other relevant natural resource topics. Its requirements overlap those of the open space, land use, safety, and circulation elements. The conservation element is distinguished by being primarily oriented toward natural resource management

and conservation. This Element covers agricultural resources, water supply and quality, pre-historic and historic resources, wildlife and habitats, and energy (City of Gridley 1999).

3.3.2 Butte Regional Conservation Plan

The Butte Regional Conservation Plan (BRCP, Plan) is a federal Habitat Conservation Plan and a state NCCP that is currently pending adoption and implementation. Once finalized and adopted Plan will provide a comprehensive, coordinated, and efficient program to conserve ecologically important resources in the lowland and foothill region of Butte County (the “Plan Area”), including endangered, threatened, and other at-risk species and their habitats; natural communities and the ecological processes that support them; biodiversity; streams and ponds and the watersheds that support them; wetlands and riparian habitats; and ecological corridors. The City of Gridley is one of 11 entities involved with the Plan. The final BRCP documents was submitted to USFWS, NMFS, and CDFW on June 28, 2019, for final inspection and publication in the Federal Register (FR).

4.0 METHODS

4.1 Literature Review

The following resources were reviewed to determine the special-status species that have been documented within or in the vicinity of the Study Area. Results of the species searches are included as Attachment A.

- CDFW CNDDDB data for the “Gridley, California” 7.5-minute quadrangles as well as the eight surrounding USGS quadrangles (CDFW 2022);
- USFWS Information, Planning, and Consultation System Resource Report List for the Study Area (USFWS 2022);
- CNPS’ electronic Inventory of Rare and Endangered Plants of California was queried for the “Gridley, California” 7.5-minute quadrangles and the eight surrounding quadrangles (CNPS 2022); and
- National Marine Fisheries West Coast Region Species, Critical Habitat, and Essential Habitat (NMFS 2016).

4.2 Site Surveys

4.2.1 Reconnaissance Site Survey

ECORP biologists Emily Mecke and Rachel Bennett conducted the site reconnaissance visit on February 16, 2022, and a secondary site visit was conducted by ECORP biologist Griffin Capehart on May 25, 2022. The Study Area was systematically surveyed on foot using an ESO Arrow Global Positioning System unit with submeter accuracy, topographic maps, and aerial imagery to ensure total site coverage. Special attention was given to identifying those portions of the Study Area with the potential to support special-status

species and sensitive habitats. During the field survey, biological communities occurring onsite were characterized and the following biological resource information was collected:

- Potential aquatic resources
- Vegetation communities
- Plant and animal species directly observed
- Burrows and any other special habitat features
- Representative Study Area photographs (Attachment B)

4.2.2 Aquatic Resources Delineation Site Survey

An aquatic resources delineation of the Study Area was conducted concurrently during the February 16, 2022 site visit. The delineation was conducted in accordance with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Arid West Region Supplement; USACE 2008).

4.3 Special-Status Species Considered for the Project

Based on species occurrence information from the literature review and observations in the field, a list of special-status plant and animal species that have the potential to occur within the Study Area was generated. Only special-status species as defined in Section 1.3 were included in this analysis. Each of these species' potential to occur within the Study Area was assessed based on the following criteria:

- **Present** - Species was observed during the site visit or is known to occur within the Study Area based on documented occurrences within the CNDDDB or other literature.
- **Potential to Occur** - Habitat (including soils and elevation requirements) for the species occurs within the Study Area.
- **Low Potential to Occur** - Marginal or limited amounts of habitat occurs and/or the species is not known to occur within the vicinity of the Study Area based on CNDDDB records and other available documentation.
- **Absent** - No suitable habitat (including soils and elevation requirements) and/or the species is not known to occur within the vicinity of the Study Area based on CNDDDB records and other documentation.

5.0 RESULTS

5.1 Site Characteristics and Land Use

The Study Area includes the Feather River, the Feather River Boat Ramp (operated by the City of Gridley), City of Gridley wastewater treatment facilities and overflow ponds, small sections of both the east and west banks of the Feather River, adjacent ruderal areas, and one small section of orchard. The developed

and semi-developed portions of the Study Area include a paved roadway, parking areas, boat ramp, and compacted gravel levee road. The underdeveloped areas include riparian woodland riverbank habitat and ruderal weedy habitats. The wastewater treatment portion of the Study Area includes constructed/excavated ponds of varying shapes and sizes, and the overflow ponds include semi-constructed wetland type habitat.

5.2 Soils and Topography

According to the Web Soil Survey (NRCS 2020a), six soil units, or types, have been mapped within the Study Area (Figure 3):

- 121 - Boga-Loemstone, 0 to 1 percent slopes.
- 138su – Live oak sandy clay loam, 0 to 2 percent slopes
- 150 – Columbia, 0 to 2 percent slopes, frequently flooded
- 152 – Gianella fine sandy loam, 0 to 1 percent slopes, frequently flooded
- 158 – Gianella fine sandy loam, 0 to 1 percent slopes, occasionally flooded
- 161 – Gianella fine sandy loam, 0 to 1 percent slope, rarely flooded

Columbia, 0 to 2 percent slopes (150), Gianella fine sandy loam, 0 to 1 percent slopes, frequently flooded (152), Gianella fine sandy loam, 0 to 1 percent slopes, occasionally flooded (158), and Gianella fine sandy loam, 0 to 1 percent slopes, rarely flooded (161) all contain hydric components (NRCS 2022b). Boga-Loemstone, 0 to 1 percent slopes (121) and Liveoak sandy clay loam, 0 to 2 percent slopes (138su) do not contain any listed hydric components (NRCS 2022b).

5.3 Land Cover Types and Vegetation Communities

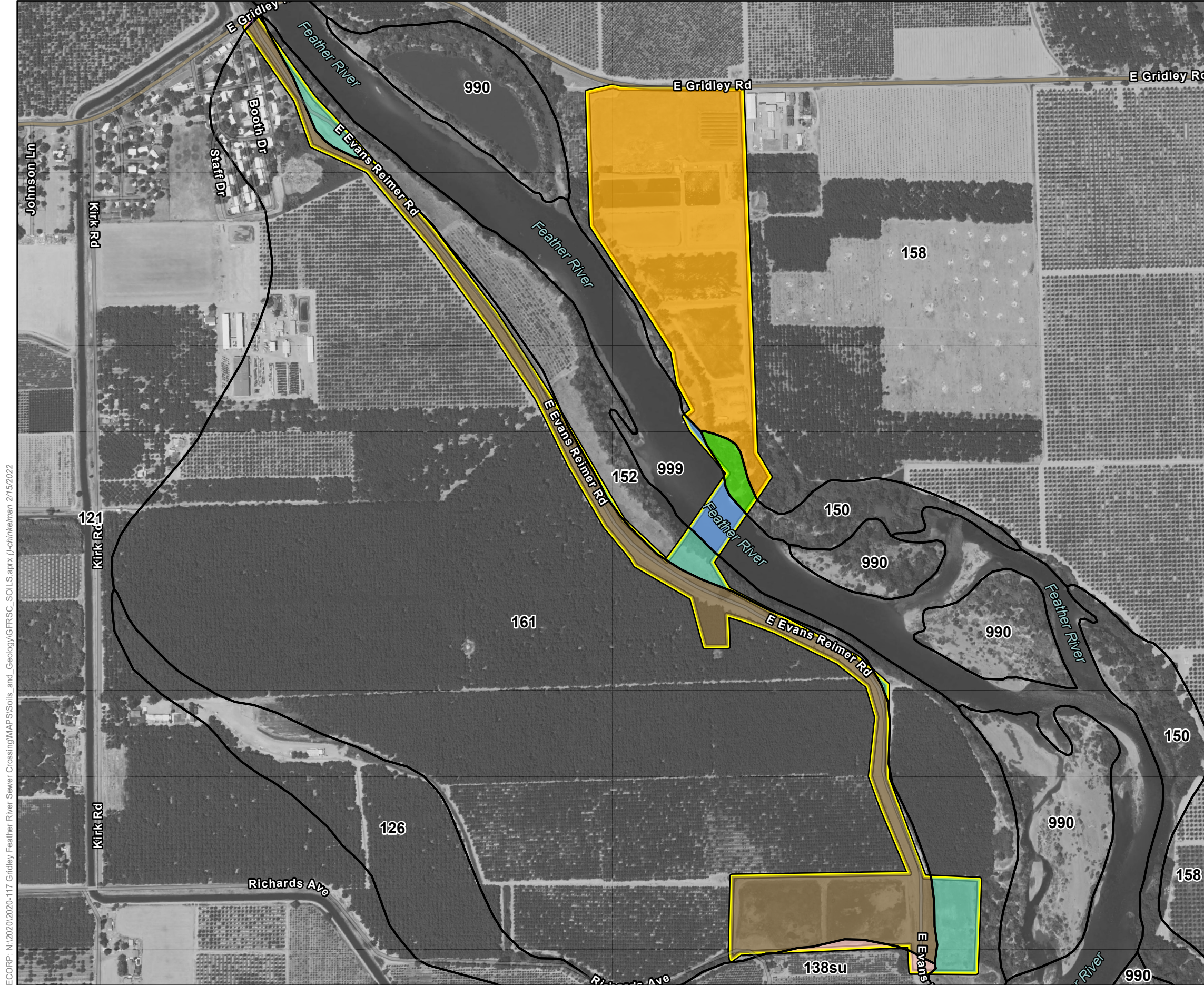
Land cover types or vegetation communities found within the Study Area included river, riparian woodland, ruderal/ruderal grassland, paved/developed, orchard, and constructed wastewater ponds. Descriptions of the land cover types, and vegetation communities present within the Study Area are provided below.

5.3.1 River

The Study Area includes the Feather River. The Feather River is a principal tributary of the Sacramento River in the Sacramento Valley of northern California. The main stem of the Feather River begins in Lake Oroville and is joined by four tributary forks.

5.3.2 Riparian Woodland

The riparian woodland community is found along the riverbanks. The riparian woodland vegetation is a relatively narrow corridor of mature trees with varying densities of understory cover, depending on levels of human use. Dominant trees include Fremont cottonwood (*Populus fremontii*), willows (*Salix* sp.), valley oak (*Quercus lobata*), blue elderberry (*Sambucus nigra* ssp. *caerulea*), and box elder (*Acer negundo*).



Map Features

Project Area

Series Number - Series Name

121 - Boga-Loemstone , 0 to 1 percent slopes

138su - Liveoak sandy clay loam, 0 to 2 percent slopes

150 - Columbia, 0 to 2 percent slopes, frequently flooded

152 - Gianella fine sandy loam, 0 to 1 percent slopes, frequently flooded

158 - Gianella fine sandy loam, 0 to 1 percent slopes, occasionally flooded

161 - Gianella fine sandy loam, 0 to 1 percent slopes, rarely flooded

999 - Water

Natural Resources Conservation Service (NRCS)
Soil Survey Geographic (SSURGO) Database for
Butte County, CA

Sources: Butte County NAIP (2020)

Understory vegetation was dense in scattered locations and included Himalayan blackberry (*Rubus armeniacus*), honeysuckle (*Lonicera* sp.), California pipevine (*Aristolochia californica*), and mugwort (*Artemisia douglasiana*).

5.3.2.1 Ruderal/Ruderal Grassland

The ruderal community was found along roadsides and levees. These areas are characterized by the presence of nonnative weedy plants such as foxtail barley (*Hordeum murinum*), milk thistle (*Silybum marianum*), Spanish clover (*Acmispon americanus*), soft brome (*Bromus hordeaceus*), wild radish (*Raphanus sativus*), ripgut brome (*Bromus diandrus*). There is ruderal grassland on the north side of the wastewater treatment facility. This area was dominated by miner's lettuce (*claytonia perfoliata* ssp. *perfoliata*), shephard's purse (*Capsella bursa-pastoris*), black mustard (*Brassica nigra*), Menzie's fiddleneck (*Amsinckia menziesii*), broadleaf filaree (*Erodium botrys*), *Vicia* sp., and henbit (*Lamium amplexicaule*).

5.3.2.2 Paved/Developed

Paved, developed portions of the Study Area are characterized by existing paved roads and parking areas, compacted dirt/gravel parking areas, the gravel levee crown road, and pedestrian paths to the Feather River. The majority of the dirt/gravel roads and paths are unvegetated.

5.3.2.3 Orchard

There is an orchard located in the southwest portion of the Study Area.

5.3.2.4 Wastewater Treatment Overflow Ponds

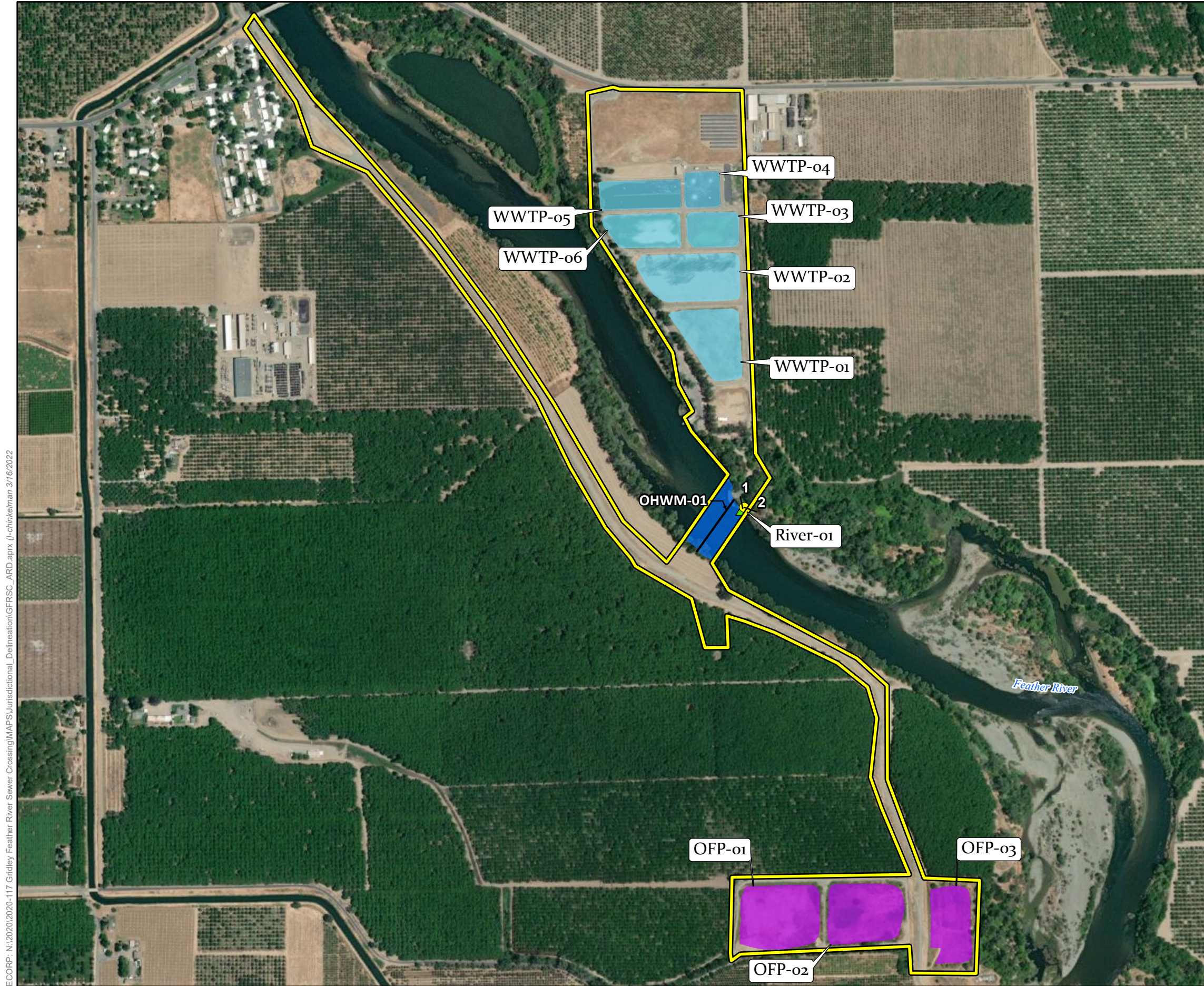
The overflow ponds are semi-constructed wetland like features used for wastewater treatment overflow. The hydrology is limited to only overflow occasions, and seasonal rainfall. The ponds are surrounded by grassy vegetation, and *Typha* sp. Several trees observed along the south side of the ponds, and orchard to the north.

5.3.2.5 Wastewater Treatment Ponds

The wastewater ponds are manmade ponds surrounded by gravel and dirt-surfaced access roads. Eucalyptus trees were found along the fence line.

5.4 Aquatic Resources

A total of 32.266 acres of aquatic resources consisting of 2.636 acres of Feather River, 16.869 acres of Active WWT Pond, and 12.761 acres of Overflow WWT Pond have been mapped within the Study Area (Table 1). The aquatic resources are described below and the aquatic resources delineation map is presented on Figure 4.



Map Features

- Project Area
- Transect

Sample Points

- Upland
- ▲ Waters

Aquatic Resources Delineation^{1*}

Other Waters

- River - 2.636 ac.
- Active WWT Pond - 16.869 ac.
- Overflow WWT Pond - 12.761 ac.

Photo Source: ESRI World Imagery (6/4/2021)
 Boundary Source: Bennett Engineering Services
 Delineator(s): E. Mecke, R. Bennett
 Coordinate System: NAD 1983 State Plane California II FIPS 0402

¹ Subject to U.S. Army Corps of Engineers verification. This exhibit depicts information and data produced in accord with the wetland delineation methods described in the 1987 Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region Version 2.0 as well as the Updated Map and Drawing Standards for the South Pacific Division Regulatory Program as amended on February 10, 2016, and conforms to Sacramento District specifications. However, feature boundaries have not been legally surveyed and may be subject to minor adjustments if more accurate locations are required.

* The acreage value for each feature has been rounded to the nearest 1/1000 decimal. Summation of these values may not equal the total potential Waters of the U.S. acreage reported.

Sources: ESRI World Imagery (6/4/2021)

Table 1. Aquatic Resources	
Type	Acreage¹
Wetlands	
None	0.000
Other Waters	
Feather River	2.636
Active WWT Pond	16.869
Overflow WWT Pond	12.761
Total	32.266

¹Acreages represent a calculated estimation and are subject to modification following the USACE verification process.

5.4.1 Wetlands

There are no wetlands within the Study Area.

5.4.2 Other Waters/Non-Wetland Waters

5.4.2.1 Feather River

The Feather River is perennial and exhibits bed and bank. Flows and water levels are regulated at dams upstream. The Feather River is a navigable water as defined under the Clean Water Act (CWA).

5.4.2.2 Active WWT Ponds and Overflow WWT Ponds

The Active WWT Ponds within the Study Area are part of the Gridley WWTP located on the east side of the Feather River. These ponds were constructed with access roads and levees and are mostly unvegetated. The ponds appear to be in active use for daily operations of the WWTP. The Overflow WWT Ponds are located south of the WWTP on the west side of the Feather River. These ponds were constructed with access roads. Portions of these ponds have emergent vegetation such as *Typha* sp. These ponds are used as overflow ponds in periods of high volume and also receive seasonal rainfall.

According to 40 CFR 230.3(s), waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11(m), which also meet the criteria of this definition) are not Waters of the U.S. As such, the Active WWT Ponds and Overflow WWT Ponds are likely not Waters of the U.S.

5.5 Wildlife Observations

The Study Area supports a variety of common wildlife species. A detailed list of wildlife species observed in the vicinity of the Study Area during the site visit is included as Attachment C.

5.6 Evaluation of Species Identified in the Literature Search

A list of all of the special-status plant and wildlife species identified in the literature search as potentially occurring within the Study Areas is provided in Table 2. This table includes the listing status for each

species, a brief habitat description, and a determination on the potential to occur in or near the Study Area. Following the table is a brief description of each species with potential to occur.

Several species and sensitive habitat types that came up in the database and literature searches have been formally delisted, are tracked by the CNDDDB but possess no special status or are identified as sensitive habitats but not located within the Study Area. These species and habitat types were not included in Table 2 and are not discussed further in this report.

Table 2. Special-Status Species Evaluated for the Study Area						
Common Name (<i>Scientific Name</i>)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA	Other			
Plants						
Ferris' milk-vetch (<i>Astragalus tener</i> var. <i>ferrisiae</i>)			CRPR 1B.1	Vernally mesic meadows and seeps and in sub-alkaline flats within valley and foothill grasslands (7'–246').	April–May	Absent. No suitable habitat within the Study Area.
Heartscale (<i>Atriplex cordulata</i> var. <i>cordulata</i>)			CRPR 1B.2	Annual herb found in Alkaline or saline valley and foothill grasslands, meadows and seeps, and chenopod scrub communities at 0'–1,837'.	Apr–Oct.	Absent. No suitable habitat within the Study Area.
Lesser saltscale (<i>Atriplex minuscula</i>)			CRPR 1B.1	Annual herb found in Alkaline, sandy soils in chenopod scrub, playas, and valley and foothill grassland at 49'–656'.	May–Oct.	Absent. No suitable habitat within the Study Area.
Subtle orache (<i>Atriplex subtilis</i>)			CRPR 1B.2	Annual herb found in Alkaline valley and foothill grasslands at 131'–328'.	June–Sept.	Absent. No suitable habitat within the Study Area.
Mexican mosquito fern (<i>Azolla microphylla</i>)			CRPR 4.2	Annual/perennial herb found in Marshes and swamps, ponds or slow-moving bodies of water at 98'–328'.	August.	Potential to Occur. There is suitable habitat within the Study Area.

Table 2. Special-Status Species Evaluated for the Study Area

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA	Other			
Valley brodiaea <i>Brodiaea rosea</i> ssp. <i>vallicola</i>			CRPR 4.2	Perennial bulbiferous herb found in Occurs in old alluvial terraces and silt, sandy, or gravelly soils in vernal pools and swales within valley and foothill grassland at 33'–1,100'.	Apr-May	Absent. No suitable habitat within Study Area.
Pink creamsacs <i>(Castilleja rubicundula</i> var. <i>rubicundula</i>			CRPR 1B.2	Annual herb (hemiparasitic) found in Serpentine substrates in chaparral openings, cismontane woodland, meadows and seeps, and valley and foothill grassland at 66'–2,986'	April – June	Absent. No suitable habitat within Study Area.
Pappose tarplant <i>Centromadia parryi</i> ssp. <i>parryi</i>			CRPR 1B.2	Annual herb found in often on alkaline soils within chaparral, coastal prairie, meadows and seeps, coastal salt marshes and swamps, vernal mesic valley and foothill grassland at 0'–1,378'.	May-Nov	Absent. No suitable habitat within Study Area.
Parry's rough tarplant <i>Centromadia parryi</i> ssp. <i>rudis</i>			CRPR 4.2	Annual herb found in alkaline, vernal mesic areas, and seeps in valley and foothill grassland and vernal pools, sometimes found on roadsides at 0'–328	May-Oct	Absent. No suitable habitat within Study Area.
Red-stemmed cryptantha <i>Cryptantha rostellata</i>			CRPR 4.2	Annual herb found in often gravelly volcanic openings and roadsides of cismontane woodland and valley and foothill grassland at 131'–2,625'.	Apr-June	Absent. No suitable habitat within Study Area.

Table 2. Special-Status Species Evaluated for the Study Area

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA	Other			
Recurved larkspur <i>Delphinium recurvatum</i>			CRPR 1B.2	Perennial herb found in Chenopod scrub, cismontane woodland, and valley and foothill grasslands at 10'–2,592'.	March–June	Absent. No suitable habitat within Study Area.
Shield-bracted monkeyflower <i>Erythranthe glaucescens</i>			CRPR 4.3	Annual herb found in Serpentine seeps and sometimes streambanks of chaparral, cismontane woodland, lower montane coniferous forest, and valley and foothill grassland at 196'–4,069'.	Feb-Aug	Low Potential to Occur. Marginally suitable habitat within Study Area.
Mendocino tarplant <i>Hemizonia congesta ssp. calyculata</i>			CRPR 4.3	Annual herb found in Sometimes serpentinite substrates of cismontane woodland and valley and foothill grassland at 740'–4,595'.	November	Absent. Study Area outside of known elevation range for species.
Hogwallow starfish <i>Hesperervax caulescens</i>			CRPR 4.2	Annual herb found in Sometimes alkaline in mesic areas with clay soil within valley and foothill grassland and shallow vernal pools at 0'–1,657'	March – June	Absent. No suitable habitat within Study Area.
Water star-grass <i>Heteranthera dubia</i>			CRPR 2B.2	Perennial herb (aquatic) found in Alkaline (pH of 7 or higher), still or slow-moving, and usually slightly eutrophic waters of marshes and swamps at 98'–4,905'.	July-Oct	Absent. No suitable habitat within Study Area.
Wooly rose-mallow <i>Hibiscus lasiocarpus var. occidentalis</i>			CRPR 1B.2	Perennial rhizomatous herb (emergent) found in marshes and freshwater swamps. Often in riprap on sides of levees at 0'–394'	June - Sept	Low Potential to Occur. There is marginally suitable habitat within Study Area.

