ORLAND-ARTOIS WATER DISTRICT ANNEXATION, SPHERE OF INFLUENCE UPDATE, AND INFRASTRUCTURE PROJECT

DRAFT INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

OCTOBER 2023

PREPARED FOR:

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Orland, CA 95963

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ACRONYMS AND ABBREVIATIONS

AB ..... Assembly Bill
AF ..... Acre-feet
APE ..... Area of Potential Effect
BMP ..... Best Management Practices
BUOW ..... Burrowing Owl
CalEEMod ..... California Emissions Estimator Modeling (software)
CARB ..... California Air Resources Board
CDFW ..... California Fish and Wildlife
CESA ..... California Endangered Species Act
CGP ..... Construction General Permit
CH_4 ..... Methane
CNDDB ..... California Natural Diversity Database
CNPS ..... California Native Plant Society
CO ..... Carbone Monoxide
CO_2 ..... Carbon dioxide
County ..... Glenn County
CWA ..... Clean Water Act
CVP ..... Central Valley Project
dBA ..... A-weighted decibels
District ..... Orland-Artois Water District
DOC ..... Department of Conservation
DTSC ..... Department of Toxic Substances Control
EIR ..... Environmental Impact Report
ESA ..... Endangered Species Act
˚F ..... Degrees Farenheit
FMMP ..... Farmland Mapping and Monitoring Program
GCAPCD ..... Glenn County Air Pollution Control District
GHG ..... Greenhouse Gas
GIS ..... Geographic Information System
GSA ..... Groundwater Sustainability Agency
H_2S ..... Hydrogen Sulfide

HUC .....Hydrologic Unit Code
I-5 ..... Interstate 5
IPaC ..... U.S. Fish and Wildlife Service's Information for Planning and Consultation System
IS ..... Initial Study
IS/MND .....Initial Study/Mitigated Negative Declaration
km ..... kilometers
LAFCO ..... Local Agency Formation Commission
MBTA ..... Migratory Bird Act
MMRP..... Mitigation Monitoring and Reporting Program
MND ..... Mitigated Negative Declaration
MTCO2e.....Metric Tons of CO2e
NAAQS ..... National Ambient Air Quality Standards
NAHC ..... Native American Heritage Commission
ND ..... Negative Declaration
NEIC ..... Northeastern Information Center
NEPA.....National Environmental Policy Act
NAGPRA..... Native American Graves Protection and Repatriation Act
NOAA.....National Oceanic and Atmospheric Administration
NO_2 .....Nitrogen Dioxide
NOx ..... Nitrogen Oxides
NPDES.....National Pollution Discharge Elimination System
NRHP ..... National Register of Historic Places
NSVAB.....Northern Sacramento Valley Air Basin
OAWD.....Orland-Artois Water District
O&M.....Operations and Maintenace
O_3 .....Ozone
Pb .....Lead
PG&E ..... Pacific Gas & Electric
PM_{10} ..... particulate matter 10 microns in size
$PM_{2.5}$ ..... particulate matter 2.5 microns in size
ppb .....parts per billion
ppm .....parts per million
PPV ..... Peak Particle Velocity

Project .... Orland-Artois Water District Annexation, Sphere of Influence Update, and Infrastructure Project
Reclamation ..... United States Bureau of Reclamation
ROG ..... Reactive Organic Gases
RWQCB ..... Regional Water Quality Control Board
SGMA ..... Sustainable Groundwater Management Act
SMAQMD ..... Sacramento Metropolitan Air Quality Management District
SO_2 ..... Sulfur Dioxide
SO_4 ..... Sulfates
SOI ..... Sphere of Influence
SPCC ..... Spill Prevention, Control, and Countermeasure Plan
SR ..... State Route
SRA ..... State Responsibility Area
SWANCC ..... Solid Waste Agency of Northern Cook County
SWPPP ..... Storm Water Pollution Prevention Plan
SWRCB ..... State Water Resources Control Board
TCC ..... Tehama-Colusa Canal
UFP ..... Ultrafine Particles
USACE ..... United States Army Corps of Engineers
USC ..... United States Code
USEPA ..... United States Environmental Protection Agency
USFWS ..... United States Fish and Wildlife Service
USGS ..... United States Geological Survey
µg/m3 ..... micrograms per cubic meter
VCM ..... Vinyl Chloride
VOC ..... Volatile Organic Compounds
WDR ..... Waste Discharge Requirements

CHAPTER 1 INTRODUCTION

Provost & Pritchard Consulting Group (Provost & Pritchard) has prepared this Initial Study/Mitigated Negative Declaration (IS/MND) on behalf of the Orland-Artois Water District (OAWD *or* District) to address the environmental effects of the Orland-Artois Water District Annexation, Sphere of Influence Update, and Infrastructure Project (Project). This document has been prepared in accordance with the California Environmental Quality Act (CEQA), Public Resources Code Section 21000 et seq. The District is the CEQA lead agency for this Project.

The site and the Project are described in detail in Chapter 2 Project Description.

1.1 REGULATORY INFORMATION

An Initial Study (IS) is a document prepared by a lead agency to determine whether a project may have a significant effect on the environment. In accordance with California Code of Regulations Title 14 (Chapter 3, Section 15000, *et seq.*) – also known as the CEQA Guidelines – Section 15064 (a)(1) states that an environmental impact report (EIR) must be prepared if there is substantial evidence in light of the whole record that the Project under review may have a significant effect on the environment and should be further analyzed to determine mitigation measures or project alternatives that might avoid or reduce project impacts to less than significant levels. A negative declaration (ND) may be prepared instead if the lead agency finds that there is no substantial evidence in light of the whole record that the project may have a significant effect on the environment. An ND is a written statement describing the reasons why a proposed Project, not otherwise exempt from CEQA, would not have a significant effect on the environment and, therefore, why it would not require the preparation of an EIR (CEQA Guidelines Section 15371). According to CEQA Guidelines Section 15070, a ND or *mitigated* ND shall be prepared for a project subject to CEQA when either:

a. The IS shows there is no substantial evidence, in light of the whole record before the agency, that the proposed Project may have a significant effect on the environment, or
b. The IS identified potentially significant effects, but:
    1. Revisions in the project plans or proposals made by or agreed to by the applicant before the proposed MND and IS is released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur is prepared, and
    2. There is no substantial evidence, in light of the whole record before the agency, that the proposed Project as *revised* may have a significant effect on the environment.

1.2 DOCUMENT FORMAT

This IS/MND contains six chapters. Chapter 1 Introduction provides an overview of the Project and the CEQA process. Chapter 2 Project Description provides a detailed description of proposed Project components and objectives. Chapter 3 Determination provides the Lead Agency's determination based upon this initial evaluation. Chapter 4 Environmental Impact Analysis presents the CEQA checklist and environmental analysis for all impact areas, mandatory findings of significance, and feasible mitigation measures. If the Project does not have the potential to significantly impact a given issue area, the relevant section provides a brief discussion of the reasons why no impacts are expected. If the Project could have a potentially significant impact on a resource, the issue area discussion provides a description of potential impacts, and appropriate mitigation measures and/or permit requirements that would reduce those

impacts to a less than significant level. Chapter 5 Mitigation, Monitoring, and Reporting Program (MMRP) provides the proposed mitigation measures, implementation timelines, and the entity/agency responsible for ensuring implementation. Chapter 6 References details the documents and reports this document relies upon to provide its analysis.