Table 2. Special-Status Species Evaluated for the Study Area

Common Name (<i>Scientific Name</i>)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA	Other			
Ahart's dwarf rush <i>Juncus leiospermus</i> var. <i>ahartii</i>			CRPR 1B.2	Annual herb found in mesic areas in valley and foothill grassland. Species has an affinity for slight disturbance such as farmed fields at 98'–751'.	March–May	Absent. No suitable habitat within Study Area.
Del Norte pea <i>Lathyrus delnorticus</i>			CRPR 4.3	Perennial herb found often in serpentine soil, lower montane coniferous forest at 100'–4,755'.	June – July	Absent. No suitable habitat within Study Area.
Colusa layia <i>Layia septentrionalis</i>			CRPR 1B.2	Sandy or serpentinite soils in chaparral, cismontane woodland, and valley and foothill grasslands (328'–3,593').	April – May	Absent. No suitable habitat within Study Area.
Bristly leptosiphon <i>Leptosiphon acicularis</i>			CRPR 4.2	Annual herb found in Sandy or serpentinite soils in chaparral, cismontane woodland, and valley and foothill grasslands at 328'–3,593'.	April – May	Absent. No suitable habitat within Study Area.
Woolly meadowfoam <i>Limnanthes floccosa</i> ssp. <i>floccosa</i>			CRPR 4.2	Annual herb found in Vernal mesic chaparral, cismontane woodland, valley and foothill grassland, and vernal pools at 197'–4,380'.	March - May	Absent. No suitable habitat within Study Area.
Veiny monardella <i>Monardella venosa</i>			CRPR 1B.1	Annual herb found in heavy clay soils in cismontane woodland and valley and foothill grasslands at 197'–1,345'.	May - July	Absent. No suitable habitat within Study Area.

Table 2. Special-Status Species Evaluated for the Study Area

Common Name (<i>Scientific Name</i>)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA	Other			
Baker's navarretia <i>Navarretia leucocephala</i> <i>ssp. bakeri</i>			CRPR 1B.1	Annual herb found in Vernal pools and mesic areas within cismontane woodlands, lower montane coniferous forests, meadows and seeps, and valley and foothill grasslands at 16'–5,709'.	April – June	Absent. No suitable habitat within Study Area.
Slender Orcutt grass <i>Orcuttia tenuis</i>	FT	CE	CRPR 1B.1	Annual herb found in vernal pools, often gravelly at 115'–5,774'.	May – Sept	Absent. No suitable habitat within Study Area.
Ahart's paronychia <i>Paronychia ahartii</i>			CRPR 1B.1	Annual herb found in Well-drained rocky outcrops, often vernal pool edges, and volcanic upland of cismontane woodland, valley and foothill grassland, and vernal pools at 98'–1673'.	Feb – June	Absent. No suitable habitat within Study Area.
Wine-colored tufa moss <i>Plagiobryoides vinosula</i>			CRPR 4.2	Moss found in granitic rock or granitic soil along seeps and streams, sometimes clay. Cismontane woodland, mojavean desert scrub, meadows and seeps, pinyon and juniper woodland and riparian woodland at 100'–5,695'.		Absent. No suitable habitat within Study Area.
Hartweg's golden sunburst <i>Pseudobahia bahiifolia</i>	FE	CE	CRPR 1B.1	Annual herb found in clay, often acidic soils in cismontane woodland, valley and foothill grasslands at 49'–492'.	March – April	Absent. No suitable habitat within Study Area.

Table 2. Special-Status Species Evaluated for the Study Area

Common Name (Scientific Name)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA	Other			
California alkali grass <i>Puccinellia simplex</i>			CRPR 1B.2	Annual herb found in alkaline, vernal mesic areas and sinks, flats and lake margins in chenopod scrub, meadows and seeps, valley and foothill grassland, and vernal pools at 7'–3,051'.	March – May	Absent. No suitable habitat within Study Area.
Sanford's arrowhead <i>Sagittaria sanfordii</i>			CRPR 1B.2	Perennial rhizomatous herb (emergent) found in shallow marshes and freshwater swamps at 0'–2,133'.	May - October	Absent. No suitable habitat within Study Area.
English Peak greenbrier <i>Smilax jamesii</i>			CRPR 4.2	Perennial rhizomatous herb found in streambanks and lake margins; sometimes mesic depressions at 1,655'–6,480'.	May - July	Absent. Study Area outside of known elevation range for species.
Greene's tuctoria <i>Tuctoria greenei</i>	FE	CR	CRPR 1B.1	Annual herb found in vernal pools at 98'–3,510'	May – July	Absent. No suitable habitat within Study Area.
Brazilian watermeal <i>Wolffia brasiliensis</i>			CRPR 2B.3	Perennial herb (aquatic) found in assorted shallow freshwater marshes and swamps at 66'–328'	Apr-Dec	Absent – No suitable habitat within Study Area.
Invertebrates						
Vernal pool fairy shrimp (<i>Branchinecta lynchi</i>)	FT			Vernal pools/wetlands.	November - April	Absent. No suitable habitat within Study Area.

Table 2. Special-Status Species Evaluated for the Study Area

Common Name (<i>Scientific Name</i>)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA	Other			
Monarch butterfly (<i>Danaus plexippus</i>)	FC			Adult monarchs west of the Rocky Mountains typically overwinter in sheltered wooded groves of Monterey pine, Monterey cypress, and gum eucalyptus along coastal California, then disperse in spring throughout California, Nevada, Arizona, and parts of Oregon and Washington. Adults require milkweed and additional nectar sources during the breeding season. Larval caterpillars feed exclusively on milkweed.	Any season	Absent. No suitable habitat within Study Area.
Valley elderberry longhorn beetle (<i>Desmocerus californicus dimorphus</i>)	FT			Elderberry shrubs (host plant for this species).	Any season	Potential to Occur. - . Several elderberry shrubs are present in the Study Area.
Vernal pool tadpole shrimp (<i>Lepidurus packardii</i>)	FE			Vernal pools/wetlands.	November - April	Absent. No suitable habitat within Study Area.
Fish						
Delta smelt (<i>Hypomesus transpacificus</i>)	FT	CE		Sacramento-San Joaquin delta.	N/A	Absent. Outside the known range for this species.
Chinook salmon - Central Valley Spring Run (<i>Oncorhynchus tshawytscha</i>)	FT	CT		Anadromous; undammed cold-water rivers and streams having riffles with large gravel substrates and relatively deep pools.	N/A	Present ²

Table 2. Special-Status Species Evaluated for the Study Area

Common Name (<i>Scientific Name</i>)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA	Other			
Steelhead (Central Valley Distinct Population Segment [DPS]) (<i>Oncorhynchus mykiss irideus</i>)	FT			Anadromous; undammed cold-water rivers and streams having riffles with gravel substrates and relatively deep pools.	N/A	Present ²
Green sturgeon (Southern DPS) (<i>Acipenser medirostris</i>)	FT			Anadromous; undammed cold-water rivers having relatively deep pools with large substrates.	N/A	Low Potential to Occur. There is little past or current evidence of occurrence or spawning in the Feather
Amphibians						
Foothill yellow-legged frog (NF Feather and Upper Feather River Watershed Clade). (<i>Rana boylei</i>)	-	CT	SSC	Foothill yellow-legged frogs can be active all year in warmer locations but may become inactive or hibernate in colder climates. At lower elevations, foothill yellow-legged frogs likely spend most of the year in or near streams. Adult frogs, primarily males, will gather along main-stem rivers during spring to breed.	May - October	Absent. Outside the known range of this species.
California red-legged frog (<i>Rana draytonii</i>)	FT		SSC	Lowlands or foothills at waters with dense shrubby or emergent riparian vegetation. Adults must have aestivation habitat to endure summer dry down.	May 1 - November 1	Absent. Outside the known range of this species.
Western spadefoot (<i>Spea hammondi</i>)			SSC	California endemic species of vernal pools, swales, wetlands and adjacent grasslands throughout the Central Valley.	March-May	Absent. No suitable habitat within the Study Area.

Table 2. Special-Status Species Evaluated for the Study Area

Common Name (<i>Scientific Name</i>)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA	Other			
Reptiles						
Northwestern pond turtle <i>(Actinemys marmorata)</i>			SSC	Requires basking sites and upland habitats up to 0.5 km from water for egg laying. Uses ponds, streams, detention basins, and irrigation ditches.	April-September	Potential to Occur. Suitable habitat within the Study Area.
Giant garter snake <i>(Thamnophis gigas)</i>	FT	CT		Freshwater ditches, sloughs, and marshes in the Central Valley. Almost extirpated from the southern parts of its range.	April - October	Low Potential to Occur. Marginal habitat adjacent to the Study Area.
Birds						
Yellow-billed cuckoo <i>(Coccyzus americanus)</i>	FT	CE	BCC	Breeds in California, Arizona, Utah, Colorado, and Wyoming. In California, they nest along the upper Sacramento River and the South Fork Kern River from Isabella Reservoir to Canebrake Ecological Reserve. Other known nesting locations include Feather River (Butte, Yuba, Sutter counties), Prado Flood Control Basin (San Bernardino and Riverside County), Amargosa River and Owens Valley (Inyo County), Santa Clara River (Los Angeles County), Mojave River and Colorado River (San Bernardino County). Nests in riparian woodland. Winters in South America.	June 15- August 15	Potential to Occur. Suitable nesting habitat is present within the Study Area and within 500-ft of the Study Area.

Table 2. Special-Status Species Evaluated for the Study Area

Common Name (<i>Scientific Name</i>)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA	Other			
California black rail <i>(Laterallus jamaicensis coturniculus)</i>	-	CT	BCC, CFP	Salt marsh, shallow freshwater marsh, wet meadows, and flooded grassy vegetation. In California, primarily found in coastal and Bay-Delta communities, but also in Sierran foothills (Butte, Yuba, Nevada, Placer, El Dorado counties)	March-September (breeding)	Absent. No suitable habitat within Study Area.
Greater sandhill crane <i>(Antigone canadensis tabida)</i>	-	CT	CFP	Breeds in NE California, Nevada, Oregon, Washington, and BC, Canada; winters from CA to Florida. In winter, they forage in burned grasslands, pastures, and feed on waste grain in a variety of agricultural settings (corn, wheat, milo, rice, oats, and barley), tilled fields, recently planted fields, alfalfa fields, row crops and burned rice fields.	March-August (breeding); September-March (wintering)	Absent. No suitable habitat within Study Area.
Double-crested cormorant <i>(Nannopterum auritum)</i>	-	-	CDFW WL	Nests near ponds, lakes, artificial impoundments, slow-moving rivers, lagoons, estuaries, and open coastlines and typically forages in shallow water. Non-nesters are found in many coastal and inland waters.	April-August	Low Potential to Occur. There is marginal nesting habitat present within the Study Area.

Table 2. Special-Status Species Evaluated for the Study Area

Common Name (<i>Scientific Name</i>)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA	Other			
Osprey (<i>Pandion haliaetus</i>)	-	-	CDFW WL	Nesting habitat requires close proximity to accessible fish, open nest site free of mammalian predators, and extended ice-free season. The nest in large trees, snags, cliffs, transmission/communication towers, artificial nest platforms, channel markers/buoys.	April-September	Potential to Occur. Suitable nesting habitat within Study Area.
White-tailed kite (<i>Elanus leucurus</i>)	-	-	CFP	Nesting occurs within trees in low elevation grassland, agricultural, wetland, oak woodland, riparian, savannah, and urban habitats.	March-August	Potential to Occur. Suitable nesting habitat within Study Area.
Northern harrier (<i>Circus hudsonius</i>)	-	-	BCC, SSC	Nests on the ground in open wetlands, marshy meadows, wet/lightly grazed pastures, (rarely) freshwater/brackish marshes, tundra, grasslands, prairies, croplands, desert, shrub-steppe, and (rarely) riparian woodland communities.	April-September	Absent No suitable habitat within Study Area.
Sharp-shinned hawk (<i>Accipiter striatus</i>)	-	-	CDFW WL	Nests in trees in most forest types with at least some conifers. In California, nesting occurs in Sierra Nevada and Cascade Ranges (foothills to tree line) and northwestern coastal range.	nest (April-August); winter CV (September-April)	Potential to Occur. Suitable wintering habitat within Study Area.
Cooper's hawk (<i>Accipiter cooperii</i>)	-	-	CDFW WL	Nests in trees in riparian woodlands in deciduous, mixed and evergreen forests, as well as urban landscapes	March-July	Potential to Occur. Suitable nesting habitat within Study Area.

Table 2. Special-Status Species Evaluated for the Study Area

Common Name (<i>Scientific Name</i>)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA	Other			
Bald eagle (<i>Haliaeetus leucocephalus</i>)	De-listed	CE	CFP	Typically nests in forested areas near large bodies of water in the northern half of California; nest in trees and rarely on cliffs; wintering habitat includes forest and woodland communities near water bodies (e.g., rivers, lakes), wetlands, flooded agricultural fields, open grasslands.	February – September (nesting); October-March (wintering)	Potential to Occur. Suitable nesting habitat within the Study Area.
Swainson's hawk (<i>Buteo swainsoni</i>)	-	CT	BCC	Nesting occurs in trees in agricultural, riparian, oak woodland, scrub, and urban landscapes. Forages over grassland, agricultural lands, particularly during discing/harvesting, irrigated pastures	March-August	Potential to Occur. Suitable nesting habitat within Study Area.
Burrowing owl (<i>Athene cunicularia</i>)	-	-	BCC, SSC	Nests in burrows or burrow surrogates in open, treeless, areas within grassland, steppe, and desert biomes. Often with other burrowing mammals (e.g., prairie dogs, California ground squirrels). May also use human-made habitat such as agricultural fields, golf courses, cemeteries, roadside, airports, vacant urban lots, and fairgrounds.	February-August	Potential to Occur. Suitable habitat within Study Area.
Nuttall's woodpecker (<i>Dryobates nuttallii</i>)	-	-	BCC	Resident from northern California south to Baja California. Nests in tree cavities in oak woodlands and riparian woodlands.	April-July	Potential to Occur. Suitable nesting habitat within Study Area.

Table 2. Special-Status Species Evaluated for the Study Area

Common Name (<i>Scientific Name</i>)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA	Other			
Merlin (<i>Falco columbarius</i>)	-	-	CDFW WL	Breeds in Oregon, Washington north into Canada. Winters in southern Canada to South America, including California. Breeds near forest openings, fragmented woodlots, and riparian areas. Wintering habitat includes wide variety, open forests, grasslands, tidal flats, plains, and urban settings.	September-April (wintering in the Central Valley); does not breed in California	Potential to Occur. Suitable wintering habitat within Study Area.
Least Bell's vireo (<i>Vireo bellii pusillus</i>)	FE	CE	-	In California, breeding range includes Ventura, Los Angeles, Riverside, Orange, San Diego, and San Bernardino counties, and rarely Stanislaus and Santa Clara counties. Nesting habitat includes dense, low shrubby vegetation in riparian areas, brushy fields, young second-growth woodland, scrub oak, coastal chaparral and mesquite brushland. Winters in southern Baja California Sur.	April 1-July 31	Absent. The Study Area is outside the known breeding range for this species.
Yellow-billed magpie (<i>Pica nuttallii</i>)	-	-	BCC	Endemic to California; found in the Central Valley and coast range south of San Francisco Bay and north of Los Angeles County; nesting habitat includes oak savannah with large in large expanses of open ground; also found in urban parklike settings.	April-June	Potential to Occur. Suitable nesting habitat within Study Area.

Table 2. Special-Status Species Evaluated for the Study Area

Common Name (<i>Scientific Name</i>)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA	Other			
Oak titmouse (<i>Baeolophus inornatus</i>)			BCC	Nests in tree cavities within dry oak or oak-pine woodland and riparian; where oaks are absent, they nest in juniper woodland, open forests (gray, Jeffrey, Coulter, pinyon pines and Joshua tree).	March-July	Potential to Occur. Suitable nesting habitat within Study Area
Bank swallow (<i>Riparia riparia</i>)	-	CT	-	Nests colonially along coasts, rivers, streams, lakes, reservoirs, and wetlands in vertical banks, cliffs, and bluffs in alluvial, friable soils. May also nest in sand, gravel quarries and road cuts. In California, breeding range includes northern and central California.	May-July	Absent No suitable habitat within Study Area.
Wrentit (<i>Chamaea fasciata</i>)	-	-	BCC	Coastal sage scrub, northern coastal scrub, chaparral, dense understory of riparian woodlands, riparian scrub, coyote brush and blackberry thickets, and dense thickets in suburban parks and gardens.	March-August	Potential to Occur. Suitable nesting habitat adjacent to Study Area.

Table 2. Special-Status Species Evaluated for the Study Area

Common Name (<i>Scientific Name</i>)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA	Other			
Lawrence's goldfinch (<i>Spinus lawrencei</i>)	-	-	BCC	Breeds in Sierra Nevada and inner Coast Range foothills surrounding the Central Valley and the southern Coast Range to Santa Barbara County east through southern California to the Mojave Desert and Colorado Desert into the Peninsular Range. Nests in arid and open woodlands with chaparral or other brushy areas, tall annual weed fields, and a water source (e.g., small stream, pond, lake), and to a lesser extent riparian woodland, coastal scrub, evergreen forests, pinyon-juniper woodland, planted conifers, and ranches or rural residences near weedy fields and water.	March-September	Low Potential to Occur. Marginal nesting habitat within Study Area.
Song sparrow "Modesto" (<i>Melospiza melodia heermanni</i>)	-	-	SSC	Resident in central and southwest California, including Central Valley; nests in marsh, scrub habitat.	April-June	Potential to Occur. Suitable nesting habitat adjacent to Study Area.

Table 2. Special-Status Species Evaluated for the Study Area

Common Name (<i>Scientific Name</i>)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA	Other			
Yellow-breasted chat (<i>Icteria virens</i>)	-	-	SSC	In California, breeds in Klamath Mountains, inner Northern Coast Range south to San Francisco Bay, locally distributed from Santa Clara County south to San Diego County Sacramento and San Joaquin valleys, along west slope of Sierra Nevada from the Feather River to Kern River, Mono and Inyo counties. In the west, nesting habitat includes dense riparian and shrubby woodland.	May-August	Potential to Occur. Suitable nesting habitat adjacent to Study Area.
Tricolored blackbird (<i>Agelaius tricolor</i>)	-	CT	BCC, SSC	Breeds locally west of Cascade-Sierra Nevada and southeastern deserts from Humboldt and Shasta counties south to San Bernardino, Riverside and San Diego counties. Central California, Sierra Nevada foothills and Central Valley, Siskiyou, Modoc, and Lassen counties. Nests colonially in freshwater marsh, blackberry bramble, milk thistle, triticale fields, weedy (mustard, mallow) fields, giant cane, safflower, stinging nettles, tamarisk, riparian scrublands and forests, fiddleneck, and fava bean fields.	March-August	Absent. No suitable habitat within Study Area.
Bullock's oriole (<i>Icterus bullockii</i>)			BCC	Breeding habitat includes riparian and oak woodlands.	March-July	Potential to Occur. Suitable nesting habitat within Study Area

Table 2. Special-Status Species Evaluated for the Study Area

Common Name (<i>Scientific Name</i>)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA	Other			
Saltmarsh common yellowthroat <i>(Geothlypis trichas sinuosa)</i>	-	-	BCC, SSC	Breeds in salt marshes of San Francisco Bay; winters San Francisco south along coast to San Diego County.	March-July	Absent. Species found along CA Coast. No Suitable habitat within Study Area.
Mammals						
Pallid bat <i>(Antrozous pallidus)</i>			SSC	Crevices in rocky outcrops and cliffs, caves, mines, trees (e.g., basal hollows of redwoods, cavities of oaks, exfoliating pine and oak bark, deciduous trees in riparian areas, and fruit trees in orchards). Also roosts in various human structures such as bridges, barns, porches, bat boxes, and human-occupied as well as vacant buildings (Western Bat Working Group [WBWG] 2017).	April-September	Potential to Occur. Suitable roosting habitat within Study Area.
Townsend's big-eared bat <i>(Corynorhinus townsendii)</i>			SSC	Caves, mines, buildings, rock crevices, trees.	April-September	Low Potential to Occur. Marginal roosting habitat within Study Area.
Marysville California kangaroo rat <i>(Dipodomys californicus eximius)</i>	-	-	CDFW SSC	Known only from the Sutter Buttes area. Occurs in areas with friable soil in grass-forb stages of chaparral and valley and foothill grassland.	Any season	Absent. No suitable habitat within Study Area.
Western mastiff bat <i>(Eumops perotis californicus)</i>			CDFW SSC	Primarily a cliff-dwelling species, found in similar crevices in large boulders and buildings (WBWG 2017).	April-September	Absent. No suitable habitat within Study Area.

Table 2. Special-Status Species Evaluated for the Study Area

Common Name (<i>Scientific Name</i>)	Status			Habitat Description	Survey Period	Potential To Occur Onsite
	ESA	CESA	Other			
American badger (<i>Taxidea taxus</i>)	-	-	CDFW SSC	Drier open stages of most shrub, forest, and herbaceous habitats with friable soils.	Any season	Absent. No suitable habitat within Study Area.

Status Codes

FESA	Federal Endangered Species Act
CESA	California Endangered Species Act
FE	FESA listed, Endangered.
FT	FESA listed, Threatened.
BCC	USFWS Bird of Conservation Concern).
CT	CESA- or NPPA-listed, Threatened.
CE	CESA or NPPA listed, Endangered.
CFP	California Fish and Game Code Fully Protected Species (§ 3511-birds, § 4700-mammals, § 5050-reptiles/amphibians).
SSC	CDFW Species of Special Concern (CDFW, updated July 2017).
1B	CRPR/Rare or Endangered in California and elsewhere.
2B	Plants rare, threatened, or endangered in California but more common elsewhere.
4	CRPR/Plants of Limited Distribution – A Watch List.
0.1	Threat Rank/Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
0.2	Threat Rank/Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
0.3	Threat Rank/Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)
Delisted	Formally Delisted (delisted species are monitored for 5 years).

5.6.1 Plants

A total of 32 special-status plant species were identified as having the potential to occur within Study Areas based on the literature review (Table 2). Upon further analysis and after the reconnaissance site visit, 29 species were determined to not have potential to occur within the Study Area due to the absence of suitable habitat or the Study Area was outside the elevational range for the species. No further discussion of these species is provided in this analysis. Brief descriptions of the remaining three species that have the potential to occur within the Study Area are presented below.

5.6.1.1 Mexican Mosquito Fern

Mexican mosquito fern is not listed pursuant to either the federal or California ESAs but is designated as a CRPR 4.2 species. This species is an herbaceous annual/perennial that occurs in marshes and swamps (e.g., ponds and slow-moving water). Mexican mosquito fern blooms in August and is known to occur at elevations ranging from 98 to 328 feet above MSL. The current range for Mexican mosquito fern in California includes Butte, Colusa, Glenn, Inyo, Kern, Lake, Modoc, Nevada, Plumas, San Bernardino, Santa Clara, San Diego, and Tulare counties (CNPS 2020).

While there are no CNDDDB documented occurrences of Mexican mosquito fern within 5 miles of the Study Area (CDFW 2022), the wastewater overflow ponds, and portions of the Feather River within the Study Area may provide suitable habitat for this species. Mexican mosquito fern has potential to occur onsite.

5.6.1.2 *Shield-Bracted Monkeyflower*

Shield-bracted monkeyflower is not listed as pursuant to either the federal or California ESAs but is designated as a CRPR 4.3 species. This species is an herbaceous annual that occurs in serpentine seeps and sometimes streambanks of chaparral, cismontane woodland, lower montane coniferous forest, and valley and foothill grassland. Shield-bracted monkeyflower blooms from February through August and is known to occur at elevations ranging from 196 to 4,069 feet above MSL. The current range of this species includes Butte, Colusa, Lake, Nevada, Shasta, and Tehama counties (CNPS 2020).

While there are no CNDDDB documented occurrences of shield-bracted monkeyflower within 5 miles of the Study Area (CDFW 2020), the banks of the Feather River within the Study Area may provide marginally suitable habitat for this species. Shield-bracted monkeyflower has low potential to occur onsite.

5.6.1.3 *Woolly Rose-Mallow*

Woolly rose-mallow is not listed pursuant to either the federal or California ESAs but is designated as a CRPR 1B.2 species. This species is a rhizomatous, herbaceous perennial that occurs in marshes and freshwater swamps, and often in riprap on sides of levees. Rose-mallow blooms from June through September and is known to occur at elevations ranging from sea level to 394 feet above MSL. Rose-mallow is endemic to California; the current range of this species in California includes Butte, Contra Costa, Colusa, Glenn, Sacramento, San Joaquin, Solano, Sutter, and Yolo counties (CNPS 2020).

While there are no CNDDDB documented occurrences of woolly rose-mallow within 5 miles of the Study Area (CDFW 2020), the banks of the Feather River, including the riprap on the east bank within the Study Area may provide marginal habitat for this species. Woolly rose-mallow has low potential to occur onsite.

5.6.2 Invertebrates

A total of four special-status invertebrate species were identified as having the potential to occur within the Study Area based on the literature review (Table 2). Upon further analysis and after the reconnaissance site visit, all but one was determined to be absent due to lack of suitable habitat. No further discussion of these species is provided in this analysis. A brief description of the remaining species is presented below.

5.6.2.1 *Valley Elderberry Longhorn Beetle*

The valley elderberry longhorn beetle (VELB) is listed as threatened pursuant to the federal ESA (USFWS 1980). The VELB is completely dependent on its larval host plant, elderberry (*Sambucus* sp.), which occurs in riparian and other woodland and scrub communities (USFWS 1999, 2017). Elderberry plants located within the range of the beetle, with one or more stems measuring 1.0 inch or greater in diameter at ground level are considered to be habitat for the species (USFWS 1999). The adult flight season extends from late March through July (USFWS 2017). During that time, the adults feed on foliage and perhaps

flowers, mate, and females lay eggs on living elderberry plants (Barr 1991). The first instar larvae bore into live elderberry stems, where they develop for one to two years feeding on the pith. The fifth instar larvae create exit holes in the stems and then plug the holes and remain in the stems through pupation (Talley et al. 2007). The VELB occurs in metapopulations throughout the Central Valley (Collinge et al. 2001 as cited in USFWS 2017). These metapopulations (subpopulations) occur throughout contiguous riparian habitat, which shift temporarily and spatially based on changing environmental conditions. This temporal and spatial shifting of the metapopulations results in a patchy and ever-changing distribution of the species. Research indicates that dense elderberry shrub clumps in healthy riparian habitat is the primary habitat for the VELB (USFWS 2017). The beetle's current distribution extends from Shasta County in the north to Fresno County in the south and includes everything from the valley floor up into the lower foothills (USFWS 2017). The vast majority of VELB occurrences have been recorded below 500 feet (152 meters), however, rare occurrences have been recorded up to approximately 3,000 feet (USFWS 1999; USFWS 2017).

There are four documented CNDDDB occurrences of this species located within 5 miles of the Study Area (CDFW 2022). Numerous elderberry shrubs were mapped in the Study Area (Figure 5). VELB has potential to occur within the Study Area.

5.6.3 Fish

The lower Feather River in the Study Area provides migration, spawning, and rearing habitat for a diverse assemblage of native and nonnative fish species, including both resident and anadromous (i.e., ocean migrating) species. At least 31 fish species, including 13 native and 18 nonnative species, have been documented in the lower Feather River in the Study Area (Seesholtz et al. 2004). A total of four special-status fish species were identified as having the potential to occur within the Study Area based on the literature review (Table 2). One species was determined to be absent because the Study Area is outside of its known range. These species are not discussed further in this analysis. A brief description of the remaining species is presented below.

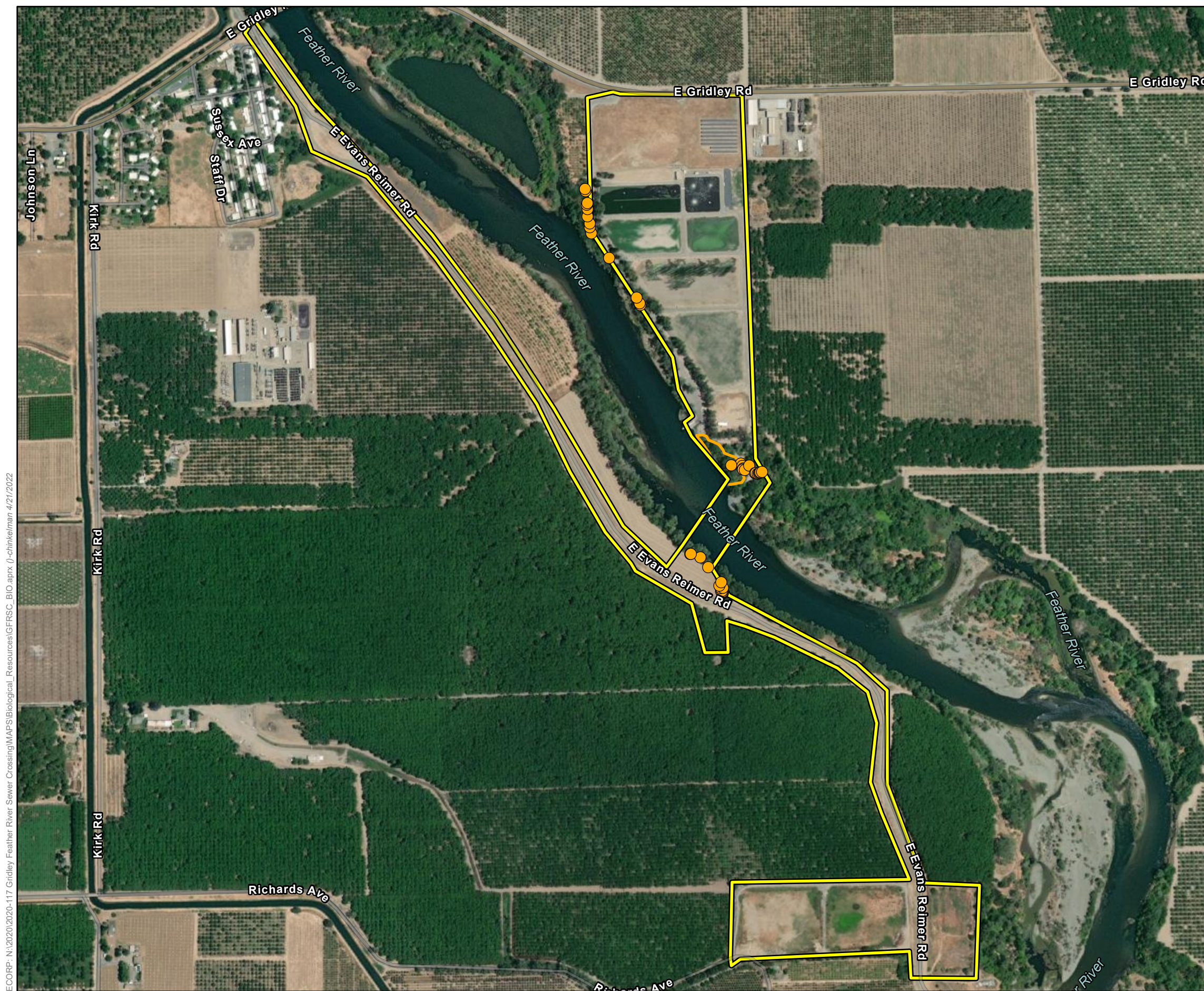
5.6.3.1 Chinook Salmon

Central Valley Spring-Run Evolutionary Significant Unit Chinook Salmon

The Central Valley spring-run Evolutionary Significant Unit (ESU) Chinook salmon (spring-run ESU) was listed as a threatened species under the ESA on September 16, 1999 (50 CFR 50394) and under the California ESA in February 1999. The spring-run ESU includes all spawning populations in the Sacramento River and its tributaries, including the Feather River, and one artificial propagation program, the Feather River Hatchery spring-run Chinook program. Annual estimates of spring-run ESU escapement for the Feather River basin ranged from approximately 146 (1967) to 8,662 (2003) and was last estimated to be 2,110 in 2018 (GrandTab 2019).

The majority of spring-run ESU Chinook salmon enters freshwater to spawn as three-year-old fish (Fisher 1994). Upstream migrations of adult spring-run ESU Chinook salmon begin in late January and continue through September (California Department of Fish and Game [CDFG] 1998; NMFS 2014). These sexually immature fish hold in deep, cold freshwater pools of rivers to mature for several months prior to

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Map Features

- Project Area
- Elderberry Shrub Locations
- Elderberry Shrubs Scattered within Riparian Vegetation

Sources: ESRI World Imagery

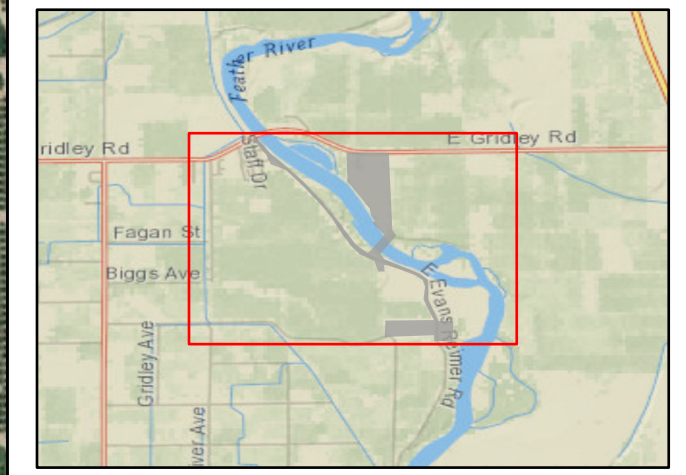


Figure 5. Elderberry Shrub Locations
2020-117 Gridley Feather River Sewer Crossing

spawning (Moyle 2002) and generally enter their natal streams from mid-February through July (CDFG 1998). Spawning typically occurs from mid-August to early October, with peak spawning occurring in September (Moyle 2002). Embryo survival is dependent upon water temperatures between five to 13 degrees Celsius and high dissolved-oxygen saturation (Moyle 2002). Embryos hatch in approximately 40 to 60 days, depending on water temperature, and remain in gravel as alevins for four to six weeks before emerging as fry from November through March (Moyle 2002). Juveniles typically reside in freshwater for 12 to 16 months and emigrate as yearlings from October through March, with peak emigration occurring from November to December (NMFS 2014).

The lower Feather River supports populations of Central Valley spring-run ESU Chinook salmon. Therefore, this ESU has potential to occur in the Study Area during the adult immigration and juvenile emigration periods.

5.6.3.2 California Central Valley DPS Steelhead

California Central Valley DPS steelhead, the anadromous form of rainbow trout, were listed as threatened under the ESA on March 19, 1998 (63 FR 13347). This DPS includes steelhead populations in the Sacramento River and San Joaquin River, inclusive and downstream of the Merced River. The listing was updated to include Coleman National Fish Hatchery and Feather River Hatchery steelhead populations on January 5, 2006 (71 FR 834).

Adult steelhead, typically averaging 600 to 800 millimeters in length (Moyle et al. 1989), generally leave the ocean and begin upstream migration through the Delta to spawning reaches in the upper Sacramento and San Joaquin rivers and tributaries from August through March (McEwan 2001), with peak immigration occurring in January and February (Moyle 2002). Spawning generally occurs from January through April (McEwan and Jackson 1996). Redds are typically dug by female fish in water depths of 10 to 150 centimeters and where water velocities over redds range from 20 to 155 centimeters per second (Moyle 2002). Juvenile steelhead rear in their natal streams for one to three years prior to emigrating from the river. Emigration of one- to three-year old, sub-adults primarily occurs from January through June (Snider and Titus 1996). Unlike Chinook salmon, steelhead are iteroparous (i.e., able to spawn repeatedly) and may spawn for up to four consecutive years before dying; however, it is rare for steelhead to spawn more than twice and the majority of repeat spawners are females (Busby et al. 1996). Although one-time spawners comprise the majority, Shapovalov and Taft (1954) report that repeat spawners are relatively numerous (i.e., 17.2 percent) in California streams. Thus, kelts (post-spawning adults) may be present in the in the Study Area shortly after spawning (i.e., January through mid-April).

The lower Feather River supports populations of California Central Valley DPS steelhead. Therefore, this DPS has the potential to occur in the Study Area during the adult and juvenile migration periods.

5.6.3.3 Green Sturgeon

On April 7, 2006, NMFS proposed the Southern DPS of green sturgeon, which includes all fish populations south of the Eel River, California, as threatened under the federal ESA (71 FR 17757). The agency determined that the Northern DPS, which includes all populations north of the Eel River (inclusive), do not

warrant listing. The designation of the Southern DPS was based on information demonstrating (1) the majority of spawning adults are concentrated into one spawning river (i.e., the Sacramento River), (2) existence of continued threats that had not been adequately addressed since the previous green sturgeon status review, (3) downward trends in juvenile abundance, and (4) habitat loss in the upper Sacramento and Feather rivers. The Final Rule establishing take prohibitions for the Southern DPS was promulgated on June 2, 2010 (75 FR 30714).

Although little is known about the spawning habits of green sturgeon in the Sacramento-San Joaquin system, spawning times are thought to be similar to those documented for the Klamath River (Emmett et al. 1991). There are three general phases in green sturgeon life history: 1) freshwater stage (less than three years old), 2) coastal migrants (three to 13 years old for females; three to nine years old for males); and 3) adults (greater than 13 years old for females, greater than nine years old for males) (Environmental Protection Information Center [EPIC] et al. 2001). Adults typically migrate into fresh water beginning in late February; spawning occurs from March to July, with peak activity from April to June (Moyle et al. 2015). Emigration typically occurs after a period of over-summering followed by out-migration in the fall/winter period coinciding with increases in flow.

Based on information from catches of green sturgeon eggs, larvae, and juveniles, and additional data derived from monitoring studies of white sturgeon, it appears that green sturgeon in the Sacramento River spawn from above Hamilton City to above Red Bluff Diversion Dam, maybe as far upstream as Keswick Dam (CDFG 2002). Juvenile green sturgeon are believed to reside in freshwater habitats from one to three years, before emigrating to the Delta under winter high-flow events. However, the timing of emigration is unknown (EPIC et al. 2001). Following emigration from the upper Sacramento River, juvenile green sturgeon are widely distributed throughout the Delta (Radtke 1966).

Although adult green sturgeon have been documented occasionally in the Feather River, the numbers are low, sporadic, and there is limited evidence of historic or current spawning (Moser et al. 2016). However, green sturgeon eggs were collected in the Feather River in June 2011 (Seesholtz et al. 2015), indicating potentially successful spawning in this system. Based on this information, there is a low potential for green sturgeon to occur in the Study Area.

5.6.4 Amphibians

A total of three special-status amphibian species were identified as having the potential to occur within the Study Area based on the literature review (Table 2). Upon further analysis and after the reconnaissance site visit, all three determined to be absent based on lack of suitable habitat within the Study Area or the Study Area was outside the known range for the species. No further discussion of the species is provided in this analysis.

5.6.5 Reptiles

A total of two special-status reptile species were identified as having the potential to occur within the Study Area based on the literature review (Table 2). Upon further analysis and after the reconnaissance site visit, both reptiles were identified to have potential to occur in the Study Area as described below.

5.6.5.1 *Northwestern Pond Turtle*

The northwestern pond turtle is not listed pursuant to either the federal or California ESAs; however, it is designated as a CDFW SSC. Northwestern pond turtles occur in a variety of fresh and brackish water habitats including marshes, lakes, ponds, and slow-moving streams (Jennings and Hayes 1994). This species is primarily aquatic; however, they typically leave aquatic habitats in the fall to reproduce and to overwinter (Jennings and Hayes 1994). Deep, still water with abundant emergent woody debris, overhanging vegetation, and rock outcrops is optimal for basking and thermoregulation. Although adults are habitat generalists, hatchlings and juveniles require shallow edgewater with relatively dense submergent or short emergent vegetation in which to forage. Northwestern pond turtles are typically active between March and November. Mating generally occurs during late April and early May and eggs are deposited between late April and early August (Jennings and Hayes 1994). Eggs are deposited within excavated nests in upland areas, with substrates that typically have high clay or silt fractions (Jennings and Hayes 1994). The majority of nesting sites are located within 650 feet (200 meters) of aquatic sites; however, nests have been documented as far as 1,310 feet (400 meters) from aquatic habitat.

There are two CNDDDB occurrences of this species located within 5 miles of the Study Area (CDFW 2022). There is suitable aquatic habitat within the Feather River and adjacent ponds along with suitable upland habitat in the riparian areas within the Study Area. Northwestern pond turtle has potential to occur within the Study Area.

5.6.5.2 *Giant Garter Snake*

The giant garter snake is listed as a threatened species pursuant to both the California and federal ESAs. Giant garter snakes typically inhabit perennial ponds, marshes, slow-moving streams, and agricultural ditches containing adequate water during the spring and summer months. Giant garter snakes are most active from early spring through mid-fall (USFWS 1999). The giant garter snake is endemic to the floors of the Sacramento and San Joaquin valleys of California and probably occurred historically from Butte County south to Buena Vista Lake in Kern County (USFWS 1999). Seasonally, the giant garter snake becomes active in early spring, emerging from overwintering sites to bask on emergent willows, tules, saltbush, and riprap (Hansen and Tremper in Rossman et al. 1996). Generally by May, all giant garter snakes have emerged from hibernacula and are actively foraging for food. Males immediately start searching for mates (USFWS 1999). Live young are born in late July through early September (Hansen and Hansen 1990) and by October, most snakes begin searching for overwintering sites. Most are in hibernacula by November (Hansen and Hansen 1990). As with most ectothermic vertebrates, the exact timing of activities is dependent on current climatic conditions. Males are sexually mature in approximately three years. Females, which achieve sexual maturity at larger size, mature in five years (G. Hansen pers. comm. in USFWS 1999). The giant garter snake is one of the most aquatic garter snakes (USFWS 1999). It is rarely found far from water and occupies habitats such as marshes and sloughs, irrigation and drainage canals, small lakes and ponds, rice agricultural fields, and low gradient streams (USFWS 1999). Waters inhabited by this species typically feature substrates of soil, mud, or other fines.

Giant garter snakes tend to be absent from larger rivers and wetlands with sand, gravel, cobble, or rock substrates, as well as from areas with extensive shading.

There are two giant garter snake occurrences within 5 miles of the Study Area. The wastewater treatment overflow ponds within the southern portion of the Study Area are not regularly inundated and, along with the Feather River, does not constitute suitable habitat. However, there is marginal habitat within an adjacent pond located 0.3 mile northeast of the wastewater treatment facility in the northern portion of the Study Area, therefore there is low potential for this species to occur within upland portions of the Study Area.

5.6.6 Birds

A total of 25 special-status bird species were identified as having the potential to occur within the Study Area based on the literature review (Table 2). Upon further analysis and after the reconnaissance site visit, eight species were determined to be absent due to lack of suitable habitat or because the Study Area is outside the range for the species. No further discussion of these species is provided in this analysis. Brief descriptions of the remaining 18 species that have the potential to occur within the Study Areas are presented below.

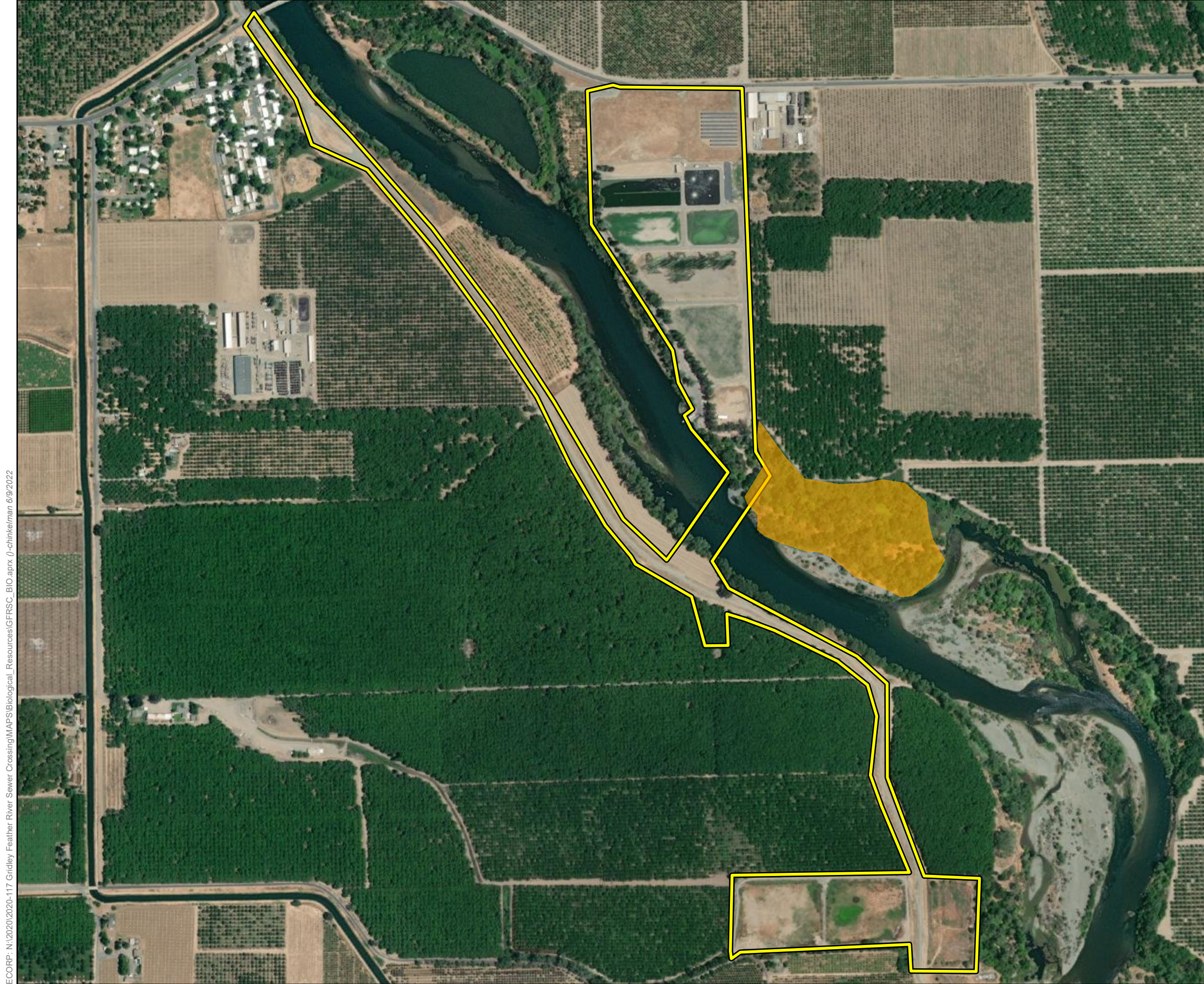
5.6.6.1 Yellow-Billed Cuckoo

The yellow-billed cuckoo is listed as an endangered species pursuant to the California Endangered Species Act and threatened under the federal Endangered Species Act. The federal listing pertains to the western DPS, whose breeding range is west of the Rocky Mountains (USFWS 2014). In California, breeding populations can be found along the Feather River from Oroville to Verona; Butte, Yuba, and Sutter counties; the Owens Valley, Inyo County; the Santa Clara River, Los Angeles County; the Mojave River, San Bernardino County, and the Colorado River, San Bernardino and Imperial counties (Laymon 1998). The western DPS breeds in riparian vegetation communities. Along the Sacramento River, nesting habitat included depositional point bars with young stands of low woody vegetation (Laymon 1998). In southern California, breeding habitat includes desert riparian woodlands (Sonoran Zones) comprised of dense willow, Fremont cottonwood, and mesquite (*Prosopis* spp.) (Hughes 2020).



There are no CNDDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022). There is a small section of suitable habitat within the Study Area and suitable nesting habitat located within 500 feet of the Study Area on the north bank just downstream from boat ramp (Figure 6). There is potential for this species to nest within 500 feet of the Study Area.