The CalEEMod Output Files, Biological Evaluation, and Cultural Resources Inventory Survey are provided as technical Appendix A, Appendix B, and Appendix C, respectively, at the end of this document.

CHAPTER 2 PROJECT DESCRIPTION

2.1 PROJECT BACKGROUND

2.1.1 Project Title

Orland-Artois Water District Annexation, Sphere of Influence Update, and Infrastructure Project

2.1.2 Lead Agency Name and Address

Orland-Artois Water District
6505 County Road 27
Orland, CA 95963

2.1.3 Contact Person and Phone Number

Lead Agency Contact

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CEQA Consultant

Provost & Pritchard Consulting Group
Dena Giacomini, Environmental Project Manager
(661) 616-5900 Ext. 710

2.1.4 Project Location

The Project is located in Glenn County, California, approximately 78 miles northwest of Sacramento and 55 miles south of Redding (see Figure 2-1 and Figure 2-2).

2.1.5 General Plan Designation and Zoning

Due to the Project's large scope, Project lands contain various general plan land use and zoning designations. See Figure 2-3 for the Project's zoning designations.

Note: Due to the Glenn County General Plan update that was completed in July 2023, updated GIS shapefiles representing the updates and changes in land use designation across the County are currently not available. However, updated data is actively being pursued and should be available upon request during the 30-day review period by contacting the person(s) identified in the Notice of Intent. In addition, once available, the updated General Plan Land Use designation map for the Project area will be uploaded to the State Clearinghouse in the same location that this IS/MND for public review once it is available.

2.1.6 Description of Project

Project Background and Purpose

The District is a United States Bureau of Reclamation (Reclamation) water contractor within the Sacramento Division of the Central Valley Project (CVP) in California. The District was formed in 1954 and began water deliveries in 1977. The District currently serves approximately 29,000 acres using 110 miles of pipeline and over three hundred (300) metered deliveries in the Orland and Artois area within the Sacramento Valley. The District receives water from eight diversions located off the CVP Tehama-Colusa Canal (TCC). The TCC commences as a diversion from the Sacramento River in Red Bluff and ends in Dunnigan, about 120 miles south. The District has a contract with Reclamation for 53,000 acre-feet (AF) of water annually. The amount of water received via the contract can be reduced depending on water availability. While the District does deliver a small amount of municipal and industrial water to users within its service area, the District water is used primarily for agricultural irrigation purposes.

A group of landowners in the vicinity of the District are seeking annexation of approximately 11,000 acres (lands) into the District boundary to receive supplemental surface water for agricultural purposes (see Figure 2-6). Currently, these lands do not have access to surface water, and thus the crop demand is being met through pumped groundwater. The proposed annexed lands are primarily located in areas surrounded by District lands. All proposed annexed lands are currently farmed, and the annexation would not result in newly established farmed lands.

The proposed Project includes the annexation of approximately 100 parcels into the District boundary. To support the annexation, the proposed Project also includes a Sphere of Influence (SOI) integrating the subject parcels within the SOI of the District. The proposed SOI update and annexation for OAWD would not be growth inducing as OAWD will only provide water for agricultural purposes to existing agricultural parcels. The Glenn Local Agency Formation Commission (Glenn LAFCO) is the approving agency for the proposed annexation and SOI update and is a responsible agency with regards to this environmental review pursuant to the CEQA.

To comply with the California Sustainable Groundwater Management Act (SGMA) requirements, acquired and delivered surface water will prove to be a vital supplement to existing groundwater supplies.

The proposed annexed lands would be categorized as subordinate lands and would have secondary access to certain District CVP supplies based on availability. Some of the proposed annexed lands are on the periphery of the District service area and would need new infrastructure to receive water. Said infrastructure would include new diversions off the TCC and subsequent water conveyance pipelines and metered farm turnouts (see Figure 2-5).

Project Description

As discussed above, the proposed Project includes annexation of 11,000 acres into the District boundary. To accomplish the annexation, the District, on behalf of the proposed annexed landowners, would apply to the Glenn LAFCO.

The proposed Project would also include infrastructure needed to deliver water to the newly annexed parcels. The infrastructure components would include seven (7) turnouts (with pumps) on the TCC; twenty-four (24) new farm turnout locations; two (2) new pump stations (approximate capacity of 30 cubic-feet-per-second) added to existing pipelines; and approximately eight (8) miles of new pipeline.

Designed facility capacities are based on projected peak demands and available topographical information. The proposed infrastructure would be constructed on either newly annexed private landowners' property, existing District landowners' property, Reclamation land adjacent to the TCC, on other private lands, and adjacent to and across several Glenn County roads. Spoils from infrastructure excavations would be managed on site and used as pipe backfill. No spoil material will be exported. The pipeline diameter would range from eight (8) to thirty (30) inches. Steel casing pipe may be used in areas where the exposed pipe passes through the TCC bank. Steel casing pipe diameter would be thirty (30) inches or smaller.

The maximum depth of ground disturbance for pipelines and farm turnouts would be nine (9) feet, while the booster pump stations would have a maximum depth of eighteen (18) feet. Each construction area would contain temporary staging areas for construction equipment lay-down. As mentioned, locations of the proposed infrastructure are also illustrated on Figure 2-5.

Annexed lands will be considered Class 2 District users with the existing Class 1 District users taking precedence with respect to CVP District contracted water supplies. Annexation zones are illustrated in Figure 2-6.

Construction Schedule

Construction is anticipated to last approximately 21 months, taking place between August 2024 and April 2026.

Equipment

Vehicles and equipment required for construction include, but are not limited to, excavators, trucks, concrete trucks, cranes, and miscellaneous equipment (e.g., pneumatic tools, generators, and portable air compressors).

Operation and Maintenance

The operation and maintenance (O&M) of the Project would be consistent with that of the District's other similar facilities. O&M would take place on an as-needed basis in the event that facilities are damaged or otherwise not operating as intended.

2.1.7 Other Public Agencies Whose Approval May Be Required

- Glenn LAFCO
- Reclamation
- Regional Water Quality Control Board
- State Water Resources Control Board
- Glenn County

2.1.8 Consultation with California Native American Tribes

Public Resources Code Section 21080.3.1, *et seq. (codification of AB 52, 2013-14)*) requires that a lead agency, within 14 days of determining that it will undertake a project, must notify in writing any California Native American Tribe traditionally and culturally affiliated with the geographic area of the project if that Tribe has previously requested notification about projects in that geographic area. The notice must briefly describe the project and inquire whether the Tribe wishes to initiate formal consultation. Tribes have 30 days from receipt of notification to request formal consultation. The lead agency then has 30 days to initiate

the consultation, which then continues until the parties come to an agreement regarding necessary mitigation, agree that no mitigation is needed, or one or both parties determine that negotiation occurred in good faith, but no agreement will be made.