5.6.6.2 Double-Crested Cormorant

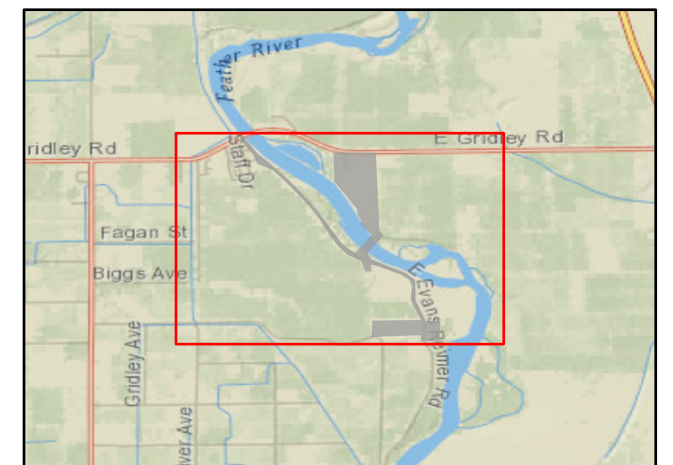
Double-crested cormorant is not listed pursuant to either the California or federal ESAs; however, the species is a CDFW “watch list” species. Double-crested cormorants are widely distributed throughout North America, foraging in shallow water and roosting on exposed rocks, sandbars, pilings, shipwrecks, high-tension wires, or trees near fishing sites (Dorr et al. 2020). They nest in colonies on ponds, lakes, artificial impoundments, slow-moving rivers, lagoons, estuaries, and coastlines where they nest in trees,



Map Features

-  Project Area
-  Yellow-billed Cuckoo Habitat

Sources: ESRI World Imagery



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Map Date: 6/9/2022



Figure 6. Yellow-Billed Cuckoo Habitat

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on the ground, bridges, shipwrecks, abandoned docks, or nesting towers (Dorr et al. 2020). Nesting occurs during April through August.

There are no CNDDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022). The Study Area provides marginal nesting habitat, There is a low potential for double-crested cormorant to nest within the Study Area.

5.6.6.3 Osprey

Osprey is not listed pursuant to either the California or federal ESAs; however, it is considered a CDFW watch list species. Osprey have expanded their range throughout much of North American (Bierregaard et al. 2020). Breeding habitat requirements include proximity to fish, open nest sites free from predators, and an ice-free fledging season (Bierregaard et al. 2020). Natural nesting sites include live and dead trees, cliffs, shoreline boulders, and on the ground on predator-free islands; they readily use artificial nest sites such as duck-hunting blinds, channel markers, communication towers, and platforms erected for nesting (Bierregaard et al. 2020). Breeding season occurrences of osprey are found throughout California, with highest frequencies found along the northern California coast, northern Sacramento Valley, and the Sierra Nevada (eBird 2020). Breeding occurs from April to September.

There are no CNDDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022). However, the Study Area provides suitable nesting habitat. There is a potential for osprey to nest within the Study Area.

5.6.6.4 White-Tailed Kite

White-tailed kite is not listed pursuant to either the California or federal ESAs; however, the species is fully protected pursuant to Section 3511 of the California Fish and Game Code. This species is a common resident in the Central Valley and the entire length of the California coast, and all areas up to the Sierra Nevada foothills and southeastern deserts (Dunk 2020). In northern California, white-tailed kite nesting occurs from March through early August, with nesting activity peaking from March through June. Nesting occurs in trees within riparian, oak woodland, savannah, and agricultural communities that are near foraging areas such as low elevation grasslands, agricultural, meadows, farmlands, savannahs, and emergent wetlands (Dunk 2020).

There are no CNDDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022). The riparian woodlands along the river provide suitable nesting habitat for this species within the Study Area. There is potential for white-tailed kite to nest within the Study Area.

5.6.6.5 Sharp-Shinned Hawk

Sharp-shinned hawk is not listed pursuant to either the California or federal ESAs; however, it is a CDFW watch list species and currently tracked in the CNDDDB. Their breeding range in California is poorly known but breeding or summering sharp-shinned hawks have occurred throughout the state (Small 1999 and Bildstein et al. 2020). They nest in most forest types, particularly dense stands with at least some conifers

(Bildstein et al. 2020). Breeding occurs during April through August. The species is a common migrant and winter resident in the Central Valley of California.

There are no CNDDDB occurrences of this species within five miles of the Study Area (CDFW 2022). However, the Study Area provides suitable wintering habitat for this species. Sharp-shinned hawk has potential to occur within the Study Area.

5.6.6.6 Cooper's Hawk

The Cooper's hawk is not listed pursuant to either the California or federal ESAs; however, it is a CDFW watch list species and is currently tracked in the CNDDDB. Typical nesting and foraging habitats include riparian woodland, dense oak woodland, and other woodlands near water. Cooper's hawk nest throughout California from Siskiyou County to San Diego County and includes the Central Valley (Rosenfield et al. 2020). Breeding occurs during March through July, with a peak from May through July.

There are no CNDDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022). However, the Study Area provides suitable nesting habitat for this species. Cooper's hawk has potential to nest within the Study Area.

5.6.6.7 Bald Eagle

The bald eagle has been delisted under the federal ESA but remains listed as Endangered under the California ESA. It is fully protected pursuant to the California Fish and Game Code Section 3511 and the federal Bald and Golden Eagle Protection Act. It is a Bureau of Land Management sensitive species, a U. S. Forest Service sensitive species and is considered a USFWS BCC. Bald eagles breed at lower elevations in the northern Sierra Nevada and North Coast ranges. Bald eagles breed in forested areas adjacent to large waterbodies (Buehler 2020). Tree species used for nesting is quite variable and includes conifers (dominant where available), oaks, hickories, cottonwoods and aspens (Buehler 2020). Nest trees are generally the largest tree available in a suitable area (Buehler 2020). Breeding activity occurs during late February through September, with peaks in activity from March to June.

There is a known nesting location (CNDDDB 2022) in close proximity to the southeast corner of the Study Area. While this nest location is outside of the Study Area boundaries, it is close enough to potentially be affected by Project activities. Two individuals were observed flying around the Study Area during the February 2022 site visit, no individuals or nesting activity was observed during the May 2022 site visit. Bald eagle has potential to nest within the Study Area.

5.6.6.8 Swainson's Hawk

The Swainson's hawk is listed as a threatened species and is protected pursuant to the California ESA. This species nests in North America (Canada, western U.S., and Mexico) and typically winters from South America north to Mexico. However, a small population has been observed wintering in the Sacramento-San Joaquin River Delta (Bechard et al. 2020). In California, the nesting season for Swainson's hawk ranges from mid-March to late August.

Swainson's hawks nest within tall trees in a variety of wooded communities including riparian, oak woodland, roadside landscape corridors, urban areas, and agricultural areas, among others. Foraging habitat includes open grassland, savannah, low-cover row crop fields, and livestock pastures. In the Central Valley, Swainson's hawks typically feed on a combination of California vole (*Microtus californicus*), California ground squirrel (*Spermophilus beecheyi*), ring-necked pheasant (*Phasianus colchicus*), many passerine birds, and grasshoppers (*Melanoplus* sp.). Swainson's hawks are opportunistic foragers and will readily forage in association with agricultural mowing, harvesting, discing, and irrigating (Estep 1989). The removal of vegetative cover by such farming activities results in more readily available prey items for this species.

There are several CNDDDB occurrences and nest locations of this species within 5 miles of the Study Area, with the closest nest site approximately 0.5 mile (CDFW 2022). The riparian woodlands along the river provide suitable nesting habitat for this species. There is potential for Swainson's hawk to nest within the Study Area.

5.6.6.9 Burrowing Owl

The burrowing owl is not listed pursuant to either the California or federal ESAs; however, it is designated as a BCC by the USFWS and a SSC by the CDFW. Burrowing owls inhabit dry open rolling hills, grasslands, desert floors, and open bare ground with gullies and arroyos. They can also inhabit developed areas such as golf courses, cemeteries, roadsides within cities, airports, vacant lots in residential areas, school campuses, and fairgrounds (Poulin et al. 2020). This species typically uses burrows created by fossorial mammals, most notably the California ground squirrel but may also use manmade structures such as concrete culverts or pipes; concrete, asphalt, or wood debris piles; or openings beneath concrete or asphalt pavement (CDFG 2012). The breeding season typically occurs between February 1 and August 31 (California Burrowing Owl Consortium 1993; CDFG 2012).

There are no CNDDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022). Suitable nesting habitat is present in burrows found within ruderal grassland on the northern side of the water treatment facility. Therefore, there is potential for burrowing owls to occur in the Study Area.

5.6.6.10 Nuttall's Woodpecker

The Nuttall's woodpecker is not listed and protected under either state or federal ESAs but is considered a USFWS BCC. They are resident from Siskiyou County south to Baja California. Nuttall's woodpeckers nest in tree cavities primarily within oak woodlands, but also can be found in riparian woodlands (Lowther et al. 2020). Breeding occurs during April through July.

There are no CNDDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022). Suitable nesting habitat is present within the Study Area for this species. There is potential for Nuttall's woodpecker to nest within the Study Area.

5.6.6.11 Merlin

The merlin is not listed pursuant to either the California or federal ESAs but is a CDFW watch list species and currently tracked in the CNDDDB. This falcon breeds in Canada and Alaska and occurs in California as a migrant and during the nonbreeding season (September through April). Foraging habitat in winter includes open forests, grasslands, and tidal flats (Warkentin et al. 2020). Merlin do not nest in the region but may occasionally forage within grassland and woodland communities on-site during winter or migration.

There are no CNDDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022). However, the Study Area provides suitable wintering habitat. There is potential for merlin to occur within the Study Area.

5.6.6.12 Yellow-Billed Magpie

The yellow-billed magpie is not listed pursuant to either the California or federal ESAs but is considered a USFWS BCC. This endemic species is a yearlong resident of the Central Valley and Coast Ranges from San Francisco Bay to Santa Barbara County. Yellow-billed magpies build large, bulky nests in trees in a variety of open woodland habitats, typically near grassland, pastures or cropland. Nest building begins in late-January to mid-February, which may take up to six to eight weeks to complete, with eggs laid during April through May, and fledging during May through June (Koenig and Reynolds 2020). The young leave the nest at about 30 days after hatching (Koenig and Reynolds 2020). Yellow-billed magpies are highly susceptible to West Nile Virus, which may have been the cause of death to thousands of magpies during 2004-2006 (Koenig and Reynolds 2020).

There are no CNDDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022). Suitable nesting habitat is present within the Study Area. There is potential for yellow-billed magpie to nest within the Study Area.

5.6.6.13 Oak Titmouse

Oak titmouse are not listed and protected under either California or federal ESAs, but are considered a USFWS BCC. Oak titmouse breeding range includes southwestern Oregon south through California's Coast, Transverse, and Peninsular ranges, western foothills of the Sierra Nevada, into Baja California; they are absent from the humid northwestern coastal region and the San Joaquin Valley (Cicero et al. 2020). They are found in dry oak or oak-pine woodlands but may also use scrub oaks or other brush near woodlands (Cicero et al. 2020). Nesting occurs during March through July.

There are no CNDDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022). Suitable nesting habitat is present within the Study Area. There is potential for oak titmouse to nest within the Study Area.

5.6.6.14 Wrentit

The wrentit is not listed in accordance with either the California or federal ESAs but is designated as a BCC by the USFWS. Wrentit are a sedentary resident along the west coast of North America from the Columbia River south to Baja California (Geupel and Ballard 2020). Wrentit are found in coastal sage scrub, northern coastal scrub, and coastal hard and montane chaparral and breed in the dense understory of Valley oak riparian, Douglas-fir and redwood forests, early-successional forests, riparian scrub, coyote bush and blackberry thickets, suburban parks, and larger gardens (Geupel and Ballard 2020). Nesting occurs during March through August.

There are no CNDDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022). Suitable nesting habitat adjacent to the Study Area. There is potential for wrentit to nest within the immediate vicinity of the Study Area.

5.6.6.15 Lawrence's Goldfinch

The Lawrence's goldfinch is not listed pursuant to either the California or federal ESAs but is currently a BCC according to the USFWS. Lawrence's goldfinch breed west of the Sierra Nevada-Cascade axis from Tehama, Shasta, and Trinity counties south into the foothills surrounding the Central Valley to Kern County; and on the Coast Range from Contra Costa County to Santa Barbara County (Watt et al. 2020). Lawrence's goldfinch nest in arid woodlands usually with brushy areas, tall annual weeds and a local water source (Watt et al. 2020). Nesting occurs during March through September.

There are no CNDDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022). However, the Study Area may provide suitable nesting habitat within weedy patches along the levees and roads. There is a potential for Lawrence's goldfinch to nest within the Study Area.

5.6.6.16 Song Sparrow "Modesto" Population

The song sparrow is considered one of the most polytypic songbirds in North America (Miller 1956 as cited in Arcese et al. 2020). The subspecies *Melospiza melodia heermanni* includes as synonyms *M. m. mailliardi* (the "Modesto song sparrow") and *M. m. cooperi* (Arcese et al. 2020). The "Modesto song sparrow" is not listed and protected pursuant to either the California or federal ESAs but is considered a CDFW SSC. The subspecies *M. m. heermanni* can be found in central and southwestern California to northwestern Baja California (Arcese et al. 2020). Song sparrows in this group may have slight morphological differences but they are genetically indistinguishable. The "Modesto song sparrow" occurs in the Central Valley from Colusa County south to Stanislaus County, and east of the Suisun Marshes (Grinnell and Miller 1944). Nesting habitat includes riparian thickets and freshwater marsh communities, with nesting occurring from April through June.

There are no CNDDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022). Suitable nesting habitat occurs adjacent to the Study Area. There is potential for song sparrow to nest within the immediate vicinity of the Study Area.

5.6.6.17 Yellow-Breasted Chat

Yellow-breasted chat is a CDFW SSC but has no federal special status. Yellow-breasted chat nest in North America and winter from southern Texas into Mexico and Guatemala (Comrack 2008). In California, the breeding range generally includes northern and northwestern California, the Sierra Nevada foothills south to Kern County, coastal valleys from Santa Clara County south to Baja California, scattered locations east of the Sierran crest, along the Colorado River. Yellow-breasted chat typically nests within early successional riparian habitat with well-developed shrub layers and an open canopy along creeks, streams, sloughs, and rivers (Comrack 2008). Nesting occurs during May through August.

There are no CNDDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022). However, the Study Area provides suitable nesting habitat for this species. There is a potential for yellow-breasted chat to nest within the Study Area.

5.6.6.18 Bullock's Oriole

The Bullock's oriole is not listed pursuant to either the California or federal ESAs but is currently a species of BCC according to the USFWS. In California, Bullock's orioles are found throughout the state except the higher elevations of mountain ranges and the eastern deserts (Small 1994). They are found in riparian and oak woodlands where nests are built in deciduous trees, but may also use orchards, conifers, and eucalyptus trees (Flood et. al 2020). Nesting occurs from March through July.

There are no CNDDDB occurrences of this species within 5 miles of the Study Area (CDFW 2022). However, the Study Area provides suitable nesting habitat for this species. There is a potential for Bullock's oriole to nest within the Study Area.

5.6.7 Mammals

A total of four special-status mammal species were identified as having the potential to occur within the Study Area based on the literature review (Table 2). Upon further analysis and after the reconnaissance site visit, two of four mammal species were determined to be absent based on lack of suitable habitat present in the Study Area. No further discussion of these species is provided in this analysis. A brief discussion of the remaining two species is provided below.

5.6.7.1 Pallid Bat

The pallid bat is not listed pursuant to either the California or federal ESAs; however, this species is considered a SSC by CDFW. The pallid bat is a large, light-colored bat with long, prominent ears and pink, brown, or grey wing and tail membranes. This species ranges throughout North America from the interior of British Columbia, south to Mexico, and east to Texas. The pallid bat inhabits low elevation (below 6,000 feet) rocky arid deserts and canyonlands, shrub-steppe grasslands, karst formations, and higher elevation coniferous forest (above 7,000 feet). This species roosts alone or in groups in the crevices of rocky outcrops and cliffs, caves, mines, trees, and in various human structures such as bridges and barns. Pallid bats are feeding generalists that glean a variety of arthropod prey from surfaces as well as capturing insects on the wing. Foraging occurs over grasslands, oak savannahs, ponderosa pine forests, talus slopes,

gravel roads, lava flows, fruit orchards, and vineyards. This species is not thought to migrate long distances between summer and winter sites (WBWG 2017).

There are no CNDDDB occurrences of this species within 5 miles of the Study Area (CDFW 2020). However, the riparian edges and the adjacent agricultural fields provide potential foraging habitat and the trees within the Study Area provide potential roosting habitat. Pallid bat has potential to roost and forage within the Study Area.

5.6.7.2 Townsend's Big-Eared Bat

The Townsend's big-eared bat is not listed pursuant to either the California or federal ESAs; however, this species is considered a SSC by CDFW. Townsend's big-eared bat is a fairly large bat with prominent bilateral nose lumps and large "rabbit-like" ears. This species occurs throughout the west and ranges from the southern portion of British Columbia south along the Pacific coast to central Mexico and east into the Great Plains. This species has been reported from a wide variety of habitat types and elevations from sea level to 10,827 feet. Habitats include coniferous forests, mixed meso-phytic forests, deserts, native prairies, riparian communities, active agricultural areas, and coastal habitat types. Its distribution is strongly associated with the availability of caves and cave-like roosting habitat including abandoned mines, buildings, bridges, rock crevices, and hollow trees. Townsend's big-eared bat primarily forages on moths. Foraging habitat is generally edge habitats along streams adjacent to and within a variety of wooded habitats. This species often travels long distances when foraging and large home ranges have been documented in California (WBWG 2017).

There are no CNDDDB occurrences of this species within 5 miles of the Study Area (CDFW 2020). The riparian edges and the adjacent agricultural fields provide potential foraging habitat for this species. Townsend's big-eared bat has potential to forage within the Study Area.

5.7 Critical Habitat and Essential Fish Habitat

The Study Area is designated Critical Habitat for the following federally listed species.

- Central Valley spring-run ESU Chinook salmon,
- Central Valley DPS steelhead, and
- Southern DPS North American green sturgeon (USFWS 2020).

The Study Area is EFH for Pacific Coast salmon (i.e., Chinook salmon, including Central Valley spring-run and fall-run ESUs).

5.8 Riparian Habitats and Sensitive Natural Communities

As described above, the riparian habitat in the Study Area is a relatively narrow corridor of mature trees with varying densities of understory cover, depending on levels of human use. Three sensitive natural communities were identified as having potential to occur within the Study Area based on the literature review (CDFW 2022). These included Great Valley Mixed Riparian Forest, Great Valley Cottonwood Riparian Forest, and Great Valley Oak Riparian Forest. Based on the site visit, the mixed riparian

woodlands present within the Study Area are likely too narrow and limited in extent to be representative of Great Valley Mixed Riparian Forest or Great Valley Cottonwood Riparian Forest.

5.9 Wildlife Movement/Corridors and Nursery Sites

The Feather River provides an important aquatic and terrestrial wildlife movement corridor. The river is important migratory habitat for a diversity of native and nonnative fish species, including both resident and anadromous (i.e., ocean migrating) species.

For the purposes of this analysis, nursery sites include but are not limited to concentrations of nest or den sites such as heron rookeries or bat maternity roosts. This data is available through CDFW's Biogeographic Information and Observation System database or as occurrence records in the CNDDDB and is supplemented with the results of the field reconnaissance. No nursery sites have been documented within the Study Area (CDFW 2022) and none were observed during the site reconnaissance.

6.0 IMPACT ANALYSIS

This section specifically addresses the questions raised by the CEQA - Appendix G Environmental Checklist Form, IV. Biological Resources. This section also identifies the appropriate recommendations to reduce potential impacts of the actions to less than significant. The recommendations are described in detail in Section 7.0.

6.1 Special Status Species, Designated Critical Habitat and Essential Fish Habitat

Would the Project result in effects, either directly or through habitat modifications, to species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS?

The Project would result in temporary construction-related impacts to the upland and aquatic resources that provide habitat for special-status species within the Study Area. Potential impacts to upland habitats include temporary disturbance associated with staging, borings, microtunneling, and disposal of dredged spoils. The Project would result in temporary impacts to aquatic habitat within the Feather River. As such, the Project would potentially have a substantial adverse effect, either directly or through habitat modifications, on special-status species identified by CDFW, USFWS, and NMFS and on Critical Habitat and EFH as identified by NMFS. Impacts by species or habitat group are summarized below.

6.1.1 Impacts to Special-Status Plants

There is no habitat for federally or state-listed plant species in the Study Area. There is potential for one CRPR 4.2 species (Mexican mosquito fern) to occur and low potential for one CRPR 4.3 species (shield-bracted monkeyflower) and one CRPR 1B.2 species (woolly rose-mallow). Habitat for Mexican mosquito fern only occurs within the WWT overflow ponds and portions of the Feather River. Work within the WWT overflow ponds is limited disposal of excavated material from the microtunneling. The material will be used to build up existing berms surrounding the WWT overflow ponds. Given no vegetation removal or

disturbance is proposed within suitable habitat for Mexican mosquito fern, potential impacts to this species are minimal.

The remaining two species have low potential to occur along the bank of the Feather River. Vegetation removal associated with equipment access/staging and microtunneling operations could result in impacts to special-status plants if present. Therefore, if vegetation removal is proposed along the bank of the Feather River within suitable habitat for shield-bracted monkeyflower and woolly rose-mallow, implementation of Recommendations BIO1 and PLANT1 described in Section 7.0 would avoid or minimize potential effects to special status plants.

6.1.2 Impacts to Valley Elderberry Longhorn Beetle

There are numerous elderberry shrubs, the host species for VELB, in the Study Area. Because the shrubs occur in riparian habitat, they are suitable habitat for VELB and potentially occupied habitat (USFWS 2017). Project activities may require removal and/or work within 165 feet of elderberry shrubs, which may result in direct and/or indirect effects to VELB. and Implementation of the recommendations BIO1 and VELB1 outlined in Section 7.0 would minimize the potential for effects on VELB.

6.1.3 Impacts to Special-Status Fish Species, Critical Habitat, and Essential Fish Habitat

Three special-status fish species have potential to occur in the Study Area. Direct and indirect impacts to special status fish species could occur as a result of exploratory borings in the river, microtunneling operations, and removal of the old sewer line. Potential impacts include increased noise during boring drilling and/or microtunneling and displacement of sediment in the river during removal of the decommissioned sewer line. Implementation of the recommendation FISH1 outlined in Section 7.0 would minimize the effects of the Project on listed and special-status fish species.

6.1.4 Impacts to Northwestern Pond Turtles

Northwestern pond turtles may occur in the upland and river portions of the Study Area. The upland areas have low potential to support this species due to the nature of the soils (that are not conducive to nest building) and the extent of public use. Implementation of BIO1 and NPT1 outlined in Section 7.0 is expected to avoid or minimize potential effects to this species in upland portions of the Study Area.

In aquatic habitat, noise and disturbance associated with Project set up and installing Best Management Practices (BMPs) for water quality would deter and displace turtles from the work area. This could increase or decrease susceptibility to predation, particularly for hatchlings, depending on how predators behave in response to the microtunneling operation. Overall, the effects are expected to be temporary and minimized by the implementation of recommendations BIO1, FISH1 and NPT1 outlined in Section 7.0.

6.1.5 Impacts to Giant Garter Snake

Giant garter snakes have low potential to occur adjacent to the Study Area. Implementation of BIO1 and GGS1 outlined in Section 7.0 is expected to avoid or minimize potential effects to this species in upland portions of the Study Area. Noise and disturbance associated with the Project would likely deter snakes

from approaching the Study Area. Overall, the effects are expected to be temporary and minimized by the implementation of recommendations BIO1 and GGS1 outline in Section 7.0.

6.1.6 Impacts to Special-Status Birds

There is potential for 18 special status bird species to occur within or adjacent to the Study Area. Additionally, all birds and their nests are protected by the MBTA and Fish and Game Code. Construction activities have potential to impact nesting birds if present within or adjacent to the construction activities. Implementation of recommendations BIRD1 and BIRD2 outlined in Section 7.0 would minimize potential effects to special-status birds.

6.1.7 Impacts to Special-Status Bats

There are two special-status bats with potential to occur in the Study Area. Removal of vegetation associated with equipment access/staging for borings and microtunneling operations could result in impacts to roosting bats, if present. Implementation of recommendations BAT1 outlined in Section 7.0 would further reduce the potential for effects to special status bats.

6.2 Riparian Habitat and Sensitive Natural Communities

Would the Project 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 US Fish and Wildlife Service?

The Study Area supports riparian woodland habitat along the Feather River. Construction staging, boring exploration and microtunneling activity would occur in upland, developed or disturbed areas of the Study Area. Project construction may require vegetation clearing or tree removal therefore, implementation of recommendation BIO1 described in Section 7.0 would further reduce the potential for additional impacts to riparian habitats.

6.3 Aquatic Resources, Including Waters the U.S. and State

Would the Project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

The Project would have no direct impact on federally protected wetlands; however, the Feather River is considered a Waters of the U.S. Project implementation would temporarily disturb Waters of the U.S. through proposed boring exploration and removal of decommissioned pipe under the Feather River. Implementation of recommendation WATERS1 described in Section 7.0 would reduction potential impacts to Waters of the U.S.