The District has not received any written correspondence from a Tribe pursuant to Public Resources Code Section 21080.3.1 requesting notification of proposed projects.

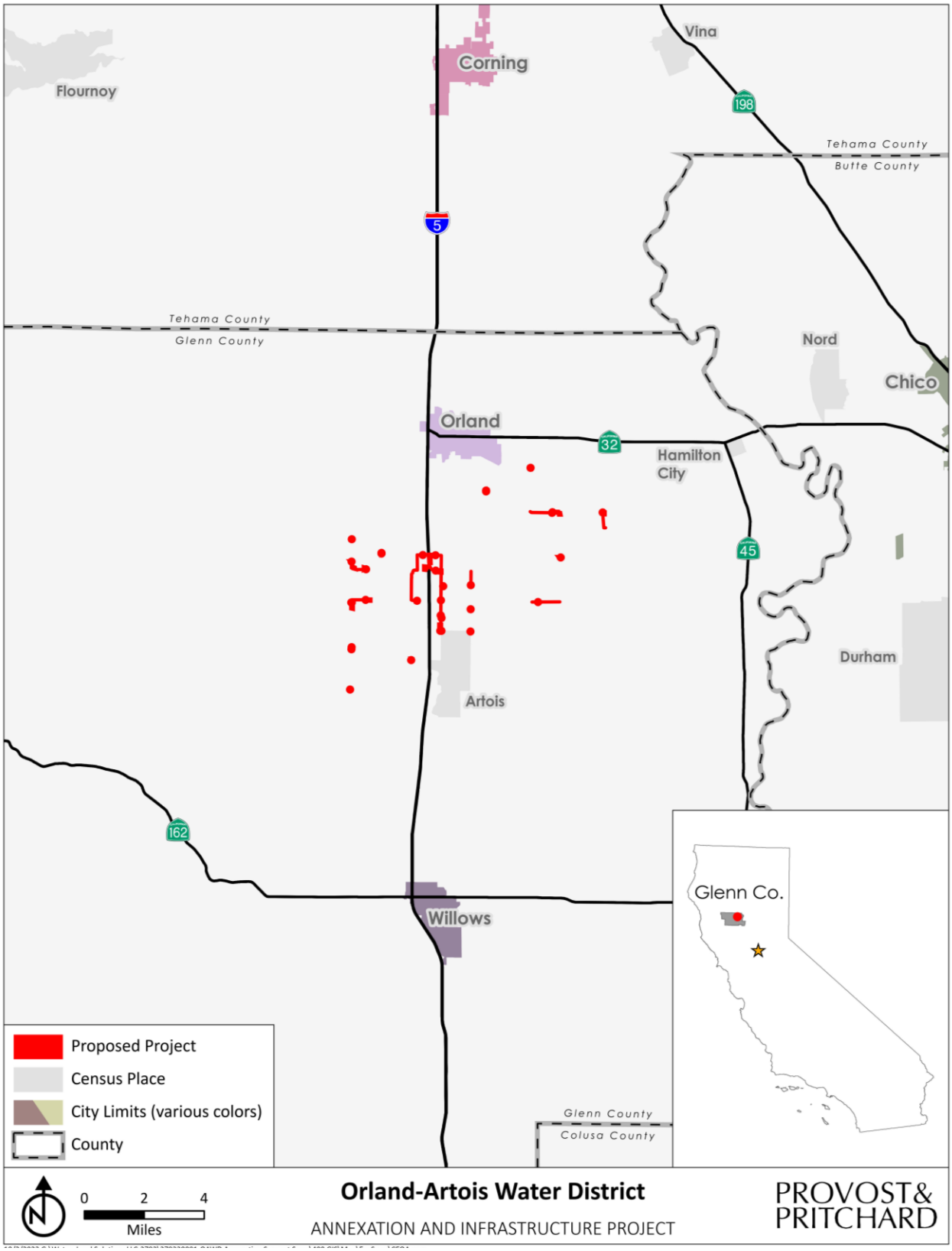

Figure 2-1: Regional Location

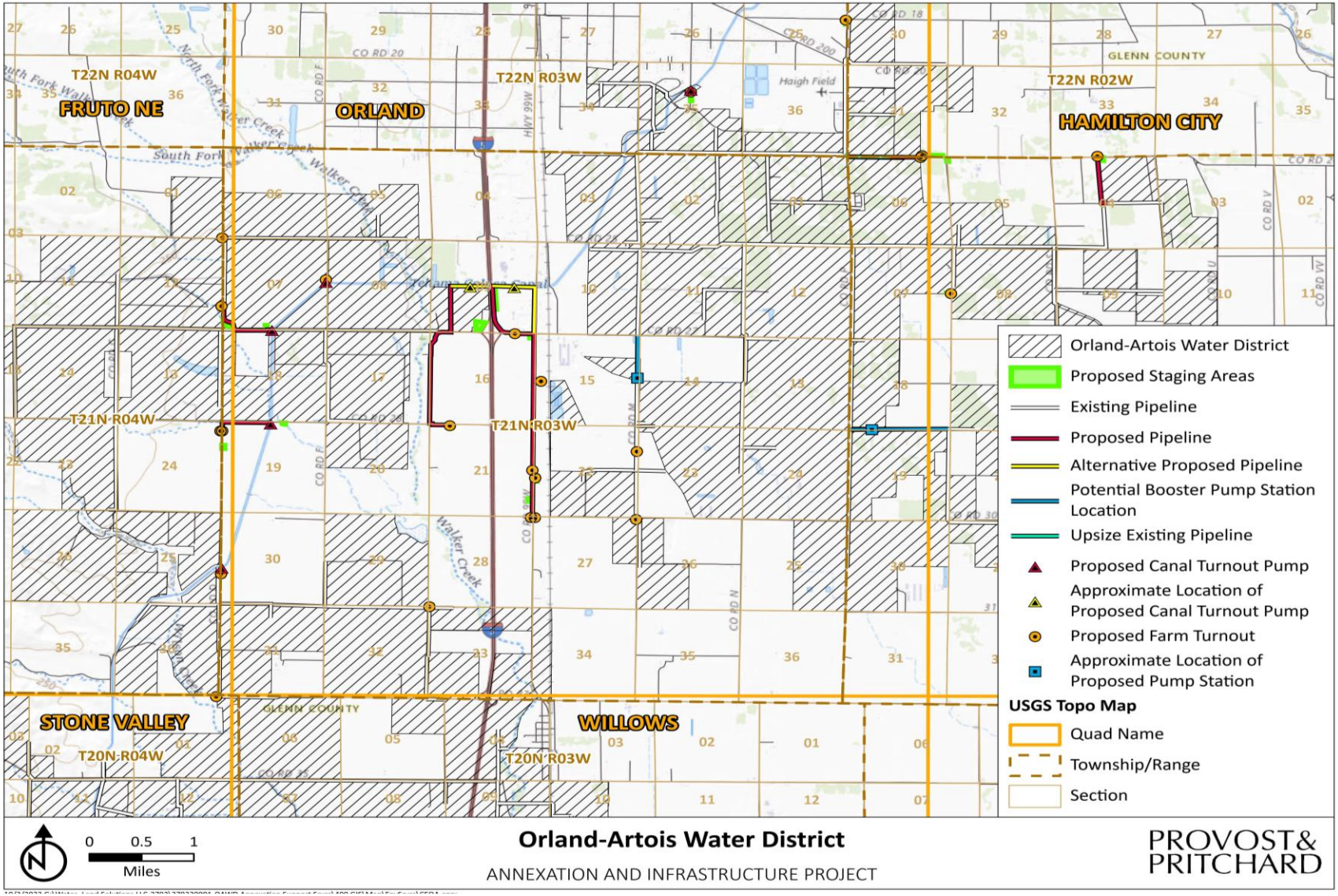

Figure 2-2: Topo Quad

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Figure 2-3: General Plan Land Use Designation Map

Note: Due to the Glenn County General Plan update that was completed in July 2023, updated GIS shapefiles representing the updates and changes in land use designation across the County are currently not available. However, updated data is actively being pursued and should be available upon request during the 30-day review period by contacting the person(s) identified in the Notice of Intent. In addition, once available, the updated General Plan Land Use designation map for the Project area will be uploaded to the State Clearinghouse in the same location that this IS/MND for public review once it is available.