6.4 Wildlife Movement/Corridors

Would the Project 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?

The Feather River is an important migratory corridor for native fish. Project activities have the potential to interfere with natural movements of resident and migratory fish species. Implementation of recommendations BIO1 and FISH1 described in Section 7.0 are expected to avoid and minimize potential effects.

The forested uplands and open space lands within the Study Area provide some limited migratory opportunities for wildlife. Establishment of the staging areas and operation of equipment is likely to temporarily disturb and displace most wildlife from the Study Area. Some wildlife such as birds or nocturnal species are likely to continue to use the habitats opportunistically for the duration of construction. Once construction is complete, wildlife movements are expected to resume.

As discussed in Section 5.9, the Study Area does not include a known nursery sites and no evidence of a wildlife nursery site was observed during the field reconnaissance. Therefore, the Project is not expected to impact wildlife nursery sites. Potential impacts to individual nesting birds would be reduced by implementation of recommendations BIRD1 and BIRD2 described in Section 7.0.

6.5 Local Policies, Ordinances, and Other Plans

Does the Project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

The Project does not conflict with a local policy or ordinance protecting biological resources, including tree ordinances. The Applicant would coordinate with the local jurisdiction to secure the necessary variance, permit, or approval if a conflict is identified.

Does the Project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The Study Area is not currently covered by any local, regional, or state conservation plan. Therefore, the Project would not conflict with a local, regional, or state conservation plan. However, once finalized and adopted the BRCP (Plan) will provide a comprehensive, coordinated, and efficient program to conserve ecologically important resources in the lowland and foothill region of Butte County (the "Plan Area"), including endangered, threatened, and other at-risk species and their habitats; natural communities and the ecological processes that support them; biodiversity; streams and ponds and the watersheds that support them; wetlands and riparian habitats; and ecological corridors

7.0 RECOMMENDATIONS

This section summarizes recommended measures to avoid, minimize, or compensate for potential impacts to biological resources from the proposed Project.

7.1 General Recommendations

The following general measure is recommended:

BIO1 – The Project will implement erosion control measures and BMPs to reduce the potential for sediment or pollutants at the Project site. Measures may include:

- Erosion control measures will be placed between Waters of the U.S., and the outer edge of the staging areas, within an area identified with highly visible markers (e.g., construction fencing, flagging, silt barriers) prior to commencement of construction activities. Such identification and erosion control measures will be properly maintained until construction is completed and the soils have been stabilized.
- Fiber rolls used for erosion control will be certified by the California Department of Food and Agriculture as weed free.
- Seed mixtures applied for erosion control will not contain California Invasive Plant Council designated invasive species (<http://cal-ipc.org/>) and will be composed of native species appropriate for the site.
- Trash generated onsite will be promptly and properly removed from the site.
- Any fueling in the upland portion of the Study Area will use appropriate secondary containment techniques to prevent spills.
- A qualified biologist will conduct a mandatory Worker Environmental Awareness Program for all contractors, work crews, and any onsite personnel on the potential for special status species to occur on the Project site. The training will provide an overview of habitat and characteristics of the species, the need to avoid certain areas, and the possible penalties for non-compliance.

7.2 Special-Status Species

Recommendations to minimize impacts to special-status species or habitats are summarized below by species group.

7.2.1 Plants

If vegetation removal is proposed within suitable habitat for shield-bracted monkey flower and woolly-rose mallow, the following measure is recommended to minimize potential impacts to special-status plants:

PLANT 1 – Preconstruction floristic surveys shall be conducted for any areas of vegetation removal in the Study Area with the potential to support shield-bracted monkey flower and woolly rose mallow. The area of ground disturbance and a 25-foot buffer would be surveyed by a qualified botanist during the appropriate blooming period prior to the start of Project activity. If no special status plants are found during the preconstruction surveys, no further measures are necessary. If surveys identify any special-status plants, the Applicant shall identify them with flagging and avoid them with a 25-foot no-disturbance buffer during Project activities. If this avoidance is not feasible, the Applicant shall consult with CDFW to determine whether alternative avoidance measures that are equally protective are possible.

7.2.2 Fish Species, Critical Habitat, and Essential Fish Habitat

The following measure is recommended to minimize potential impacts to special-status fish:

FISH1 – To avoid and minimize potential adverse effects to listed and special-status fish species, designated critical habitat, and EFH implement the following:

- Implement Project activities during a limited work window (likely June 15 through October 15) to avoid the most sensitive life stages of ESA-listed anadromous fish species.
- Deploy measures, as practicable, to reduce sediment resuspension such as a turbidity curtain, if feasible, given the flow volume and velocity in the Study Area.
- Through the CWA Section 404 and/or 408 Permission, request the USACE initiate ESA Section 7 Consultation with NMFS on the Project effects to ESA-listed anadromous fish species, designated Critical Habitat, and EFH.
- Consult with CDFW and if necessary, secure an Incidental Take Permit 2081, pursuant to Section 2080 of the California Fish and Game Code.

7.2.3 Northwestern Pond Turtle

The following measure is recommended to minimize impacts to northwestern pond turtle:

NPT1 – Conduct a preconstruction northwestern pond turtle survey in the construction staging and dewatering areas within 48 hours prior to construction activities. Any northwestern pond turtle individuals discovered in the Project work area immediately prior to or during Project activities shall be allowed to move out of the work area of their own volition. If this is not feasible, they shall be captured by a qualified wildlife biologist and relocated out of harm's way to the nearest suitable habitat at least 100 feet from the Project work area where they were found.

7.2.4 Giant Garter Snake

The following measure is recommended to minimize impacts to giant garter snake:

GGS1 – Conduct a preconstruction giant garter snake survey in the construction staging areas within 24 hours prior to construction activities. Any giant garter snake individuals discovered in the Project

work area immediately prior to or during Project activities shall be allowed to move out of the work area of their own volition. If this is not feasible, they shall be captured by a qualified wildlife biologist and relocated out of harm's way to the nearest suitable habitat at least 200 feet from the Project work area where they were found.

7.2.5 Valley Elderberry Longhorn Beetle

The following measure is recommended to minimize potential impacts to VELB:

VELB1 – To avoid and minimize potential adverse effects to VELB, implement the following:

- Through the CWA Section 404 and/or 408 Permission, request the USACE initiate ESA Section 7 Consultation with USFWS, if necessary, on the Project effects to ESA-listed VELB.
- The area surrounding avoided elderberry shrubs shall be fenced and/or flagged as close to construction limits as possible. Recognizing that the Project may require staging/other construction activities within 165 feet of some shrubs, the shrubs shall be protected during construction by establishing and maintaining a high-visibility fence as far from the drip line of each elderberry shrub as feasible.
- As much as feasible, all activities that could occur within 165 feet of an elderberry shrub will be conducted outside of the flight season of VELB (March through July).
- Herbicides will not be used within the drip line of any elderberry shrubs. Insecticides will not be used within 100 feet of an elderberry shrub and will be applied using a backpack sprayer or similar direct application method.
- The potential effects of dust on VELB will be minimized by applying water during construction activities or by presoaking work areas that will occur within 100 feet of any potential elderberry shrub habitat.

7.2.6 Special-Status Birds and Migratory Bird Treaty Act-Protected Birds (Including Nesting Raptors)

The following measure is recommended to minimize potential impacts to nesting birds:

BIRD1 – To protect nesting birds, no Project activity shall begin from February 1 through August 31 unless the following surveys are completed by a qualified wildlife biologist. Separate surveys and avoidance requirements are listed below for all nesting birds and raptors, including bald eagle, burrowing owl, and Swainson's hawk.

- All Nesting Birds - Within 14 days prior to construction (or less if recommended by CDFW), survey for nesting activity of birds within each Project work area and a 100-foot radius. If any active nests are observed, these nests shall be designated a sensitive area and protected by an avoidance buffer established in coordination with CDFW until the breeding season has ended or until a qualified biologist has determined that the young have fledged and are no longer reliant upon the nest or parental care for survival.

- Raptors (including bald eagle) – Within 14 days prior to construction, survey for nesting activity of birds of prey within each Project work area and a 500-foot radius. If any active nests are observed, these nests shall be designated a sensitive area and protected by an avoidance buffer established in coordination with CDFW until the breeding season has ended or until a qualified biologist has determined that the young have fledged and are no longer reliant upon the nest or parental care for survival.
- Burrowing owl – A qualified wildlife biologist shall survey for burrowing owl within the Project work area and a 250-foot radius of the Project work area, within 14 days prior to starting Project activities. Surveys shall be conducted at appropriate times (dawn or dusk) to maximize detection. If any active nests are observed, these nests shall be designated a sensitive area and protected by an avoidance buffer established in coordination with CDFW until the breeding season has ended or until a qualified biologist has determined that the young have fledged and are no longer reliant upon the nest or parental care for survival.
- Swainson's hawk – Within 14 days prior to construction, survey for nesting activity of Swainson's hawk within each Project work area and a 0.25-mile radius. If any active nests are observed, these nests shall be designated a sensitive area and protected by an avoidance buffer established in coordination with CDFW until the breeding season has ended or until a qualified biologist has determined that the young have fledged and are no longer reliant upon the nest or parental care for survival.

BIRD2 – To protect potentially nesting yellow-billed cuckoo, the following is recommended

- To encourage western yellow-billed cuckoos to choose nesting sites away from construction activities, crews will make every effort possible to begin construction activities within 500 feet of suitable habitat before the start of the breeding season (i.e., before May 31).
- If construction activities begin after May 31 and if it is anticipated that construction-related disturbances within 500 feet of suitable habitat cannot be avoided, protocol surveys for yellow-billed cuckoo will be conducted. Surveys will follow the latest version of *A Natural History Summary and Survey Protocol for the Western Distinct Population Segment of the Yellow-billed Cuckoo* (Halterman et al. 2015).
- Biologists will coordinate with the USFWS and CDFW prior to conducting surveys. Survey methods and results will be reported to the USFWS and CDFW at the conclusion of the surveys. If cuckoos are detected during surveys, the nest or general location, will be mapped by the biologists and a 500-foot buffer will be established, or other distance as approved by the USFWS and CDFW, no-disturbance buffer between construction activities and the area identified. The no-disturbance buffer will be maintained until it has been determined by a qualified biologist that young have fledged or the nest is no longer active.
- If removal of vegetation identified as suitable habitat is proposed, consultation with USFWS may be required. Through the CWA Section 404 and/or 408 Permission, request the USACE

initiate ESA Section 7 Consultation with USFWS, if necessary, on the Project effects to ESA-listed yellow-billed cuckoo.

Two special-status birds identified as potentially occurring are migrants and/or wintering species. These are sharp-shinned hawk and merlin. These species do not nest in this region or nesting habitat does not occur in the Survey Area. Therefore, no surveys for wintering and/or migrant or foraging species are recommended.

7.2.7 Special-Status Bats

The following measure is recommended to minimize potential impacts to roosting bats:

BAT1 – Within 14 days of construction, a qualified biologist will survey for all suitable roosting habitat (e.g., manmade structures, trees) proposed for removal. If suitable roosting habitat is identified and proposed for removal, a qualified biologist will conduct an evening bat emergence survey that may include acoustic monitoring to determine whether or not bats are present. If roosting bats are found, consultation with CDFW prior to initiation of construction activities may be required. If bats are not found during the preconstruction surveys, no further measures are necessary.

7.3 Riparian and Sensitive Natural Communities

To minimize the potential for impacts to riparian habitat, the following measure is recommended:

RIP1 – A Streambed Alteration Agreement (SAA), pursuant to Section 1602 of the California Fish and Game Code, must be obtained for any activity that will impact the Feather River and riparian habitats. Minimization measures will be developed during consultation with CDFW as part of the SAA agreement process to ensure protections for affected fish and wildlife resources. If applicable, compensatory mitigation may be required for removal of riparian vegetation.

7.4 Waters of the U.S./State

The following measure is recommended to minimize potential impacts to Waters of the U.S./State:

WTR1 – To avoid or minimize anticipated short-term adverse effects to Waters of the U.S. implement the following measures:

- Obtain coverage under Section 404 of the federal CWA from USACE for the exploratory borings within the Feather River. The impacts from such actions are expected to be temporary. Therefore, no net loss of aquatic resources is likely to occur as a result of the Project and no mitigation is required.
- A Water Quality Certification or waiver pursuant to Section 401 of the CWA, as issued by RWQCB, must be obtained for Section 404 permit actions.

- A Waste Discharge Requirement for dredge and fill in Waters of the State under the Porter-Cologne Water Quality Control Act as issued by RWQCB must be obtained for impacts to Waters of the State.

7.5 Wildlife Movement Corridors

Implementation of recommendations BIO1, RIP1, and FISH1 are expected to avoid or minimize potential short-term effects on wildlife and aquatic movement corridors.

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LIST OF ATTACHMENTS

Attachment A – Special-Status Species Searches

Attachment B – Representative Site Photographs

Attachment C – Wildlife Observed Onsite

Special-Status Species Searches



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Query Criteria: Quad IS (Yuba City (3912125) OR Palermo (3912145) OR Honcut (3912135) OR Pennington (3912137) OR Gridley (3912136) OR West of Biggs (3912147) OR Biggs (3912146) OR Sutter (3912126) OR Sutter Buttes (3912127))

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>Acipenser medirostris</i> pop. 1 green sturgeon - southern DPS	G3T1 S1	Threatened None	AFS_VU-Vulnerable IUCN_NT-Near Threatened	129 129	3 S:2	0	0	2	0	0	0	0	2	2	0	0
<i>Agelaius tricolor</i> tricolored blackbird	G1G2 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	60 282	955 S:28	0	1	0	0	13	14	20	8	15	13	0
<i>Ambystoma californiense</i> pop. 1 California tiger salamander - central California DPS	G2G3 S3	Threatened Threatened	CDFW_WL-Watch List IUCN_VU-Vulnerable	65 65	1263 S:1	0	0	0	0	1	0	1	0	0	0	1
<i>Antigone canadensis tabida</i> greater sandhill crane	G5T5 S2	None Threatened	BLM_S-Sensitive CDFW_FP-Fully Protected USFS_S-Sensitive	50 90	605 S:5	1	1	0	0	0	3	3	2	5	0	0
<i>Antrozous pallidus</i> pallid bat	G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive WBWG_H-High Priority	600 600	420 S:1	0	1	0	0	0	0	0	1	1	0	0
<i>Astragalus tener</i> var. <i>ferrisiae</i> Ferris' milk-vetch	G2T1 S1	None None	Rare Plant Rank - 1B.1	74 85	18 S:3	0	0	0	0	1	2	3	0	2	1	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	160 160	2011 S:1	0	0	0	0	0	1	0	1	1	0	0
<i>Atriplex cordulata</i> var. <i>cordulata</i> heartscale	G3T2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	65 70	66 S:2	0	1	1	0	0	0	1	1	2	0	0



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						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Atriplex minuscula</i> lesser saltscale	G2 S2	None None	Rare Plant Rank - 1B.1	65 70	52 S:2	0	2	0	0	0	0	2	0	2	0	0
<i>Atriplex subtilis</i> subtle orache	G1 S1	None None	Rare Plant Rank - 1B.2	70 70	24 S:1	0	1	0	0	0	0	1	0	1	0	0
<i>Branchinecta lynchi</i> vernal pool fairy shrimp	G3 S3	Threatened None	IUCN_VU-Vulnerable	105 275	795 S:16	4	3	1	2	1	5	2	14	15	0	1
<i>Buteo swainsoni</i> Swainson's hawk	G5 S3	None Threatened	BLM_S-Sensitive IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	45 120	2541 S:14	2	3	0	0	0	9	1	13	14	0	0
<i>Castilleja rubicundula</i> var. <i>rubicundula</i> pink creamsacs	G5T2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	70 70	42 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Centromadia parryi</i> ssp. <i>parryi</i> pappose tarplant	G3T2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	70 70	39 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Circus hudsonius</i> northern harrier	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	60 110	54 S:2	0	0	0	0	0	2	2	0	2	0	0
<i>Coccyzus americanus occidentalis</i> western yellow-billed cuckoo	G5T2T3 S1	Threatened Endangered	BLM_S-Sensitive NABCI_RWL-Red Watch List USFS_S-Sensitive USFWS_BCC-Birds of Conservation Concern	50 82	165 S:3	0	1	0	0	0	2	2	1	3	0	0
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	G4 S2	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive WBWG_H-High Priority	175 175	635 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		119 S:1	0	0	0	0	1	0	1	0	0	0	1



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						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Desmocerus californicus dimorphus</i> valley elderberry longhorn beetle	G3T2 S3	Threatened None		60 132	271 S:13	1	4	1	2	0	5	9	4	13	0	0
<i>Dipodomys californicus eximius</i> Marysville California kangaroo rat	G4T1 S1	None None	CDFW_SSC-Species of Special Concern	500 550	2 S:2	0	0	0	0	0	2	2	0	2	0	0
<i>Emys marmorata</i> western pond turtle	G3G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable USFS_S-Sensitive	65 320	1404 S:7	0	0	1	0	0	6	3	4	7	0	0
<i>Erethizon dorsatum</i> North American porcupine	G5 S3	None None	IUCN_LC-Least Concern	100 267	523 S:2	0	0	0	0	0	2	1	1	2	0	0
<i>Eumops perotis californicus</i> western mastiff bat	G4G5T4 S3S4	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern WBWG_H-High Priority		296 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Falco columbarius</i> merlin	G5 S3S4	None None	CDFW_WL-Watch List IUCN_LC-Least Concern	70 70	37 S:1	0	1	0	0	0	0	1	0	1	0	0
<i>Gonidea angulata</i> western ridged mussel	G3 S1S2	None None		72 127	157 S:2	0	0	0	0	0	2	2	0	2	0	0
<i>Great Valley Cottonwood Riparian Forest</i> Great Valley Cottonwood Riparian Forest	G2 S2.1	None None		50 90	56 S:5	0	0	3	0	0	2	5	0	5	0	0
<i>Great Valley Mixed Riparian Forest</i> Great Valley Mixed Riparian Forest	G2 S2.2	None None		50 85	68 S:3	0	1	0	0	0	2	3	0	3	0	0
<i>Great Valley Valley Oak Riparian Forest</i> Great Valley Valley Oak Riparian Forest	G1 S1.1	None None		75 75	33 S:2	0	1	0	0	0	1	2	0	2	0	0
<i>Haliaeetus leucocephalus</i> bald eagle	G5 S3	Delisted Endangered	BLM_S-Sensitive CDF_S-Sensitive CDFW_FP-Fully Protected IUCN_LC-Least Concern USFS_S-Sensitive USFWS_BCC-Birds of Conservation Concern	80 80	329 S:1	0	0	0	0	0	1	0	1	1	0	0



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						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Heteranthera dubia</i> water star-grass	G5 S2	None None	Rare Plant Rank - 2B.2 IUCN_LC-Least Concern	55 55	9 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Hibiscus lasiocarpus</i> var. <i>occidentalis</i> woolly rose-mallow	G5T3 S3	None None	Rare Plant Rank - 1B.2 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_UCBG-UC Botanical Garden at Berkeley	40 80	173 S:8	0	4	2	0	0	2	6	2	8	0	0
<i>Juncus leiospermus</i> var. <i>ahartii</i> Ahart's dwarf rush	G2T1 S1	None None	Rare Plant Rank - 1B.2	100 180	13 S:7	1	4	0	1	0	1	4	3	7	0	0
<i>Lasionycteris noctivagans</i> silver-haired bat	G3G4 S3S4	None None	IUCN_LC-Least Concern WBWG_M-Medium Priority	100 175	139 S:2	0	0	0	0	0	2	2	0	2	0	0
<i>Laterallus jamaicensis coturniculus</i> California black rail	G3G4T1 S1	None Threatened	BLM_S-Sensitive CDFW_FP-Fully Protected IUCN_NT-Near Threatened NABCI_RWL-Red Watch List USFWS_BCC-Birds of Conservation Concern	65 400	303 S:2	0	0	0	0	0	2	2	0	2	0	0
<i>Layia septentrionalis</i> Colusa layia	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_UCBG-UC Botanical Garden at Berkeley	2,100 2,100	69 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Lepidurus packardii</i> vernal pool tadpole shrimp	G4 S3S4	Endangered None	IUCN_EN-Endangered	75 220	329 S:8	5	2	1	0	0	0	0	8	8	0	0
<i>Linderiella occidentalis</i> California linderiella	G2G3 S2S3	None None	IUCN_NT-Near Threatened	75 270	508 S:6	0	2	4	0	0	0	0	6	6	0	0
<i>Melospiza melodia</i> song sparrow ("Modesto" population)	G5 S3?	None None	CDFW_SSC-Species of Special Concern	60 60	92 S:1	0	0	0	0	0	1	1	0	1	0	0



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						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Monardella venosa</i> veiny monardella	G1 S1	None None	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_UCBG-UC Botanical Garden at Berkeley	100 100	4 S:1	0	0	0	0	1	0	1	0	0	1	0
<i>Navarretia leucocephala ssp. bakeri</i> Baker's navarretia	G4T2 S2	None None	Rare Plant Rank - 1B.1	100 115	64 S:2	0	0	0	0	0	2	2	0	2	0	0
<i>Northern Hardpan Vernal Pool</i> Northern Hardpan Vernal Pool	G3 S3.1	None None		45 175	126 S:9	0	0	0	0	0	9	9	0	9	0	0
<i>Oncorhynchus mykiss irideus pop. 11</i> steelhead - Central Valley DPS	G5T2Q S2	Threatened None	AFS_TH-Threatened		31 S:3	0	0	0	0	0	3	0	3	3	0	0
<i>Oncorhynchus tshawytscha pop. 11</i> chinook salmon - Central Valley spring-run ESU	G5T1T2Q S2	Threatened Threatened	AFS_TH-Threatened	120 120	13 S:1	0	0	0	0	0	1	0	1	1	0	0
<i>Orcuttia tenuis</i> slender Orcutt grass	G2 S2	Threatened Endangered	Rare Plant Rank - 1B.1 SB_UCBG-UC Botanical Garden at Berkeley	150 150	100 S:2	0	2	0	0	0	0	0	2	2	0	0
<i>Paronychia ahartii</i> Ahart's paronychia	G3 S3	None None	Rare Plant Rank - 1B.1 BLM_S-Sensitive	150 150	59 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Pseudobahia bahiifolia</i> Hartweg's golden sunburst	G1 S1	Endangered Endangered	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden		27 S:1	0	0	0	0	1	0	1	0	0	0	1
<i>Puccinellia simplex</i> California alkali grass	G3 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	65 70	80 S:3	0	0	0	0	0	3	3	0	3	0	0
<i>Rana boylei</i> foothill yellow-legged frog	G3 S3	None Endangered	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_NT-Near Threatened USFS_S-Sensitive	681 681	2476 S:1	0	0	0	0	1	0	1	0	0	0	1
<i>Riparia riparia</i> bank swallow	G5 S2	None Threatened	BLM_S-Sensitive IUCN_LC-Least Concern	50 100	298 S:23	0	4	0	0	0	19	7	16	23	0	0



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						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Sagittaria sanfordii</i> Sanford's arrowhead	G3 S3	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	85 130	126 S:4	1	0	0	0	0	3	2	2	4	0	0
<i>Spea hammondi</i> western spadefoot	G2G3 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_NT-Near Threatened	112 350	1422 S:4	0	0	0	0	0	4	4	0	4	0	0
<i>Spinus lawrencei</i> Lawrence's goldfinch	G3G4 S4	None None	IUCN_LC-Least Concern NABCI_YWL-Yellow Watch List USFWS_BCC-Birds of Conservation Concern	285 300	4 S:2	2	0	0	0	0	0	0	2	2	0	0
<i>Taxidea taxus</i> American badger	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	90 90	594 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Thamnophis gigas</i> giant gartersnake	G2 S2	Threatened Threatened	IUCN_VU-Vulnerable	50 135	373 S:30	3	9	3	1	0	14	16	14	30	0	0
<i>Tuctoria greenei</i> Greene's tuctoria	G1 S1	Endangered Rare	Rare Plant Rank - 1B.1	105 105	50 S:1	0	0	0	0	1	0	1	0	0	1	0
<i>Vireo bellii pusillus</i> least Bell's vireo	G5T2 S2	Endangered Endangered	IUCN_NT-Near Threatened NABCI_YWL-Yellow Watch List	50 50	503 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Wolffia brasiliensis</i> Brazilian watermeal	G5 S2	None None	Rare Plant Rank - 2B.3	65 72	6 S:2	0	1	0	0	0	1	0	2	2	0	0