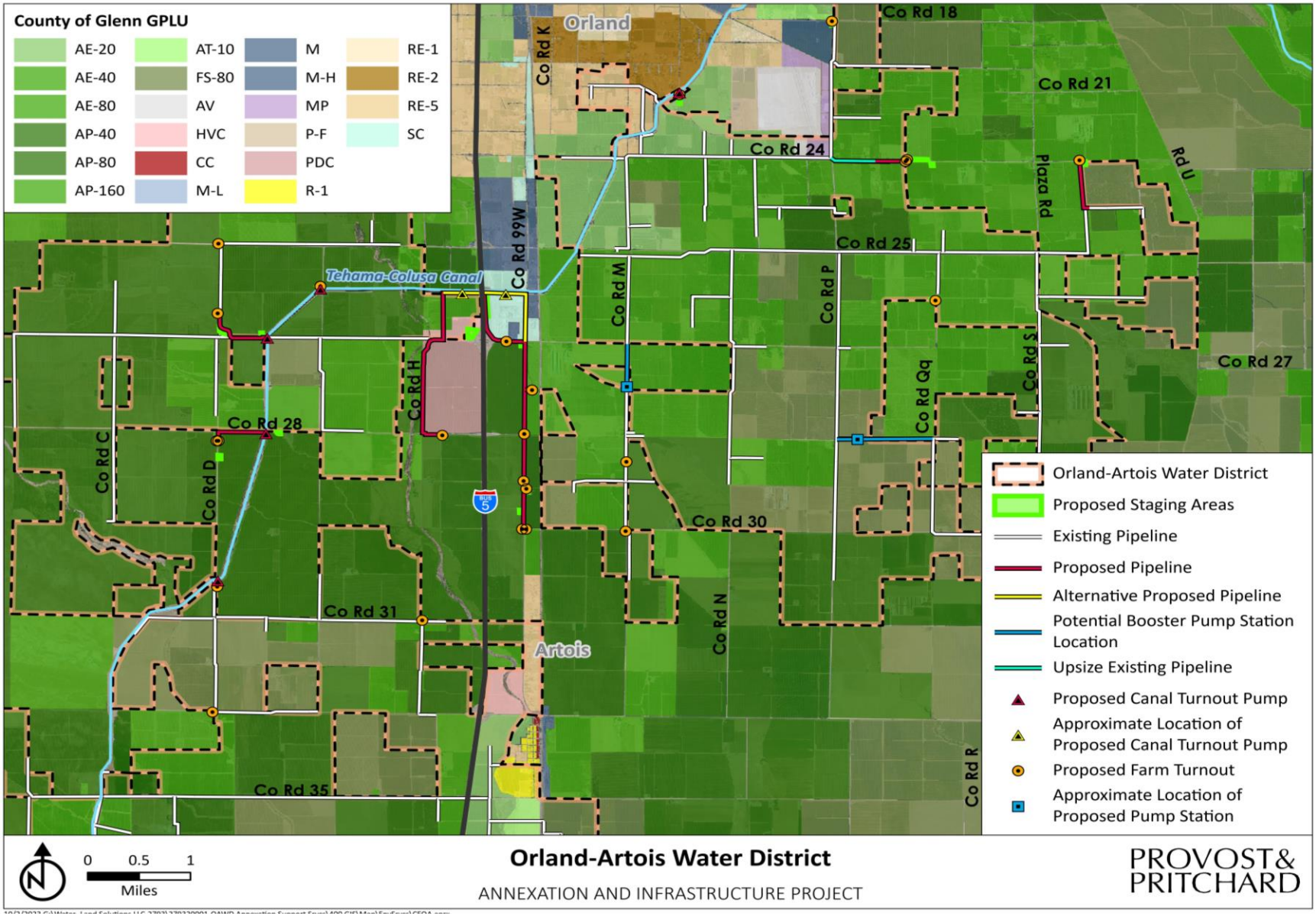

Figure 2-4: Zone District Map

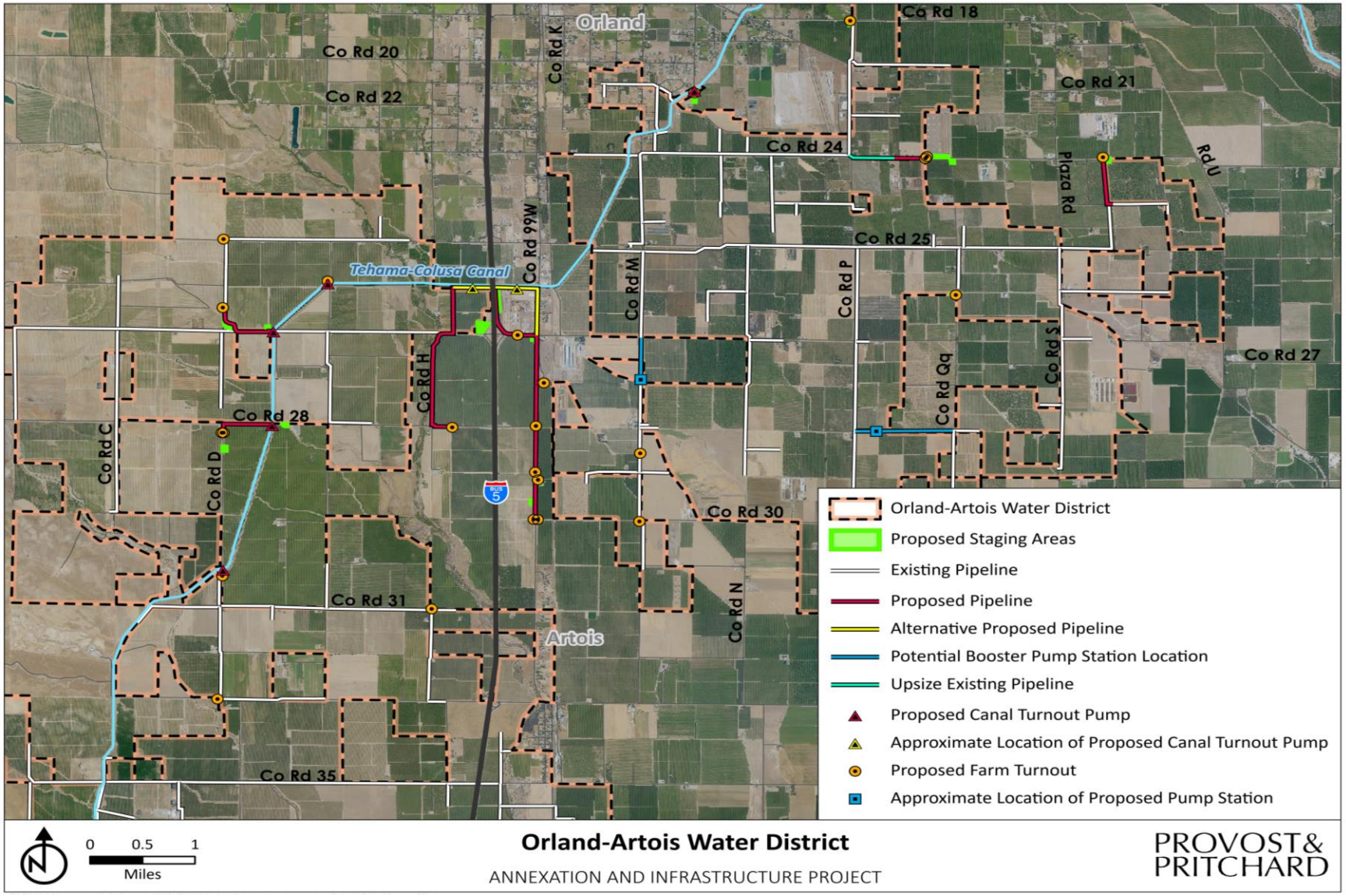

Figure 2-5. Proposed Infrastructure Map

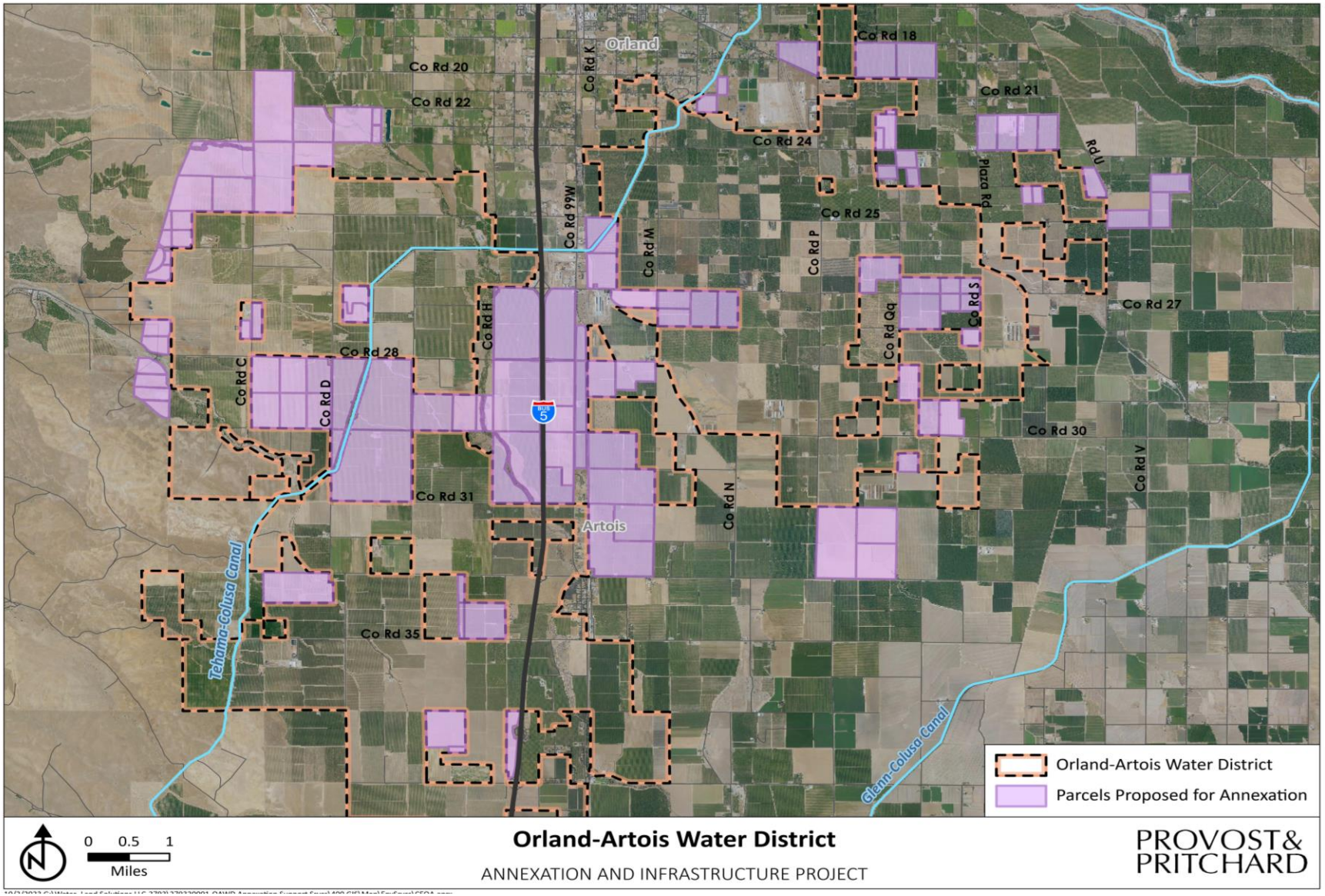

Figure 2-6. Lands Proposed for Annexation Map

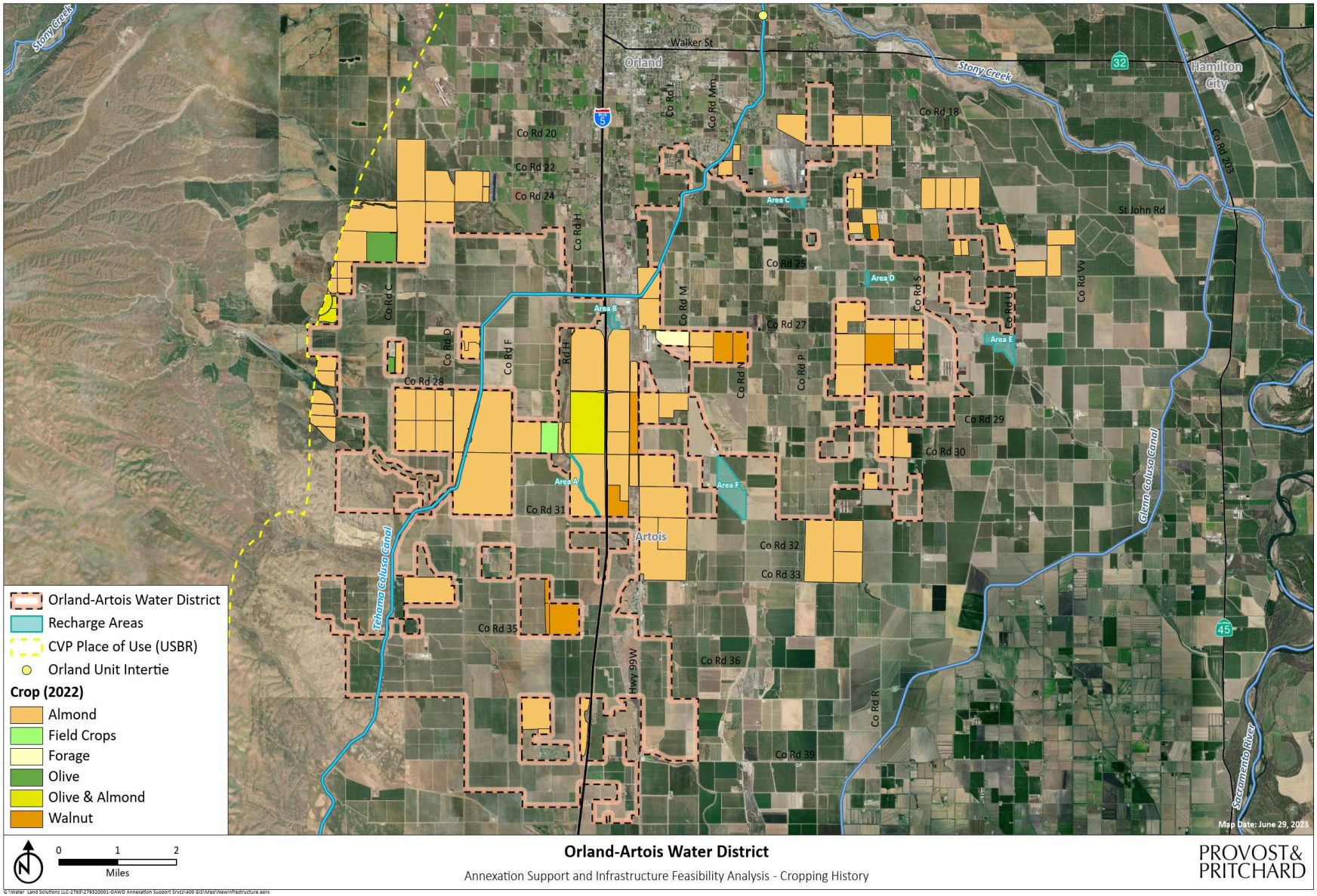

Figure 2-7. Crop Map

CHAPTER 3 DETERMINATION

3.1 POTENTIAL ENVIRONMENTAL IMPACTS

As indicated by the discussions of existing and baseline conditions, and impact analyses that follow in this Chapter, environmental factors not checked below would have no impacts or less than significant impacts resulting from the Project. Environmental factors that are checked below would have potentially significant impacts resulting from the Project. Mitigation measures are recommended for each of the potentially significant impacts that would reduce the impact to less than significant.

☐ Aesthetics	☐ Agriculture and Forestry Resources	☐ Air Quality
☒ Biological Resources	☒ Cultural Resources	☐ Energy
☒ Geology/Soils	☐ Greenhouse Gas Emissions	☐ Hazards and Hazardous Materials
☐ Hydrology / Water Quality	☐ Land Use/Planning	☐ Mineral Resources
☐ Noise	☐ Population/Housing	☐ Public Services
☐ Recreation	☐ Transportation	☒ Tribal Cultural Resources
☐ Utilities and Service Systems	☐ Wildfire	☐ Mandatory Findings of Significance

The analyses of environmental impacts in Chapter 4 Environmental Impact Analysis result in an impact statement, which shall have the following meanings.

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

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

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

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

3.2 DETERMINATION

On the basis of this initial evaluation (to be completed by the Lead Agency):

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature

10/10/2023
Date

Emil Cavagnolo, GM
Printed Name/Position

CHAPTER 4 ENVIRONMENTAL IMPACT ANALYSIS

4.1 AESTHETICS

Table 4-1: Aesthetics Impacts

Except as provided in Public Resources Code Section 21099, would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Have substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☐	☒
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

4.1.1 Baseline Conditions

Aesthetics refers to natural and cultural landscape features that people see and that contribute to the public's appreciative enjoyment of the environment. Aesthetic impacts are generally defined in terms of the extent to which a project's physical characteristics and potential visibility would change the perceived visual character and visual quality of the viewed landscape. The Project area is located in a predominantly agricultural region. The surrounding lands contain planted orchards and row crops, fallowed land, and various water conveyance facilities such as canals, turnouts, and wells. In addition, various structures such as residences and pole barns are scattered throughout the Project area. The Project does not contain any scenic vistas as the area is mostly flat with little to no topographic relief. The nearest State Scenic Highway is State Route (SR) 49, located approximately 58 miles east of the Project area.[1]

[1] (California State Scenic Highway System Map 2018)

4.1.2 Impact Analysis

a) Have substantial adverse effect on a scenic vista?

No Impact. The Project would allow for infrastructure construction needed to deliver water to the annexed parcels, which would include mostly subsurface construction. Two new pump stations would be expected, but the Project area is generally flat and is mostly circumscribed by land in agricultural use. As such, the Project area does contain a scenic vista. Therefore, there is no impact.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No Impact. The Project would not be located along, or within the vicinity of, a state scenic highway. The nearest officially designated scenic highway to the Project site is SR 49, located approximately 58 miles to the east. In addition, the Project would not damage scenic resources such as trees, rock outcroppings, and historic buildings. Therefore, there would be no impact.

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

No Impact. As the Project area is located in an agricultural region with various existing irrigation and farming infrastructure, the construction of additional infrastructure would not degrade the existing visual character or quality of the site and its surroundings, as it would blend in with the existing setting. Additionally, there are no cities within the Project area that meet the CEQA qualification to be considered urbanized (population of at least 50,000 people). As such, there would be no impact.

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

No Impact. The Project would not require any lighting facilities during construction or operation; therefore, there would be no significant generation of light or glare that would adversely affect day or nighttime views. There would be no impact due to the Project.