	GRank	SRank	CESA	ElevationH	Counties	Quads	EOTotal	EOU	EOHistoric	EORecent	EOExtant	EOTreatU	Notes	Threats	Taxonomy	Other	Synonyms
1B.1	G2T1	S1	None	245	BUT, COL, GLE, SOL, SUT, YOL, YUB	Arbuckle (3912211)*, Butte City (3912148), Colusa (3912221)*, Davis (3812156), Dozier (3812137)*, Dunnigan (3812188)*, Grimes (3912118), Llano Seco (3912158), Logandale (3912242), Manor Slough (3912223), Merritt (3812157), Nord (3912178)*, Olivehurst (3912115), Pennington (3912137), Sacramento West (3812155), Saxon (3812146), Sutter (3812126), West of Biggs (3912147), Wildwood School (3812281), Yuba City (3912125)*	18	11	17	1	13	8	Rediscovered in 1989 by V. Oswald in Butte Sink WA (DFG); known only from six extant occurrences. Most historical habitat destroyed by agriculture. See Brittonia 42(2):100-104 (1990) for original description, and Systematic Botany 17(3):367-379 (1992) for 8 distributional information.				
1B.2	G3T2	S2	None	1835	ALA, BUT, CCA, COL, FRE, GLE, KNG, KRN, MAD, MER, SIQ, SOL, STA, TUL, YOL	Altamont (3712166), Arena (3712036), Berenda (3712012), Birds Landing (3812127), Bliss Ranch (3712014), Bonita Ranch (3612082), Burris Park (3611945), Byron Hot Springs (3712176), Ceres (3712058), Chowchilla (3712013)*, Clifton Court Forebay (3712175), Conner (3511921), Crows Landing (3712141)*, Davis (3812156)*, Denair (3712057), Denverton (3812128), Dozier (3812137), El Nido (3712024)*, Elmira (3812138), Firebaugh NE (3612083), Goshen (3611934), Gravelly Ford (3612072), Gustine (3712038), Ingomar (3712028), Jamesan (3612062), Kerman (3612061)*, Logandale (3912242), Lokern (3511945), Los Banos (3712017), Maricopa (3511914), Mendota Dam (3612073), Meridian (3912128), Merritt (3812157), Millux (3511922), Mouth of Kern (3511923), Ortigalita Peak NW (3612088), Pennington (3912137), Plainsburg (3712023), Poso Farm (3612084), San Luis Ranch (3712027), Sandy Mush (3712025), Stevinson (3712037), Stockton West (3712183), Taft (3511924), Tranquillity (3612063), Traver (3611944), Tupman (3511933), Turner Ranch (3712026), Volta (3712018)*	66	29	54	12	54	29	Threatened by competition from non-native plants. Possibly threatened by trampling. Similar to A. coronata var. coronata.	Threatened by competition from non-native plants. Possibly threatened by trampling.	Similar to <I>A. coronata<D> var. <I>A. coronata<D>.	Atriplex cordulata	
1B.1	G2	S2	None	655	ALA, BUT, FRE, KNG, KRN, MAD, MER, STA, TUL	Allensworth (3511974), Altamont (3712166), Arena (3712036), Berenda (3712012), Bliss Ranch (3712014), Bonita Ranch (3612082), Burris Park (3611945), Buttonwillow (3511944), Byron Hot Springs (3712176), Cairns Corner (3611922), Chowchilla (3712013), Crows Landing (3712141), El Nido (3712024), Firebaugh NE (3612083), Goshen (3611934), Gravelly Ford (3612072), Ivanhoe (3611942), Jamesan (3612062), Kerman (3612061), Le Grand (3712022), Livermore (3712167), Los Banos (3712017), Lost Hills NE (3511965), Mendota Dam (3612073), Milpitas (3712148), Ortigalita Peak NW (3612088), Pennington (3912137), Pixley (3511983), Plainsburg (3712023), Poso Farm (3612084), Raisin (3611958)*, Ripon (3712162)*, San Luis Ranch (3712027), Sandy Mush (3712025), Tranquillity (3612063), Traver (3611944), Wasco NW (3511964), Wasco SW (3511954), Waukena (3611925)	52	19	31	21	50	25	Historical occurrences extirpated by agriculture. Possibly threatened by solar energy development. Closely related to A. depressa and A. parishii; a synonym of the latter in A California Flora (1959) by P. Munz. See North American Flora 21:51 (1916) for original description.				
1B.2	G1	S1	None	330	BUT, FRE, KNG, KRN, MAD, MER, STA, TUL	Bliss Ranch (3712014), Bonita Ranch (3612082), Buttonwillow (3511944), Cairns Corner (3611922), Ceres (3712058), Chowchilla (3712013), Delano West (3511973), Denair (3712057), El Nido (3712024), Firebaugh NE (3612083), Goshen (3611934), Gravelly Ford (3612072), Helm (3612051), Jamesan (3612062), Mendota Dam (3612073), Pennington (3912137), Pixley (3511983), Pond (3511963), Sandy Mush (3712025), Santa Rita Bridge (3712015), Sausalito School (3511982), Traver (3611944), Wasco SW (3511954), Waukena (3611925)	24	14	22	2	20	11	Threatened by agriculture. Possibly threatened by solar energy development. Not in The Jepson Manual (1993). See Madroño 11 44(2):184 (1997) for original description.				
4.2	G5	S4	None	330	BUT, COL, GLE, INY, KRN, LAK, MNT, MOD, NEV, PLU, SBD, SCR, SIQ, TUL	Alturas (4112045), Biggs (3912146), Cholame Valley (3512073), Crescent Mills (4012018), Felton (3712211), Fountain Springs (3511888), Genesee Valley (4012016), Independence (3611872), Keene (3511825), Kelseyville (3812287), Llano Seco (3912158), Loma Rica (3912134), Manzanar (3611862), Miracle Hot Springs (3511855), Nelson (3912157), Oil Center (3511848), Oiler Peak (3511835), Oroville (3912155), Palermo (3912145), Paradise West (3912176), Princeton (3912241), Sausalito School (3511982), Silverwood Lake (3411733), Taylorsville (4012017), Tejon Ranch (3511816), Thornton (3812124), Tupman (3511933), Walker Pass (3511861), Wolf (3912112)	0	0	0	0	0		Too common? Difficult to distinguish from A. filiculoides, which is common. See American Fern Journal 34(3):69-84 (1944) for a review of New World Azolla.			Azolla mexicana	
4.2	G5T3	S3	None	1100	BUT, CAL, NEV, PLA, SAC, SIQ, SUT, YUB	Buffalo Creek (3812152), Camp Far West (3912113), Carbondale (3812141), Carmichael (3812153), Cherokee (3912165), Chico (3912167), Citrus Heights (3812163), Clements (3812121), Folsom (3812162), Goose Creek (3812131), Hamlin Canyon (3912166), Honcut (3912135), Jenny Lind (3812017), Lincoln (3812183), Nord (3912178), Pleasant Grove (3812174), Rio Linda (3812164), Roseville (3812173), Sacramento East (3812154), Salt Spring Valley (3812016), Shippee (3912156), Sloughhouse (3812142), Smartville (3912123), Valley Springs SW (3812018), Wallace (3812028)	0	0	0	0	0		Threatened by urbanization. Previously assigned to B. coronaria; differentiated by staminodes strongly inrolled, tapering to an apex vs. staminodes flat to incurved, uniformly wide from base to obtuse apex in B. coronaria. Similar to B. rosea ssp. rosea, but with perianth always violet, most floral characters longer, and with a disjunct distribution in non-serpentine habitats along the eastern edge of the Great Valley. See Systematic Botany 38(4):1012-1028 (2013) for original description.				
1B.2	G5T2	S2	None	2985	BUT, COL, GLE, LAK, NAP, SCL, SHA, YOL	Chittenden (3612185), Gilmore Peak (3912235), Glascock Mtn. (3812283), Hamilton City (3912261), Hamlin Canyon (3912166), Hough Springs (3912225), Jericho Valley (3812274), Knoxville (3812273), Leesville (3912224), Lodoga (3912234), Middletown (3812275), Morgan Hill (3712126), Nord (3912178)*, Olinda (4012244), Oroville (3912155), Pennington (3912137), Salt Canyon (3912213), Wilbur Springs (3912214), Wilson Valley (3812284)	42	22	17	25	38	10	Possibly threatened by grazing, mining, vehicles, and road construction. See C. rubicundula ssp. rubicundula in TJM 2. See Manual of the Flowering Plants of California, p. 943 (1925) by W.L. Jepson for original description, Systematic Botany 16(1):658 (1991) for taxonomic treatment, and Phytologia 90(1):63-81 (2008) for 10 revised nomenclature.			Castilleja rubicundula ssp. rubicundula	
1B.2	G3T2	S2	None	1380	BUT, COL, GLE, LAK, NAP, SMT, SOL, SON, YOL	Aetna Springs (3812264), Birds Landing (3812127), Calistoga (3812255), Clarksburg (3812145), Cordelia (3812222), Cotati (3812236), Courtland (3812135), Davis (3812156), Denverton (3812128), Elmira (3812138), Fairfield North (3812231), Fairfield South (3812221), Fouts Springs (3912236), Glascock Mtn. (3812283), Healdsburg (3812257), Mark West Springs (3812256), Montara Mountain (3712254), Pennington (3912137), Salt Canyon (3912213), San Francisco South (3712264), Sears Point (3812224), Stonyford (3912245), Wilbur Springs (3912214), Wilson Valley (3812284)	39	25	15	24	38	13	Threatened by agriculture, competition, development, grazing, foot traffic, habitat disturbance, and road maintenance. A synonym of Hemizonia parryi ssp. parryi in TJM (1993). See Bulletin of the Torrey Botanical Club 9:16 (1882) for original description and Novon 9:466 (1999) for taxonomic treatment.				
4.2	G3T3	S3	None	330	BUT, COL, GLE, LAK, MER, MOD, SAC, SIQ, SOL, STA, YOL	Adin (4112028), Arbuckle (3912211), Big Swamp (4112121), Birds Landing (3812127), Bruceville (3812134), Brush Lake (3712151), Butte City (3912148), Clarksburg (3812145), Colusa (3912221), Courtland (3812135), Davis (3812156), Dozier (3812137), Elmira (3812138), Florin (3812144), Glenn (3912251), Grays Bend (3812166), Llano Seco (3912158), Logandale (3912242), Los Banos (3712017), Maxwell (3912232), Meridian (3912128), Moulton Weir (3912231), Mt. George (3812232), Pennington (3912137), Princeton (3912241), Sacramento West (3812155), Salt Canyon (3912213), San Luis Ranch (3712027), Sandy Mush (3712025), Santa Rita Bridge (3712015), Saxon (3812146), Sites (3912233), Stockton East (3712182)?, Taylor Monument (3812165), Turner Ranch (3712026), West of Biggs (3912147), Wilbur Springs (3912214), Williams (3912222), Winters (3812158), Woodland (3812167)	0	0	0	0	0		Threatened by development, habitat alteration and habitat disturbance. Possibly threatened by grazing and road maintenance. Protected on several refuges including Sacramento NWR, Colusa NWR, the Llano Seco Unit of the North Valley Wildlife Management Area, the Llano Seco Ranch, and the Vic Fazio Yolo Wetlands Preserve. See Hemizonia parryi ssp. rudis in The Jepson Manual (1993). See Manual of the Botany of the Region of San Francisco Bay: 197(1894) for original description and Novon 9: 467(1999) for revised nomenclature.				
4.2	G4	S3	None	2625	BUT, COL, NAP, SUT	Chico (3912167), Honcut (3912135), Leesville (3912224), Sutter (3912126), Sutter Buttes (3912127), Walter Springs (3812263)	0	0	0	0	0		See Bulletin of the California Academy of Sciences 1(4A):203 (1886) for original description, and Pittonia 1(7):116 (1887) for taxonomic treatment.				
1B.2	G2?	S2?	None	2590	ALA, BUT, CCA, FRE, KNG, KRN, MAD, MER, MNT, SBA, SBT, SIQ, SLO, SOL, SUT, TU	Allendale (3812148), Allensworth (3511974), Avenal Gap (3511978), Bliss Ranch (3712014), Bonita Ranch (3612082), Boron (3511716), Byron Hot Springs (3712176), Cairns Corner (3611922), Camp Wishon (3611826), Chickencoop Canyon (3611838), Chimineas Ranch (3511928), Chowchilla (3712013), Ciervo Mtn. (3612045), Clifton Court Forebay (3712175), Coalinga (3612023), Cuyama Peak (3411974), Delano East (3511972), Delano West (3511973), Domengine Ranch (3612033), East Elk Hills (3511934), Elkhorn Hills (3511915), Elmira (3812138), Firebaugh (3612074), Firebaugh NE (3612083), Five Points (3612041), Frazier Valley (3611828), Garza Peak (3512082), Globe (3611817), Gosford (3511931), Guernsey (3611926), Helm (3612051), Horsecamp Mountain (3711937), Ivanhoe (3611942), Jamesan (3612062), Kerman (3612061), Knob Hill (3511858), Laguna Seca Ranch (3612077), Leuham Ridge (3411786), Lindsay (3611921), Lokern (3511945), Lonoak (3612038), Lost Hills NE (3511965), Lost Hills NW (3511966), Maricopa (3511914), McKittrick Summit (3511937), Mendota Dam (3612073), Millux (3511922), Monson (3611943), Natrass Valley (3612028), Nelson (3912157)*, North Edwards (3511717), Olivehurst (3912115), Ortigalita Peak (3612078), Ortigalita Peak NW (3612088), Painted Rock (3511927), Panorama Hills (3511926), Pentland (3511913), Pinalito Canyon (3612131), Pixley (3511983), Pond (3511963), Priest Valley (3612026)*, Pyramid Hills (3512071), Reward (3511936), Richgrove (3511971), Rocky Hill (3611931), Rogers Lake North (3411787), San Lucas (3612121), Sandy Mush (3712025), Sausalito School (3511982), Sawtooth Ridge (3512061), Semitropic (3511955), Shippee (3912156), Simmler (3511938), Soledad Mtn. (3411882), Springville (3611827), Stevens (3511932), Stockton East (3712182), Sutter (3912126), Tent Hills (3512072), Tipton (3611913), Tuney Hills (3612056), Tupman (3511933), Wasco (3511953), Wasco NW (3511964), Waukena (3611925), Wells Ranch (3511916), West Elk Hills (3511935), Woodlake (3611941), Yuba City (3912125)	120	57	77	43	105	55	Many occurrences historical; need current information on status. Much habitat converted to agriculture; also threatened by grazing, trampling, and non-native plants. Potentially threatened by vehicles. 				
4.3	G3G4	S3S4	None	4070	BUT, SHA, TEH	Acorn Hollow (4012118), Balls Ferry (4012242), Barkley Mtn. (4012126), Bend (4012232), Berry Creek (3912164), Butte Meadows (4012115), Campbell Mound (3912187), Cherokee (3912165), Chico (3912167), Cohasset (3912186), Cottonwood (4012243), Dales (4012231), Devils Parade Ground (4012116), Dewitt Peak (4012128), Finley Butte (4012137), Gerber (4012212), Hamlin Canyon (3912166), Honcut (3912135), Humboldt Peak (4012124), Jonesville (4012114), Loma Rica (3912134), Los Molinos (4012211), Manton (4012147), Nord (3912178), Onion Butte (4012125), Ord Ferry (3912168), Oroville (3912155), Oroville Dam (3912154), Panther Spring (4012127), Paradise East (3912175), Paradise West (3912176), Pulga (3912174), Red Bluff East (4012222), Richardson Springs (3912177), Richardson Springs NW (3912188), Stirling City (3912185), Tuscan Springs (4012221)	0	0	0	0	0		Threatened by vehicles and non-native plants. See Bulletin of the California Academy of Sciences 1:113 (1885) for original description, Annals of the Missouri Botanical Garden 11(2-3):175-176 (1924) for taxonomic treatment, and Phytoneuron 2012-39:1-60 (2012) for revised nomenclature.			Mimulus glaucescens	
4.3	G5T4	S4	None	4595	LAK, MEN, SUT, TEH	Bartlett Mtn. (3912227), Clearlake Highlands (3812286), Clearlake Oaks (3912216), Cow Mountain (3912321), Elk Mountain (3912238), Gerber (4012212), Greenough Ridge (3912334), Laughlin Range (3912333), Newhouse Ridge (3912371), Orrs Springs (3912323), Sutter Buttes (3912127), Ukiah (3912322), Upper Lake (3912228), Willis Ridge (3912353), Willits (3912343)	0	0	0	0	0				Hemizonia calyculata		