4.2 AGRICULTURE AND FORESTRY RESOURCES

Table 4-2: Agriculture and Forest Impacts

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

4.2.1 Baseline Conditions

The Project area is located in an agricultural setting that consists of relatively flat irrigated farmland. Agricultural practices in the vicinity consist of row crop, field crop, and orchard cultivation. The most predominant crop grown in the Project area are almonds. See Figure 2-7 for a map of crops grown within the confines of the Project area. Rural roadways and local water distribution systems are also found in the immediate vicinity. The surrounding land is primarily zoned and planned for agricultural uses by Glenn County. Agriculture is Glenn County's major industry with almonds being the leading commodity grown.[2]

Farmland Mapping and Monitoring Program (FMMP): The FMMP produces maps and statistical data used for analyzing impacts to California's agricultural resources. Agricultural land is rated according to soil quality and irrigation status; the best quality land is called Prime Farmland. The maps are updated every two years with the use of a computer mapping system, aerial imagery, public review, and field reconnaissance. The California Department of Conservation's (DOC) 2018 FMMP is a non-regulatory program that produces "Important Farmland" maps and statistical data used for analyzing impacts on California's agricultural resources. The Important Farmland maps identify eight land use categories, five of

[2] (Glenn County Agricultural Commissioner's Office 2016)

which are agriculture related: prime farmland, farmland of Statewide importance, unique farmland, farmland of local importance, and grazing land — rated according to soil quality and irrigation status. Each is summarized below:

- PRIME FARMLAND (P): Farmland with the best combination of physical and chemical features able to sustain long term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
- FARMLAND OF STATEWIDE IMPORTANCE (S): Farmland similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.
- UNIQUE FARMLAND (U): Farmland of lesser quality soils used for the production of the State's leading agricultural crops. This land is usually irrigated but may include non-irrigated orchards or vineyards as found in some climatic zones in California. Land must have been cropped at some time during the four years prior to the mapping date.
- FARMLAND OF LOCAL IMPORTANCE (L): Land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee.
- GRAZING LAND (G): Land on which the existing vegetation is suited to the grazing of livestock. The minimum mapping unit for Grazing Land is 40 acres.
- URBAN AND BUILT-UP LAND (D): Land occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel. This land is used for residential, industrial, commercial, institutional, public administrative purposes, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment, water control structures, and other developed purposes.
- OTHER LAND (X): Land not included in any other mapping category. Common examples include low density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing; confined livestock, poultry, or aquaculture facilities; strip mines, borrow pits; and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land.
- WATER (W): Perennial water bodies with an extent of at least 40 acres.

According to the California DOC's FMMP, the Project area encompasses lands designated as Prime Farmland, Farmland of Statewide Importance, Farmland of Local Importance, Unique Farmland, Grazing Land, Urban and Built-Up Land, and Other Land (see Figure 4-1).[3]

4.2.2 Impact Analysis

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

No Impact. As mentioned above, Project lands contain designations of Prime Farmland, Unique Farmland, and Farmland of Statewide Importance. The intent of the Project is to provide existing lands that are currently reliant on groundwater with a supplemental supply of surface water in order to sustain agricultural operations. This additional supply of surface water would reduce said lands dependency on

[3] (Calfornia Department of Conservation 2019)

groundwater, ultimately protecting groundwater resources. The Project would ultimately support the land designations provided by the FMMP. Therefore, the Project would not convert any Farmland to non-agricultural use. There would be no impact.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

Less than Significant Impact. Pursuant to Government Code Section 53091(e), location or construction of facilities for the production, generation, storage, treatment, or transmission of water by a special district are not subject to the zoning ordinance of the county in which the project would be located. Although the Project is not required to comply with the Glenn County Zoning Ordinance, it is the Project's intent to support Glenn County farmers and enhance groundwater levels, thereby sustaining existing agriculture. The Project would inherently promote the agricultural zoning and Williamson Act intentions. The principal objectives of the Williamson Act program include protection of agricultural resources, preservation of open space land, and promotion of efficient urban growth patterns. Implementation of the Project would promote continued farming and groundwater security and would not alter existing agricultural or Williamsons Act lands. Therefore, impacts would be less than significant.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

No Impact. There are no lands zoned for forest or timberland use in the District. Therefore, the Project would not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production. There would be no impact.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. There are no forests or timberland in the District, therefore the Project would not result in the loss of forest land or conversion of forest land to non-forest use. There would be no impact.

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

Less than Significant Impact. The Project would not convert the land from its existing agricultural use to any other land use pursuant to the FMMP. The intent of the Project is to support ongoing agricultural endeavors and to enhance groundwater resources. As a result, the Project would improve existing farming operations that are currently reliant on a declining groundwater basin. Impacts would be less than significant.