GRank	SRank	CESA	ElevationH	Counties	Quads	EOTotal	EOU	EOHistoric	EORecent	EOExtant	EOTreatLI	Notes	Threats	Taxonomy	Other	Synonyms
4.2	G3	S3	None	1655	ALA, BUT, CCA, COL, FRE, GLE, KRN, MER, MNT, MPA, SAC, SDG, SIQ, SLO, SOL, SFO	Adelaida (3512067), Allendale (3812148), Altamont (3712166), Antioch North (3812117), Antioch South (3712187), Biggs (3912146), Birds Landing (3812127), Bradley (3512077), Brentwood (3712186), Briones Valley (3712282), Buffalo Creek (3812152), Byron Hot Springs (3712176), Catheys Valley (3712041), Cherokee (3912165), Cholame (3512063), Cholame Valley (3512073), Chrome (3912265), Clifton Court Forebay (3712175), Cooperstown (3712065), Denverton (3812128), Dixon (3812147), Dozier (3812137), Elmira (3812138), Fairfield North (3812231), Fairfield South (3812221), Florin (3812144), Fruto (3912254), Hamlin Canyon (3912166), Haystack Mtn. (3712043), Healdsburg (3812257), Honcut (3912135), Howard Ranch (3712121), Jamul Mountains (3211668), Knights Alturas (4112045), Boles Meadows East (4112067), Canby (4112047), Fall River Mills (4112114), Hogback Ridge (4012184), Hunters Point (3712263), Inverness (3812217), Oakland West (3712273), Pennington (3912137), Point Bonita (3712275), Rattlesnake Butte (4112046), San Francisco North (3712274), San Francisco South (3712264), Sanborn Slough (3912138), Washington Mtn. (4112048), Williams (3912222)	0	0	0	0	0	Threatened by development and agriculture. Possibly threatened by overgrazing. See Proceedings of the American Academy of Arts and Sciences 7:356 (1868) for revised nomenclature, and Systematic Botany 17(2):293-310 (1992) for taxonomic treatment.				
2B.2	G5	S2	None	4905	BUT, COL, MOD, MRN, SFO, SHA, SMT, SUT	Alturas (4112045), Boles Meadows East (4112067), Canby (4112047), Fall River Mills (4112114), Hogback Ridge (4012184), Hunters Point (3712263), Inverness (3812217), Oakland West (3712273), Pennington (3912137), Point Bonita (3712275), Rattlesnake Butte (4112046), San Francisco North (3712274), San Francisco South (3712264), Sanborn Slough (3912138), Washington Mtn. (4112048), Williams (3912222)	9	9	8	1	9	Many occurrences historical and some possibly extirpated; needs field surveys. See Observationum Botanicarum 3(9):59 (1768) for original description and The Metaspermæ of the Minnesota Valley, 2 pp. 138 (1892) by C. MacMillan for taxonomic treatment.				
1B.2	G5T3	S3	None	395	BUT, CCA, COL, GLE, SAC, SIQ, SOL, SUT, YOL	Bouldin Island (3812115), Bruceville (3812134), Butte City (3912148), Clarksburg (3812145), Clifton Court Forebay (3712175), Courtland (3812135), Dozier (3812137), Florin (3812144), Gilsizer Slough (3912116), Grays Bend (3812166), Hamlin Canyon (3912166), Holt (3712184), Isleton (3812125), Jersey Island (3812116), Knights Landing (3812176), Liberty Island (3812136), Llano Seco (3912158), Logandale (3912242), Meridian (3912128), Nelson (3912157), Ord Ferry (3912168), Oroville (3912155), Paradise West (3912176), Pennington (3912137), Richardson Springs (3912177), Rio Vista (3812126), Sacramento West (3812155), Sanborn Slough (3912138), Shippee (3912156), Stockton West (3712183), Sutter Buttes (3912127), Sutter Causeway (3812186), Terminous (3812114), Thornton (3812124), Tisdale Weir (3912117), Verona (3812175), West of Biggs (3912147), Woodward Island (3712185)	173	40	79	94	172	Most occurrences are very small. Seriously threatened by habitat disturbance, development, agriculture, recreational activities, and channelization of the Sacramento River and its tributaries. Also threatened by weed control measures and erosion. Possibly threatened by trail maintenance. See Madroño 56(2):104-111 for revised taxonomy. Known from approximately 10 occurrences. Threatened by development. See Memoirs of the New York Botanical Garden 39:49 8 (1986) for original description.		Hibiscus californicus, Hibiscus lasiocarpus, Hibiscus lasic		
1B.2	G2T1	S1	None	750	BUT, CAL, PLA, SAC, TEH, YUB	Biggs (3912146), Buffalo Creek (3812152)*, Carmichael (3812153), Honcut (3912135), Lincoln (3812183), Loma Rica (3912134), Palermo (3912145), Red Bluff East (4012222), Valley Springs SW (3812018)	13	2	8	5	12					
4.3	G4	S3	None	4755	DNT, SIS, SUT	Broken Rib Mtn. (4112386), Cant Hook Mtn. (4112368), Childs Hill (4112461), Crescent City (4112472), Devils Punchbowl (4112376), Gasquet (4112378), High Divide (4112481), High Plateau Mtn. (4112388), Hiouchi (4112471), Hurdgurdy Butte (4112377), Klamath Glen (4112358), Polar Bear Mtn. (4112385), Preston Peak (4112375), Shelly Creek Ridge (4112387), Ship Mountain (4112367), Summit Valley (4112357), Sutter Buttes (3912127), Ukonom Lake (4112353)	0	0	0	0	0					
1B.2	G2	S2	None	3595	BUT, COL, GLE, LAK, MEN, NAP, SON, SUT, TEH, YOL	Detert Reservoir (3812265), Dunnigan (3812188), Elk Creek (3912255), Gilmore Peak (3912235), Glascock Mtn. (3812283), Grimes (3912118), Highland Springs (3812288), Hopland (3812381), Jericho Valley (3812274), Kelseyville (3812287), Kenwood (3812245)*, Knoxville (3812273), Lakeport (3912218), Leesville (3912224), Lower Lake (3812285), Lucerne (3912217), Monticello Dam (3812251), Paskenta (3912285), Purdys Gardens (3912311), Rail Canyon (3912244), Riley Ridge (3912286), Rumsey (3812282), Santa Rosa (3812246), St. Helena (3812254), Stonyford (3912245), Sutter Buttes (3912127), The Geysers (3812277), Walter Springs (3812263), Whispering Pines (3812276), Wilbur Springs (3912214), Wildwood School (3812281), Wilson Valley (3812284)	69	54	39	30	68	Historical occurrences need field surveys. Threatened by 10 development. See Aliso 4(1):106 (1958) for original description.				
4.2	G4?	S4?	None	4920	ALA, BUT, COL, HUM, KRN, LAK, MEN, MRN, NAP, PLA, SBT, SCL, SCR, SMT, SOL, SC	Auburn (3812181), Bartlett Springs (3912226), Benmore Canyon (3912215), Big Basin (3712222), Bolinas (3712286), Bridgeville (4012247), Brushy Mtn. (3912352), Burbeck (3912344), Calistoga (3812255), Camp Meeker (3812248), Capell Valley (3812242), Castle Rock Ridge (3712221), Cazadero (3812351), Clearlake Highlands (3812286), Clearlake Oaks (3912216), Cold Spring (3912315), Comptche (3912335), Cordelia (3812222), Covelo East (3912372), Davenport (3712212), Detert Reservoir (3812265), Dos Rios (3912363), Dublin (3712168)?, Elledge Peak (3912312), Felton (3712211), Fort Ross (3812352), Foster Mtn. (3912342), Garberville (4012317), Geyserville (3812268), Glen Ellen (3812235), Gold Hill (3812182), Hayward (3712261), Healdsburg (3812257), Hennessy Peak (4012375), Hepsedam Peak (3612037), Highland Springs (3812288), Holter Ridge (4112338), Honcut (3912135), Hopland (3812381), Hull Mountain (3912258), Inverness (3812217), Jamison Ridge (3912362), Jintown (3812267), Kelseyville (3812287), Kenwood (3812245), Lakeport (3912218), Larabee Valley (4012346), Laughlin Range (3912333), Leech Lake Mtn. (3912381), Livermore (3712167), Loma Rica (3912134), Longvale (3912354), Lower Lake (3812285), Lucerne (3912217), Mark West Springs (3812256), Middletown (3812275), Mindego Hill (3712232), Miranda (4012327), Monticello Dam (3812251), Mt. George (3812232), Napa (3812233), Newhouse Ridge (3912371), Novato (3812215), Oakland East (3712272), Orick (4112431), Ornbaua Valley (3812383), Orrs Springs (3912323), Palermo (3912145), Palo Alto (3712242), Petaluma River (3812225), Philo (3912314), Plantation (3812353), Potter Valley (3912331), Purdys Gardens (3912311), Redwood Valley (3912332), Richmond (3712283), Rutherford (3812244), Salt Canyon (3912213), Salyer (4012385), San Rafael (3712285), Santa Rosa (3812246), Santa Teresa Hills (3712127), Sears Point (3812224), Sonoma (3812234), The Geysers (3812277), Ukiah (3912322), Upper Lake (3912228), Valley Ford (3812238), Walker Pass (3511861), Whispering Pines (3812276), Willits (3912343), Willow Creek (4012386), Woodside (3712243), Yountville (3812243)	0	0	0	0	0	Historical occurrences need verification. Does plant occur in CCA Co.? Potentially threatened by road widening. A synonym of Linanthus acicularis in TIM (1993). See Pittonia 2:259 (1892) for original description, and School fl. Pacif. Coast 77 (1902) for revised nomenclature.		Linanthus acicularis		
4.2	G4T4	S3	None	4380	BUT, LAK, LAS, NAP, SHA, SIS, TEH, TRI	Acorn Hollow (4012118), Balls Ferry (4012242), Beegum (4012237), Bella Vista (4012262), Bend (4012232), Bieber (4112112), Big Bend (4112118), Burney (4012186), Burney Falls (4112116), Cable Mtn. (4012183), Campbell Mound (3912187), Cassel (4012185), Chickabally Mtn. (4012236), Clearlake Highlands (3812286), Clough Gulch (4012251), Cold Fork (4012226), Dales (4012231), Dana (4112115), Detert Reservoir (3812265), Dewitt Peak (4012128), Finley Butte (4012137), Hayfork (4012352), Inskip Hill (4012138), Inwood (4012158), Kelseyville (3812287), Los Molinos (4012211), Lowrey (4012215), Mineral (4012135), Montague (4112265), Nord (3912178), Oak Run (4012261), Olinda (4012244), Palermo (3912145), Palo Cedro (4012252), Panther Spring (4012127), Platina (4012238), Red Bluff East (4012222), Richardson Springs (3912177), Richardson Springs NW (3912188), Roaring Creek (4012188), Tuscan Springs (4012221), Viola (4012156), West of Biggs (3912147), Yreka (4112266)	54	16	54	0	54	Threatened by grazing and road widening. Potentially threatened by development. Possibly threatened by non-native plants. See 34 Brittonia 25:177-193 (1973) for revised nomenclature.				
1B.1	G1	S1	None	1345	BUT, SUT, TUO, YUB	Cherokee (3912165)*, Gilsizer Slough (3912116), Hamlin Canyon (3912166), New Melones Dam (3712085), Olivehurst (3912115), Sutter (3912126), Yuba City (3912125)	4	0	4	0	2	Rediscovered in 1992 by B. Castro. Threatened by development of wastewater treatment plant. See Madroño 40(4):270 (1993) for 2 information on rediscovery.	Threatened by development of wastewater treatment plant.	Rediscover Monardella douglasii ssp. venosa		
1B.1	G4T2	S2	None	5710	COL, GLE, HUM, LAK, LAS, MEN, MRN, NAP, SOL, SON, SUT, TEH, YOL	Allendale (3812148), Arbuckle (3912211), Balls Ferry (4012242), Bend (4012232), Birds Landing (3812127), Blocksburg (4012336), Calistoga (3812255), Clearlake Highlands (3812286), Denverton (3812128), Dozier (3812137), Dunnigan (3812188), Elmira (3812138), Fairfield North (3812231), Gridley (3912136), Grimes (3912118), Healdsburg (3812257), Kenwood (3812245), Kirkwood (3912272), Laughlin Range (3912333), Longvale (3912354), Lower Lake (3812285), Manor Slough (3912223), Mark West Springs (3812256), Middletown (3812275), Owl Creek (4012358), Pennington (3912137), Petaluma River (3812225), Pine Creek Valley (4012151), Redwood Valley (3912332), Santa Rosa (3812246), Saxon (3812146), Sebastopol (3812247), Sherwood Peak (3912355), St. Helena (3812254), Sutter (3912126), Sutter Buttes (3912127), Tuscan Buttes Ne (4012241), Ukiah (3912322), Whispering Pines (3812276), Wildwood School (3812281), Willits (3912343), Willows (3912252), Winters (3812158), Yager Junction (4012357)	64	38	41	23	54	May be more widespread; need information. Need quads for COL Co. Threatened by development, habitat alteration, road construction, and agriculture. Potentially threatened by non-native plants. See Madroño 8(6):198 (1946) for original description, and Novon 27 3(4):331-340 (1993) for revised nomenclature.				
1B.1	G2	S2	CE	5775	BUT, LAK, LAS, MOD, PLU, SAC, SHA, SIS, TEH	Almanor (4012122), Ambrose (4112058), Balls Ferry (4012242), Bend (4012232), Black Butte Dam (3912273), Boles Meadows West (4112068), Buffalo Creek (3812152), Burney (4012186), Cottonwood (4012243), Crank Mountain (4112142), Dales (4012231), Dana (4112115), Donica Mtn. (4112132), Egg Lake (4112133), Elk Grove (3812143), Enterprise (4012253), Hager Basin (4112077), Happy Camp Mtn. (4112141), Harvey Mtn. (4012161), Kelseyville (3812287), Knobcone Butte (4112151), Middletown (3812275), Murken Bench (4012174), Old Station (4012164), Palermo (3912145), Palo Cedro (4012252), Poison Lake (4012162), Richardson Springs NW (3912188), Spaulding Butte (4112152), Swain Mountain (4012141), Swains Hole (4012163), Timbered Crater (4112124), Tuscan Buttes Ne (4012241), Vina (3912281), Washington Mtn. (4112048), West Prospect Peak (4012154), Whittemore Ridge (4112066)	100	7	20	80	93	Seriously threatened by agriculture, residential development, grazing, trampling, vehicles, recreational activities, logging, fire, and non-native plants. Species management guidelines adopted by Lassen NF (USFS) and BLM. See American Journal of Botany 21:131 (1934) for original description and 69:1082-1095 (1982) for taxonomic 84 treatment.				
1B.1	G3	S3	None	1675	BUT, SHA, TEH	Balls Ferry (4012242), Bend (4012232), Black Butte Dam (3912273), Clough Gulch (4012251), Corning (3912282), Dales (4012231), Gerber (4012212), Henleyville (3912283), Honcut (3912135), Kirkwood (3912272), Oroville (3912155), Palo Cedro (4012252), Richardson Springs (3912177), Richardson Springs NW (3912188), Shingletown (4012148), Shippee (3912156), Tuscan Buttes Ne (4012241), Tuscan Springs (4012221), Vina (3912281), West of Gerber (4012213)	59	22	47	12	59	Threatened by habitat loss. Possibly threatened by grazing, trampling, and vehicles. See Madroño 32(2):87-90 (1985) for 25 original description.				
4.2	G4	S3S4	None	5695	BUT, INY, KRN, LAK, MAD, MNT, SBD, SDG, TUL	Biggs (3912146), Bighorn Basin (3411576), Cinco (3511831), Emigrant Canyon (3611742), Junipero Serra Peak (3612124), Kernville (3511874), Last Chance Mtn. (3711736), Mid Hills (3511524), Millerton Lake East (3711915), Morena Reservoir (3211665), Pinto Valley (3511523), Rovana (3711845), Trona West (3511774), Ubehebe Crater (3711714), White Dome (3511872), Wilbur Springs (3912214), Wildrose Peak (3611731)	0	0	0	0	0	Threatened by grazing, trampling, and vehicles. Potentially threatened by hydrological alterations. See Revue Bryologique 38(1):6-7 (1911) for original description, and Phytologia 91(3):499 (2009) for revised nomenclature.				
1B.1	G1	S1	CE	490	FRE, MAD, MER, STA, SUT, TUO, YUB	Cooperstown (3712065), Friant (3611986), Gilsizer Slough (3912116), Haystack Mtn. (3712043), Knights Ferry (3712076)*, La Grange (3712064), Merced Falls (3712053), Millerton Lake West (3711916), Olivehurst (3912115), Snelling (3712054), Sutter (3912126), Yuba City (3912125)*	27	1	10	17	23	Many occurrences are very small. Seriously threatened by 19 development, agriculture, overgrazing, and trampling.				

GRank	SRank	CESA	ElevationH	Counties	Quads	EOTotal	EOU	EOHistoric	EORecent	EOExtant	EOThreat	LiNotes	Threats	Taxonomy	Other	Synonyms		
					Altamont (3712166), Arbutuckle (3912211), Arena (3712036), Bonita Ranch (3612082), Byron Hot Springs (3712176), Cairns Corner (3611922), Calistoga (3812255), Chittenden (3612185), Cholame Valley (3512073), Clifton Court Forebay (3712175), Colusa (3912221), Crevison Peak (3712122), Crows Landing (3712141), Davis (3812156), Denverton (3812128), Dozier (3812137), Eldorado Bend (3812177), Elmira (3812138), Fairfield South (3812221), Firebaugh NE (3612083), Goshen (3611934), Gravelly Ford (3612072), Grays Bend (3812166), Guernsey (3611926), Hanford (3611936), Hatch (3712048), Helm (3612051)*, Jamesan (3612062), Kerman (3612061)*, La Costa Valley (3712157), Lake Isabella North (3511864), Lake Isabella South (3511854), Logandale (3912242), Lokern (3511945), Los Banos (3712017), Los Banos Valley (3612181), Lost Hills (3511956), Lost Hills NE (3511965), Lucerne Valley (3411648), Madison (3812168), Merritt (3812157)*, Milpitas (3712148), Monson (3611943), Mud Hills (3511711), Ortigalita Peak NW (3612088), Pennington (3912137), Plainsburg (3712023), Redman (3411778), Remnoy (3611935)*, Reward (3511936), Ripon (3712162), Riverdale (3611947), Rosamond Lake (3411871), Saxon (3812146)*, Stonyford (3912245), Stratford (3611927), Tassajara (3712177), Taylor Weir (3611914), Traver (3611944), Weed Patch (3511828)*, West Elk Hills (3511935), Westley (3712152), Wilbur Springs (3912214), Williams (3912222), Woodland (3812167)*	80	56	58	22	65	32	Threatened by hydrological alterations, urbanization, agricultural conversion, development, and habitat fragmentation, disturbance, alteration, and loss; resulting in extirpation of some occurrences. Potentially threatened by solar energy development. Possibly threatened by grazing and proximity to roads. Similar to P. parishii. See Circular, United States Department of Agriculture, Division of Agrostology 16:1 (1899) for original description.						
1B.2	G3	S2	None	3050	ALA, BUT, CCA, COL, FRE, GLE, KNG, KRN, LAK, LAX, MAD, MER, NAP, SBD, SCL, SCR	Atwater (3712035), Bend (4012232), Berry Creek (3912164), Biggs (3912146), Bruceville (3812134), Buffalo Creek (3812152), Carbondale (3812141), Carmichael (3812153), Citrus Heights (3812163), Clarksville (3812161), Clovis (3611976), Courtland (3812135), Crescent City (4112472), Cucamonga Peak (3411725), Dales (4012231), Delta Ranch (3712016), Elk Grove (3812143), Firebaugh (3612074), Florin (3812144), Folsom (3812162), Folsom SE (3812151), Fresno North (3611977), Friant (3611986), Galt (3812133), Gridley (3912136), Gustine (3712038), Ingomar (3712028), Inverness (3812217), Isleton (3812125), Ivanhoe (3611942), Jamesan (3612062), Liberty Island (3812136), Lockeford (3812122), Los Banos (3712017), Matilija (3411943)*, Mendota Dam (3612073), Merced (3712034), Monson (3611943), Nicolaus (3812185), Olivehurst (3912115), Orange Cove North (3611963), Orange Cove South (3611953), Owens Reservoir (3712032), Piedra (3611974), Project City (4012263), Reedley (3611954), Richardson Springs NW (3912188), Rio Linda (3812164), Rio Vista (3812126), Sacramento East (3812154), San Geronimo (3812216), San Luis Ranch (3712027), Sloughhouse (3812142), St. Helena (3812254), Stockton West (3712183), Thornton (3812124), Tranquillity (3612063), Turner Ranch (3712026), Wahtoke (3611964), Waterloo (3812112), Whiskeytown (4012265), Yosemite Lake (3712044), Yountville (3812243)	126	35	49	77	117	65	Extirpated from southern California, and mostly extirpated from the Central Valley. Several SAC Co. occurrences not relocated during fieldwork in 2005. Threatened by grazing, development, recreational activities, non-native plants, road widening, and channel alteration and maintenance. See Pittonia 2:158 (1890) for original description.					
					Big Bend (4112118), Boulder Peak (4112351), Burney (4012186), Burney Mtn. West (4012176), Caribou Lake (4112218), Carrville (4112216), Chalk Mtn. (4012187), Chimney Rock (4112356), Covington Mill (4012287), Damnation Peak (4012285), Dead Horse Summit (4112127), English Peak (4112342), Goose Gap (4012281), Greenview (4112258), Grider Valley (4112362), Gridley (3912136), Hatchet Mtn. Pass (4012177), Marble Mountain (4112352), Mt. Hilton (4012381), Papoose Creek (4012276), Pondosa (4112126), Roaring Creek (4012188), Rush Creek Lakes (4012278), Sawyers Bar (4112332), Schell Mtn. (4012275), Shoeinhorse Mtn. (4112211), Siligo Peak (4012288), Skunk Ridge (4112117), Tangle Blue Lake (4112226), Tanners Peak (4112331), Trinity Center (4012286), Trinity Dam (4012277), Ukonom Lake (4112353), Weaverville (4012268), Whisky Bill Peak (4112215), Ycatapom Peak (4112217), Youngs Peak (4112323)	158	24	20	138	158	123	Previously CRPR 1B.3; more common than originally known. Potentially threatened by logging and associated road usage. Possibly threatened by vehicles, recreational activities, foot traffic, grazing, trampling, alteration of fire regimes, hydrological alterations, and non-native plants. See Brittonia 31:416-421 (1979) for original description.						
4.2	G3G4	S3S4	None	6480	DNT, SHA, SIS, TRI, YUB	Biggs (3912146), Clovis (3611976)*, Cooperstown (3712065)*, Donica Mtn. (4112132), Escalon (3712078)*, Farmington (3712088)*, Hamlin Canyon (3912166), Haystack Mtn. (3712043), Kismet (3712011)*, Le Grand (3712022), Llano Seco (3912158), Logandale (3912242), Montpelier (3712056)*, Murken Bench (4012174), Nord (3912178), Owens Reservoir (3712032), Paulsell (3712066)*, Peters (3712181), Planada (3712033), Richardson Springs NW (3912188), Round Mountain (3611975)*, Sanger (3611965), Shippee (3912156), Vina (3912281), Waterford (3712067)*, Woodlake (3611941)*	50	5	29	21	31	42	Threatened by agriculture, urbanization, overgrazing, and habitat fragmentation and loss. See Botanical Gazette 16:146 (1891) for original description, American Journal of Botany 69:1082-1095 (1982) for taxonomic treatment, and Conservation Genetics, pp. 1-14 (2011) for information on population genetics.					
1B.1	G1	S1	CR	3510	BUT, FRE, GLE, MAD, MER, MOD, SHA, SIQ, STA, TEH, TUL	Camp Far West (3912113), Cottonwood (4012243), Hamilton City (3912261), Llano Seco (3912158), Ord Ferry (3912168), Palermo (3912145), Paulsell (3712066), Pennington (3912137)	6	5	3	3	6	2	Potentially threatened by competition. See Madroaño 36(4):283-286 (1989) for first CA occurrence.			Orcuttia greenei		
2B.3	G5	S2	None	330	BUT, GLE, SHA, STA, SUT, YUB													

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Butte County, California



Local office

Sacramento Fish And Wildlife Office

☎ (916) 414-6600

📠 (916) 414-6713

Federal Building

2800 Cottage Way, Room W-2605

Sacramento, CA 95825-1846

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species¹ and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries²).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. [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.

The following species are potentially affected by activities in this location:

Reptiles

NAME	STATUS
Giant Garter Snake <i>Thamnophis gigas</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog <i>Rana draytonii</i> Wherever found There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/2891	Threatened

Fishes

NAME	STATUS
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Delta Smelt *Hypomesus transpacificus*

Threatened

Wherever found

There is **final** critical habitat for this species. The location of the critical habitat is not available.

<https://ecos.fws.gov/ecp/species/321>

Insects

NAME

STATUS

Monarch Butterfly *Danaus plexippus*

Candidate

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/9743>

Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus*

Threatened

Wherever found

There is **final** critical habitat for this species. The location of the critical habitat is not available.

<https://ecos.fws.gov/ecp/species/7850>

Crustaceans

NAME

STATUS

Vernal Pool Fairy Shrimp *Branchinecta lynchi*

Threatened

Wherever found

There is **final** critical habitat for this species. The location of the critical habitat is not available.

<https://ecos.fws.gov/ecp/species/498>

Vernal Pool Tadpole Shrimp *Lepidurus packardii*

Endangered

Wherever found

There is **final** critical habitat for this species. The location of the critical habitat is not available.

<https://ecos.fws.gov/ecp/species/2246>

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act¹ and the Bald and Golden Eagle Protection Act².

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>

- Nationwide conservation measures for birds

<http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME

BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Bald Eagle *Haliaeetus leucocephalus*

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1626>

Breeds Jan 1 to Aug 31

Common Yellowthroat *Geothlypis trichas sinuosa*

Breeds May 20 to Jul 31

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

<https://ecos.fws.gov/ecp/species/2084>

Nuttall's Woodpecker *Picoides nuttallii*

Breeds Apr 1 to Jul 20

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

<https://ecos.fws.gov/ecp/species/9410>

Oak Titmouse *Baeolophus inornatus*

Breeds Mar 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9656>

Yellow-billed Magpie *Pica nuttalli*

Breeds Apr 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9726>

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is $0.25/0.25 = 1$; at week 20 it is $0.05/0.25 = 0.2$.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (—)

A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the [NWI map](#) to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

ATTACHMENT B

Representative Site Photographs

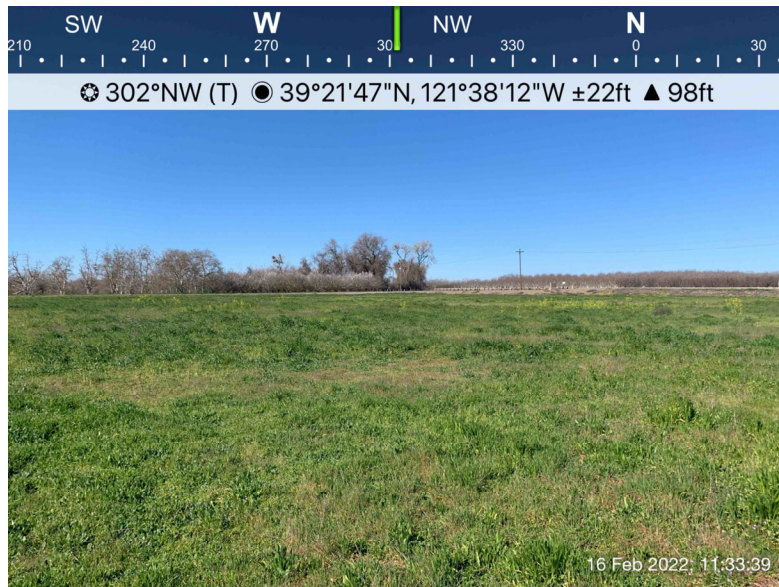


Photo 1. Annual Ruderal Grassland north of WWTP, 2-1-2022



Photo 2. Annual Ruderal Grassland north of WWTP, 2-16-2022



Photo 3. East Bank of Feather, 2-16-2022



Photo 4. Gridley Boat Launch Entrance, 2-16-2022



Photo 5. Levee Road on Feather River west levee, 2-16-2022



Photo 6. Levee road on Feather River west levee.

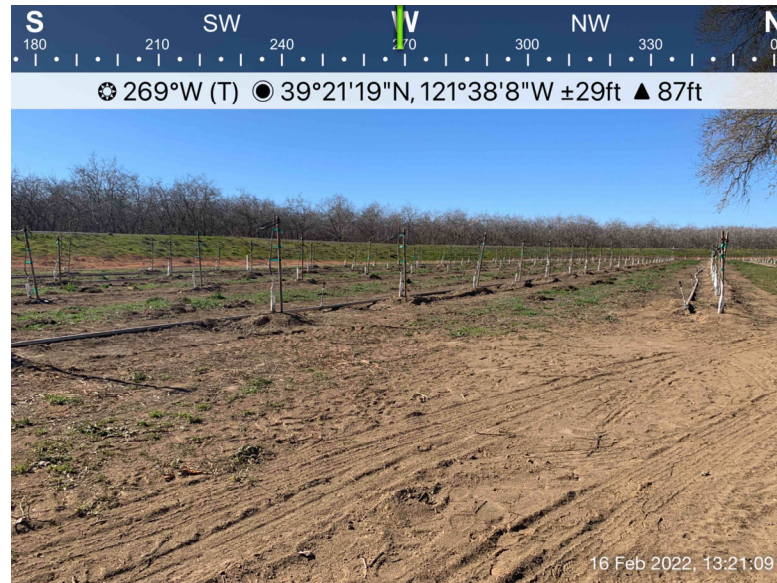


Photo 7. Orchard east of Feather River west levee, 2-16-2022

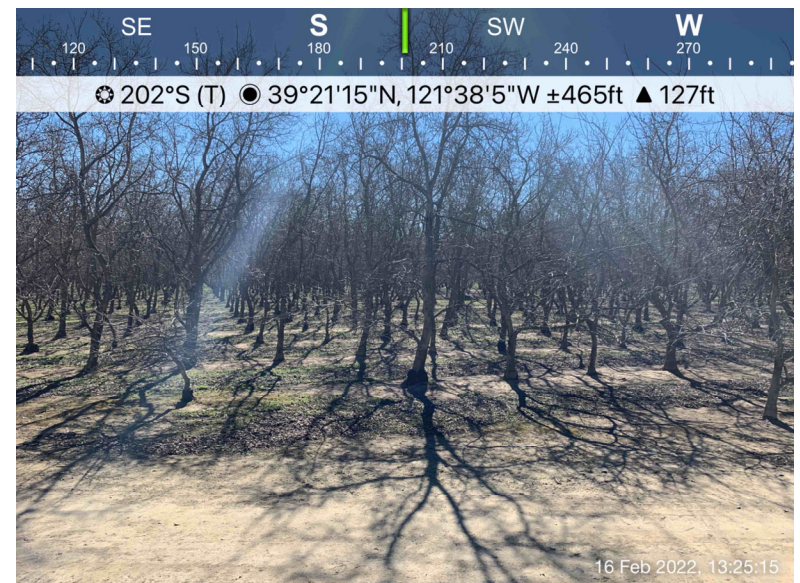


Photo 8. Orchard - Orchard east of Feather River west levee, 2-16-2022

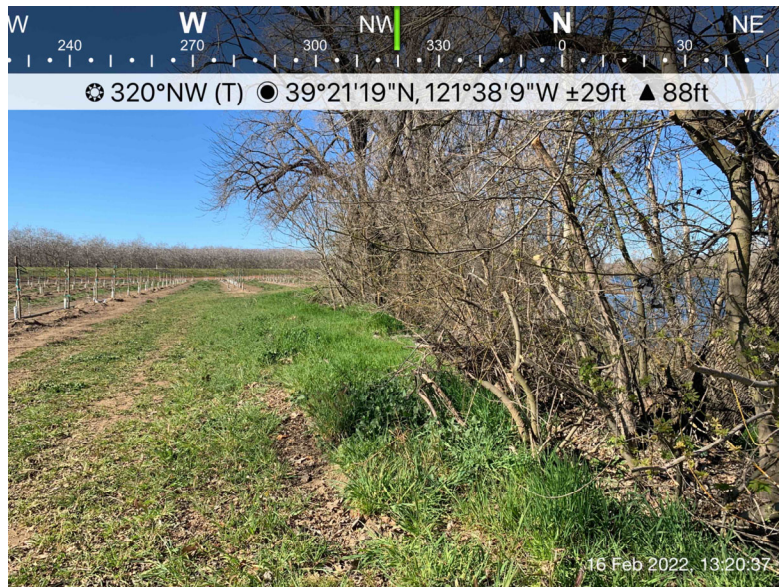


Photo 9. Bank of Feather River and location of Shaft Boring on west side, 2-16-2022



Photo 10. Feather River east bank and boring location, 2-16-2022



Photo 11. Feather River east bank and boring location, 2-16-2022



Photo 12. Feather River west bank and riparian vegetation, 2-16-2022

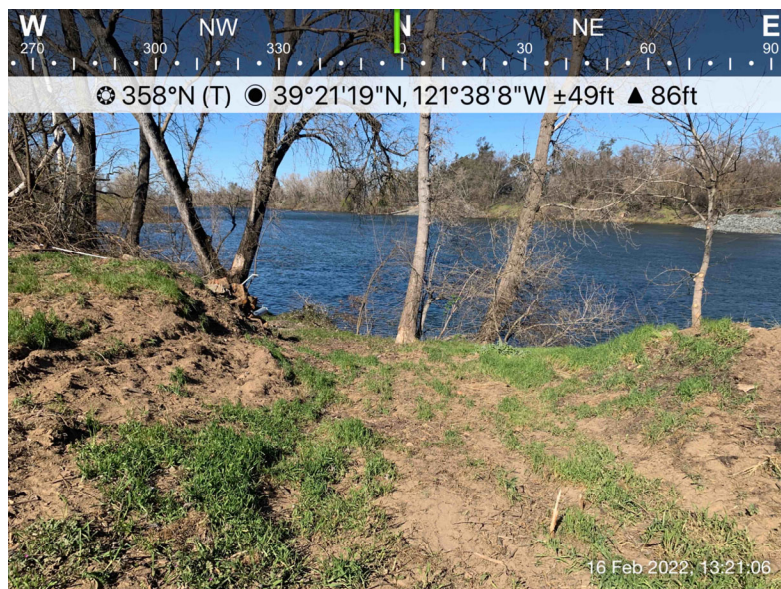


Photo 13. Feather River west bank and boring location, 2-16-2022

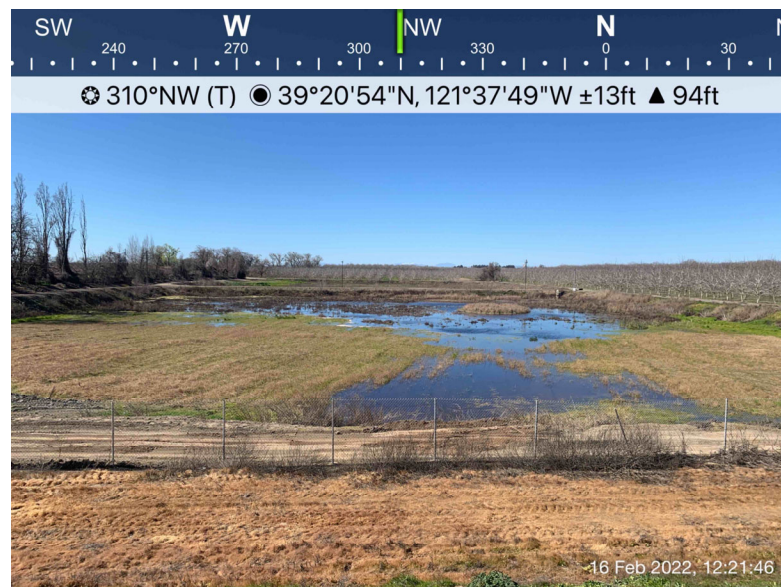


Photo 15. WWT Overflow Ponds, 2-16-2022



Photo 14. WWT Overflow Ponds, 2-16-2022



ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Attachment E. Representative Site Photographs

2020-117 Gridley Feather River Sewer Crossing Project

ATTACHMENT C

Wildlife Observed Onsite

Wildlife Observed (February 16, 2022 and May 25, 2022)

Common Name	Scientific Name
California Quail	<i>Callipepla californica</i>
Killdeer	<i>Charadrius vociferus</i>
Great blue Heron	<i>Ardea herodias</i>
Great Egret	<i>Ardea alba</i>
Green Heron	<i>Butorides virescens</i>
Turkey Vulture	<i>Cathartes aura</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Red-shouldered Hawk	<i>Buteo lineatus</i>
Red-tailed Hawk	<i>Buteo jamaicensis</i>
Nuttall's Woodpecker	<i>Dryobates nuttallii</i>
Northern Flicker	<i>Colaptes auratus</i>
Ash-throated Flycatcher	<i>Myiarchus cinerascens</i>
Western Kingbird	<i>Tyrannus verticalis</i>
Western Wood-Pee wee	<i>Contopus sordidulus</i>
California Scrub-Jay	<i>Aphelocoma californica</i>
Oak Titmouse	<i>Baeolophus inornatus</i>
Tree Swallow	<i>Tachycineta bicolor</i>
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>
House Wren	<i>Troglodytes aedon</i>
European Starling	<i>Sturnus vulgaris</i>
House Finch	<i>Haemorhous mexicanus</i>
Lesser Goldfinch	<i>Spinus psaltria</i>
Spotted Towhee	<i>Pipilo maculatus</i>
Bullock's Oriole	<i>Icterus bullockii</i>
Brown-headed Cowbird	<i>Molothrus ater</i>
Norther American River Otter	<i>Lontra canadensis</i>
Ground Squirrel	<i>Otospermophilus beecheyi</i>
Western toad	<i>Anaxyrus boreas</i>
Pacific Gopher Snake	<i>Pituophis catenifer catenifer</i>
Western Yellow-Bellied Racer	<i>Coluber constrictor mormon</i>
Western Fence Lizard	<i>Sceloporus occidentalis</i>

Attachment 4.13

**Noise Assessment Memorandum,
ECORP Consulting, Inc.**



April 2021

Dave Harden
Bennett Engineering Services
1082 Sunrise Avenue, Suite 100
Roseville, CA 95661

Subject: Gridley Feather River Sewer Crossing Project – Noise Assessment Memorandum

PROJECT DESCRIPTION

The City of Gridley (City) constructed its current wastewater collection system, wastewater treatment plant and disposal system in 1967. The wastewater generated from the City is conveyed to the wastewater treatment plant through a 20" force main sitting on the bottom of the Feather River. The Project includes the replacement of this 20" force main. The new force main pipe would be installed under the Feather River just north of the existing pipe in the river utilizing microtunneling technologies. Microtunneling will require two deep, watertight shafts to tunnel the casing underneath the river. Specifically, shafts would be constructed on each side of the river to allow a minimum 48-inch diameter casing to be installed. The jacking shaft would be approximately 64 feet deep and located outside the levee prism on the south/west side of the river on the waterside of the levee. The reception shaft would be 55 feet deep, located on the north/east side of the river in the vegetated area south of the wastewater treatment plant. Once the casing is installed, two sanitary sewer force main pipes would be pulled through the casing and reconnected to the existing sanitary sewer force main system on both sides of the river. It is estimated that the microtunneling will take approximately 180 working days.

The work area to construct the shafts would be a minimum of 10,000 square feet. The levee road is proposed to be used for access to the jacking shaft, and an access road through the boat launch parking area would be used for access to the reception shaft. Minor improvements are anticipated to be made to improve accessibility for large trucks: such as widening, additional gravel and minor grading. Approximately 2,150 cubic yards of soil material is estimated to need to be exported from the shaft excavation. This material is proposed to be taken to the City's emergency overflow ponds at the wastewater treatment plant just north of the Project Site.

NOISE ANALYSIS

Fundamentals of Sound and Environmental Noise

Addition of Decibels

The decibel (dB) scale is logarithmic, not linear; therefore, sound levels cannot be added or subtracted through ordinary arithmetic. Two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic decibel is A-weighted (dBA), an increase of 10 dBA is generally perceived as a doubling in loudness. For example, a 70-dBA sound is half as loud as an 80-dBA sound and twice as loud as a 60-dBA sound. When two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions (Federal Transit Administration [FTA] 2018). For example, a 65-dB source of sound, such as a truck, when joined by another 65-dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB). Under the dB scale, three sources of equal loudness together would produce an increase of 5 dB.

Sound Propagation and Attenuation

Noise can be generated by a number of sources, including mobile sources such as automobiles, trucks and airplanes, and stationary sources such as construction sites, machinery, and industrial operations. Sound spreads (propagates) uniformly outward in a spherical pattern, and the sound level decreases (attenuates) at a rate of approximately 6 dB (dBA) for each doubling of distance from a stationary or point source (FHWA 2017). Sound from a line source, such as a highway, propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of approximately 3 dBA for each doubling of distance from a line source, such as a roadway, depending on ground surface characteristics (Federal Highway Administration [FHWA] 2017). No excess attenuation is assumed for hard surfaces like a parking lot or a body of water. Soft surfaces, such as soft dirt or grass, can absorb sound, so an excess ground-attenuation value of 1.5 dBA per doubling of distance is normally assumed.

Noise levels may also be reduced by intervening structures; generally, a single row of detached buildings between the receptor and the noise source reduces the noise level by about 5 dBA (FHWA 2006), while a solid wall or berm generally reduces noise levels by 10 to 20 dBA (FHWA 2011). However, noise barriers or enclosures specifically designed to reduce site-specific construction noise can provide a sound reduction of 35 dBA or greater (Western Electro-Acoustic Laboratory, Inc. 2000). To achieve the most potent noise-reducing effect, a noise enclosure/barrier must physically fit in the available space, must completely break the "line of sight" between the noise source and the receptors, must be free of degrading holes or gaps, and must not be flanked by nearby reflective surfaces. Noise barriers must be sizable enough to cover the entire noise source and extend length-wise and vertically as far as feasibly possible to be most effective. The limiting factor for a noise barrier is not the component of noise transmitted through the material, but rather the amount of noise flanking around and over the barrier. In general, barriers contribute to decreasing noise levels only when the structure breaks the line of sight between the source and the receiver.

The manner in which older structures in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows (California Department of

Transportation [Caltrans] 2002). The exterior-to-interior reduction of newer structures is generally 30 dBA or more (Harris Miller, Miller & Hanson Inc. [HMMH] 2006).

Noise Descriptors

The decibel scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Several rating scales have been developed to analyze the adverse effect of community noise on people. Because environmental noise fluctuates over time, these scales consider that the effect of noise on people is largely dependent on the total acoustical energy content of the noise, as well as the time of day when the noise occurs. The L_{eq} is a measure of ambient noise, while the L_{dn} and CNEL (Community Noise Equivalent Level) are measures of community noise. Each is applicable to this analysis and defined as follows:

- **Equivalent Noise Level (L_{eq})** is the average acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.
- **Day-Night Average (L_{dn})** is a 24-hour average L_{eq} with a 10-dBA “weighting” added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.4 dBA L_{dn} .
- **Community Noise Equivalent Level (CNEL)** is a 24-hour average L_{eq} with a 5-dBA weighting during the hours of 7:00 p.m. to 10:00 p.m. and a 10-dBA weighting added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively.

Human Response to Noise

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities, including sleep, speech, recreation, and tasks that demand concentration or coordination. Hearing loss can occur at the highest noise intensity levels.

Noise environments and consequences of human activities are usually well represented by median noise levels during the day or night or over a 24-hour period. Environmental noise levels are generally considered low when the CNEL is below 60 dBA, moderate in the 60- to 70-dBA range, and high above 70 dBA. Examples of low daytime levels are isolated, natural settings with noise levels as low as 20 dBA and quiet, suburban, residential streets with noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of moderate-level noise environments are urban residential or semi-commercial areas (typically 55 to 60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most will accept the higher levels associated with noisier urban residential or residential-commercial areas (60 to 75 dBA), or dense urban or industrial areas (65 to 80

dBA). Regarding increases in dBA noise levels, the following relationships should be noted in understanding this analysis:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived by humans.
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference.
- A change in level of at least 5 dBA is required before any noticeable change in community response would be expected.
- A 10-dBA change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

Vibration Fundamentals

Ground vibration can be measured several ways to quantify the amplitude of vibration produced. This can be through peak particle velocity or root mean square velocity. These velocity measurements measure maximum particle at one point or the average of the squared amplitude of the signal, respectively. Vibration impacts on people can be described as the level of annoyance and can vary depending on an individual's sensitivity. Generally, low-level vibrations may cause window rattling but do not pose any threats to the integrity of buildings or structures.

Existing Noise Environment

The existing ambient noise levels experienced in the Project Area are typical of a quiet, rural residential area. Rural residential noise levels generally range around 40 - 50 dBA CNEL.

Noise-Sensitive Land Uses

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Additional land uses such as parks, historic sites, cemeteries, and recreation areas are considered sensitive to increases in exterior noise levels. Schools, churches, hotels, libraries, and other places where low interior noise levels are essential are also considered noise-sensitive land uses. The nearest sensitive receptors to the Project Site are residences located on Booth Drive approximately 3,900 feet (0.74 mile) distant.

Regulatory Setting

Butte County General Plan Health and Safety Element

The County of Butte Health and Safety Element of the General Plan establishes goals and policies addressing major noise sources within the community. The Project is predominately construction in nature. Once installation of the new force main is complete it would not change the permanent use of the Project Site or result in regular visits. The following provides the applicable goals, policies and criteria for evaluating the feasibility and potential noise impact associated with the Proposed Project:

- **Policy HS-P1.7:** Applicants for discretionary permits shall be required to limit noise-generating construction activities located within 1,000 feet of residential uses to daytime hours between 7:00 a.m. and 6:00 p.m. on weekdays and non-holidays.
- **Policy HS-P1.9:** The following standard construction noise control measures shall be required at construction sites in order to minimize construction noise impacts:
 - a) Equip all internal combustion engine driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.
 - b) Locate stationary noise-generating equipment as far as possible from sensitive receptors when sensitive receptors adjoin or are near a construction project area.
 - c) Utilize quiet air compressors and other stationary noise-generating equipment where appropriate technology exists and is feasible.

County of Butte Municipal Code

The County of Butte Municipal Code, Chapter 41A, *Noise Control*, specifies additional noise regulations pertaining to construction noise. Section 41A-9, *Exemptions*, of this chapter exempts construction noise from numeric noise thresholds, provided construction activities do not take place between the following hours:

- Sunset to sunrise on weekdays and non-holidays;
- Friday commencing at 6:00 p.m. through and including 8:00 a.m. on Saturday, as well as not before 8:00 a.m. on holidays;
- Saturday commencing at 6:00 p.m. through and including 10:00 a.m. on Sunday; and,
- Sunday after the hour of 6:00 p.m.

Noise Impacts

Methodology

This analysis of the existing and future noise environments is based on noise prediction modeling and empirical observations. In order to estimate the worst-case construction noise levels that may occur at the nearest noise-sensitive receptors in the Project vicinity, predicted construction noise levels were calculated utilizing the FHWA's Roadway Construction Model (2006). Operational noise levels are addressed qualitatively with reference measurements taken by ECORP Consulting, Inc. Groundborne vibration levels associated with construction-related activities for the Project were evaluated utilizing typical groundborne vibration levels associated with construction equipment, obtained from the Caltrans guidelines set forth above. Potential groundborne vibration impacts related to structural damage and human annoyance were evaluated, taking into account the distance from construction activities to nearby land uses.

Impact Discussion

The impact analysis provided below is based on the following California Environmental Quality Act (CEQA) Guidelines Appendix G thresholds of significance. The significance criteria promulgated by the City's Development Code and General Plan may be relied upon to make impact determinations.

Would the Project result in 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?

As previously described, noise-sensitive land uses are locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Residences, schools, hospitals, guest lodging, libraries, and some passive recreation areas would each be considered noise sensitive and may warrant unique measures for protection from intruding noise. The nearest sensitive receptors to the Project Site are residences located on Booth Drive approximately 3,900 feet (0.74 mile) distant.

Onsite Construction Noise

Construction noise associated with the proposed Project would be temporary and would vary depending on the nature of the activities being performed. Noise generated would primarily be associated with the operation of off-road equipment for onsite construction activities as well as construction vehicle traffic on area roadways. Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g., site preparation, grading and building construction, paving and architectural coating). Noise generated by construction equipment, including excavators, material handlers, and portable generators, can reach high levels. Typical operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Other primary sources of acoustical disturbance would be random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts). During construction, exterior noise levels could negatively affect sensitive land uses in the vicinity of the construction site.

The County does not promulgate numeric thresholds pertaining to the noise associated with construction but instead limits the time that construction can take place. Specifically, Section 41A-9, *Exemptions*, of this chapter exempts construction noise from numeric noise thresholds, provided construction activities do not take place between the following hours:

- Sunset to sunrise on weekdays and non-holidays;
- Friday commencing at 6:00 p.m. through and including 8:00 a.m. on Saturday, as well as not before 8:00 a.m. on holidays;
- Saturday commencing at 6:00 p.m. through and including 10:00 a.m. on Sunday; and,
- Sunday after the hour of 6:00 p.m.

It is typical to regulate construction noise in this manner since construction noise is temporary, short term, intermittent in nature, and would cease on completion of the Project.

To estimate the worst-case onsite construction noise levels that may occur at the nearest noise-sensitive receptor in the Project vicinity in order to evaluate the potential health-related effects (physical damage to the ear) from construction noise, the construction equipment noise levels were calculated using the Roadway Noise Construction Model and compared against the construction-related noise level threshold established in the *Criteria for a Recommended Standard: Occupational Noise Exposure* prepared in 1998 by National Institute for Occupational Safety and Health (NIOSH). A division of the US Department of Health and Human Services, NIOSH identifies a noise level threshold based on the duration of exposure to the source. The NIOSH construction-related noise level threshold starts at 85 dBA for more than 8 hours per day; for every 3-dBA increase, the exposure time is cut in half. This reduction results in noise level thresholds of 88 dBA for more than 4 hours per day, 92 dBA for more than 1 hour per day, 96 dBA for more than 30 minutes per day, and up to 100 dBA for more than 15 minutes per day. For the purposes of this analysis, the lowest, more conservative threshold of 85 dBA L_{eq} is used as an acceptable threshold for construction noise at the nearby sensitive receptors.

The anticipated short-term construction noise levels generated for the necessary equipment were calculated using the Roadway Noise Construction Model. The nearest sensitive receptors to the Project Site are residences located on Booth Drive approximately 3,900 feet (0.74 mile) distant. The anticipated short-term construction noise levels experienced at these receptors as a result of Project construction/implementation noise is presented in Table 1.

Table 1. Construction Average (dBA) Noise Levels at Nearest Receptor- Project Site			
Equipment	Estimated Exterior Construction Noise Level at Nearest Residences	Construction Noise Standards (dBA L_{eq})	Exceeds Standards?
Microtunneling			
Boring Jack (2)	42.1 dBA (each)	85	No
Generator (1)	39.8 dBA	85	No
Rough Terrain Forklift (1)	41.6 dBA	85	No
Other Equipment (2)	44.1 dBA (each)	85	No
Graders (1)	43.2 dBA	85	No
Tractors/Loaders/Backhoes (1)	35.7 dBA	85	No
Combined Site Preparation Equipment	51.2 dBA	85	No

Source: Construction noise levels were calculated by ECRP Consulting using the FHWA Roadway Noise Construction Model (FHWA 2006). Refer to Attachment A for Model Data Outputs.

L_{eq} = The equivalent energy noise level, is the average acoustic energy content of noise for a stated period of time.

As shown in Table 1, during construction activities no individual piece of construction equipment would exceed the NIOSHA threshold of 85 dBA L_{eq} at the nearest residences to the Project Site.

Operational Noise

The Project proposes the replacement of a 20" force main currently sitting on the bottom of the Feather River with a new force main installed underneath the Feather River. The Proposed Project will not include the provision of new permanent stationary or mobile sources. Thus, it would not be a source of operational mobile or stationary noise sources.

Would the Project Result the Generation of Excessive Groundborne Vibration or Groundborne Noise Levels?

Construction Vibration Impacts

Excessive groundborne vibration impacts result from continuously occurring vibration levels. Increases in groundborne vibration levels attributable to the proposed Project would be primarily associated with short-term construction-related activities. Construction on the Project Site would have the potential to result in varying degrees of temporary groundborne vibration, depending on the specific construction equipment used and the operations involved. Ground vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance.

Construction-related ground vibration is normally associated with impact equipment such as pile drivers, jackhammers, and the operation of some heavy-duty construction equipment, such as dozers and trucks. It is not anticipated that pile drivers would be necessary during Project implementation. Vibration decreases rapidly with distance, and it is acknowledged that construction activities would occur throughout the Project Site and would not be concentrated at the point closest to sensitive receptors. Groundborne vibration levels associated with construction equipment are summarized in Table 2.

Table 2. Typical Construction Equipment Vibration Levels	
Equipment Type	Peak Particle Velocity at 25 Feet (inches per second)
Vibratory Roller	0.21
Hoe Ram (Rock Breaker)	0.089
Large Bulldozer	0.089
Caisson Drilling	0.089
Loaded Trucks	0.076
Jackhammer	0.035
Small Bulldozer/Tractor	0.003

Source: FTA 2018

The County of Butte does not regulate vibrations associated with construction. However, a discussion of construction vibration is included for full disclosure purposes. For comparison purposes, the Caltrans (2020) recommended standard of 0.2 inch per second peak particle velocity (PPV) with respect to the

prevention of structural damage for older residential buildings is used as a threshold. This is also the level at which vibrations may begin to annoy people in buildings. The nearest structures of concern to the Project Site include the City wastewater treatment plant sewage ponds approximately 1,600 feet to the north.

Based on the representative vibration levels presented for various construction equipment types in Table 2 and the construction vibration assessment methodology published by the FTA (2018), it is possible to estimate the potential Project construction vibration levels. The FTA provides the following equation:

$$[PPV_{\text{equip}} = PPV_{\text{ref}} \times (25/D)^{1.5}]$$

Table 3 presents the expected Project related vibration levels at a distance of 1,600 feet.

Table 3. Project Construction Vibration Levels at 1,600 Feet									
Receiver PPV Levels (in/sec)¹							Peak Vibration	Threshold	Exceed Threshold?
Vibratory Roller	Large Bulldozer	Drilling	Loaded Trucks	Rock Breaker	Jack- hammer	Small Bulldozer			
0.0004	0.0001	0.0001	0.0001	0.0001	0.0000	0.000	0.004	0.02	No

¹Based on the Vibration Source Levels of Construction Equipment included on Table 2 (FTA 2018).

As shown, groundborne vibrations attenuate rapidly from the source due to geometric spreading and material damping. Geometric spreading occurs because the energy is radiated from the source and spreads over an increasingly large distance while material damping is a property of the friction loss which occurs during the passage of a vibration wave. Vibration as a result of construction activities would not exceed 0.2 PPV at the nearest structure. Thus, Project construction would not exceed the recommended threshold.

Operational Vibration Impacts

Project operations would not include the use of any stationary equipment that would result in excessive groundborne vibration levels. Therefore, the Project would result in no groundborne vibration impacts during operations.

Would the Project Expose People Residing or Working in the Project Area to Excessive Airport Noise Levels?

No airport is located in the Gridley vicinity. The Project Site is located outside of any airport land use plan. Furthermore, the Project Site is located beyond two miles from any airport. The Proposed Project will not expose people residing or working in the Project Area to excess airport noise levels.

REFERENCES

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Federal Highway Administration Highway Roadway Construction Noise Model – Project
Construction Noise

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 4/1/2022

Case Description: Feather River Sewer Crossing

Description **Land Use**
 Affected Land Use Residential

Description	Impact Device	Usage(%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Boring Jack Power Unit	No	50		83	3900	0
Boring Jack Power Unit	No	50		83	3900	0
Generator	No	50		80.6	3900	0
Gradall	No	40		83.4	3900	0
All Other Equipment > 5 HP	No	50	85		3900	0
All Other Equipment > 5 HP	No	50	85		3900	0
Grader	No	40	85		3900	0
Backhoe	No	40		77.6	3900	0

Results

Calculated (dBA)

Equipment	*Lmax	Leq
Boring Jack Power Unit	45.2	42.1
Boring Jack Power Unit	45.2	42.1
Generator	42.8	39.8
Gradall	45.6	41.6
All Other Equipment > 5 HP	47.2	44.1
All Other Equipment > 5 HP	47.2	44.1
Grader	47.2	43.2
Backhoe	39.7	35.7
Total	47.2	51.2

*Calculated Lmax is the Loudest value.