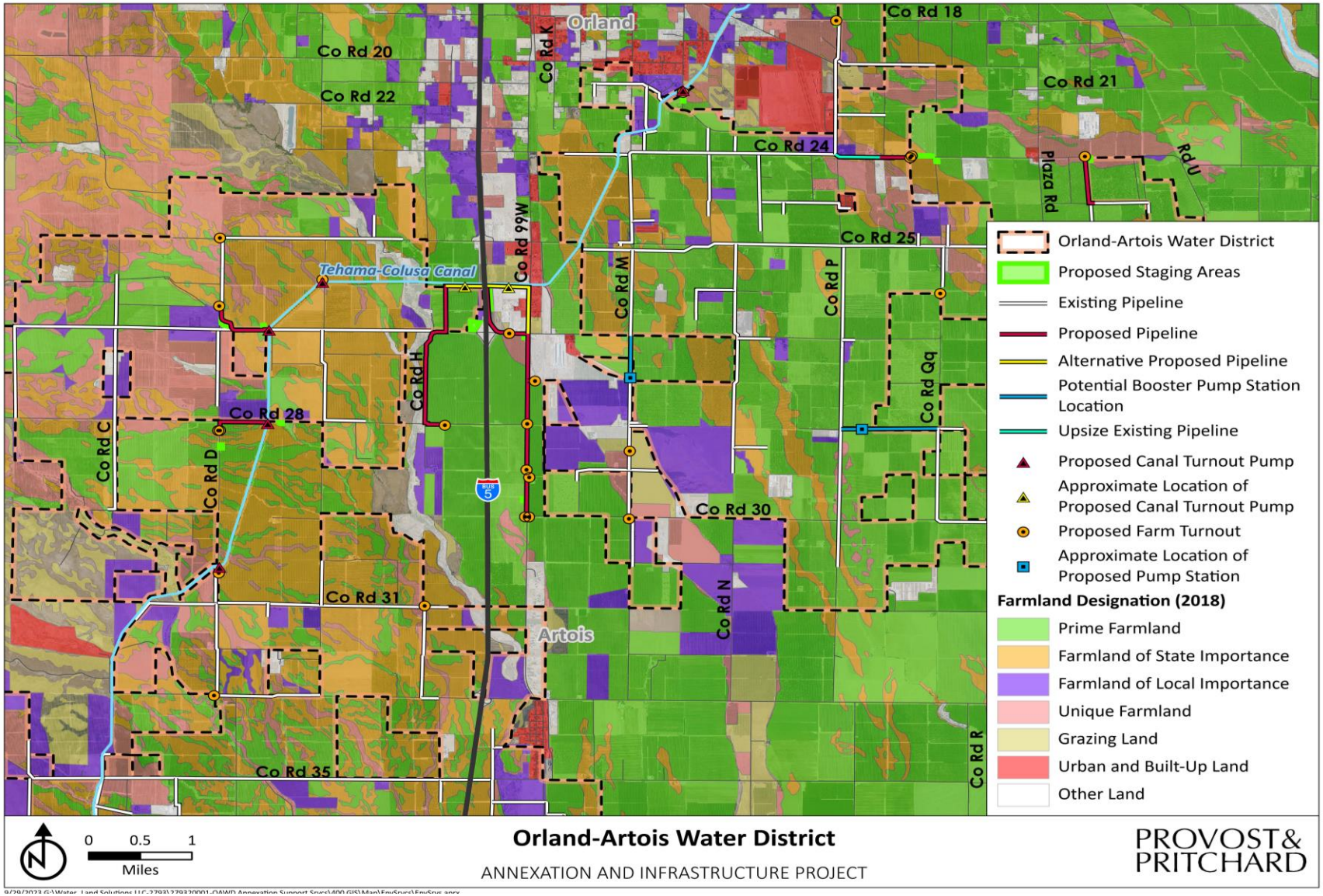

Figure 4-1. Farmland Map

4.3 AIR QUALITY

Table 4-3: Air Quality Impacts

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

4.3.1 Baseline Conditions

The Project area is located within Glenn County and the Glenn County Air Pollution Control District (GCAPCD). The County sits within the Northern Sacramento Valley Air Basin (NSVAB), with the I-5 corridor running north and south through the eastern portion of the County. The OAWD service area is bisected by I-5, which is located on the western edge of the City of Orland. Air basins share a common "air shed", the boundaries of which are defined by surrounding topography. Although mixing between adjacent air basins inevitably occurs, air quality conditions are relatively uniform within a given air basin. The NSVAB is bounded to the north and west by the Coastal Mountain Range, to the east by the Cascade Mountain Range and the Sierra Nevada Mountain Range and extending south to where Sacramento County and San Joaquin County abut one another.

On November 30, 1993, the United States Environmental Protection Agency (USEPA) promulgated final general conformity regulations at 40 CFR 93 Subpart B for all Federal activities, except those covered under transportation conformity. The general conformity regulations apply to a proposed Federal action in a non-attainment or maintenance area if the total of direct and indirect emissions of the relevant criteria pollutants and precursor pollutants caused by a Project equal or exceed certain emissions thresholds, thus requiring the Federal agency to make a Proposed Project conformity determination. According to the USEPA, Glenn County is currently in attainment for all criteria pollutants.[4]

[4] (United States Environmental Protection Agency 2022)

Table 4-4: Summary of Ambient Air Quality Standards and Attainment Designation

Pollutant	Averaging Time	California Standards*		National Standards*	
		Concentration*	Attainment Status	Primary	Attainment Status
Ozone (O_3)	1-hour	0.09 ppm	Nonattainment/ Severe	–	No Federal Standard
	8-hour	0.070 ppm	Nonattainment	0.075 ppm	Nonattainment (Extreme)**
Particulate Matter (PM_{10})	AAM	20 µg/m^3	Nonattainment	–	Attainment
	24-hour	50 µg/m^3		150 µg/m^3	
Fine Particulate Matter ($PM_{2.5}$)	AAM	12 µg/m^3	Nonattainment	12 µg/m^3	Nonattainment
	24-hour	No Standard		35 µg/m^3	
Carbon Monoxide (CO)	1-hour	20 ppm	Attainment/ Unclassified	35 ppm	Attainment/ Unclassified
	8-hour	9 ppm		9 ppm	
	8-hour (Lake Tahoe)	6 ppm		–	
Nitrogen Dioxide (NO_2)	AAM	0.030 ppm	Attainment	53 ppb	Attainment/ Unclassified
	1-hour	0.18 ppm		100 ppb	
Sulfur Dioxide (SO_2)	AAM	–	Attainment	–	Attainment/ Unclassified
	24-hour	0.04 ppm		–	
	3-hour	–		0.5 ppm	
	1-hour	0.25 ppm		75 ppb	
Lead (Pb)	30-day Average	1.5 µg/m^3	Attainment	–	No Designation/ Classification
	Calendar Quarter	–		–	
	Rolling 3-Month Average	–		0.15 µg/m^3	
Sulfates (SO_4)	24-hour	25 µg/m^3	Attainment	No Federal Standards	
Hydrogen Sulfide (H_2S)	1-hour	0.03 ppm (42 µg/m^3)	Unclassified		
Vinyl Chloride (C_2H_3Cl)	24-hour	0.01 ppm (26 µg/m^3)	Attainment		
Visibility-Reducing Particle Matter	8-hour	Extinction coefficient: 0.23/km-visibility of 10 miles or more due to particles when the relative humidity is less than 70%.	Unclassified		

** For more information on standards visit: https://ww3.arb.ca.gov/research/aaqs/aaqs2.pdf*
*** No Federal 1-hour standard. Reclassified extreme nonattainment for the Federal 8-hour standard.*
****Secondary Standard*
Source: http://www.valleyair.org/aqinfo/attainment.htm. Accessed 2023

Air Pollutants of Primary Concern

Criteria Air Pollutants

For the protection of public health and welfare, the federal Clean Air Act (CAA) required that the USEPA establish National Ambient Air Quality Standards (NAAQS) for various pollutants. These pollutants are referred to as "criteria" pollutants because the USEPA publishes criteria documents to justify the choice of standards. These standards define the maximum amount of an air pollutant that can be present in ambient air. An ambient air quality standard is generally specified as a concentration averaged over a specific time period, such as one hour, eight hours, 24 hours, or one year. The different averaging times and concentrations are meant to protect against different exposure effects. Standards established for the protection of human health are referred to as primary standards; whereas standards established for the prevention of environmental and property damage are called secondary standards. The CAA allows states to adopt additional or more health-protective standards. The following provides a summary discussion of the criteria air pollutants of primary concern.

Ozone (O_3) is a reactive gas consisting of three atoms of oxygen. In the troposphere, it is a product of the photochemical process involving the sun's energy. It is a secondary pollutant that is formed when oxides of nitrogen (NO_X) and volatile organic compounds (VOC), also referred to as reactive organic gases (ROG) react in the presence of sunlight. Ozone at the earth's surface causes numerous adverse health effects and is a criteria pollutant. It is a major component of smog. In the stratosphere, ozone exists naturally and shields Earth from harmful incoming ultraviolet radiation.

High concentrations of ground level ozone can adversely affect the human respiratory system and aggravate cardiovascular disease and many respiratory ailments. Ozone also damages natural ecosystems such as forests and foothill communities, agricultural crops, and some man-made materials, such as rubber, paint, and plastics.

Reactive Organic Gas (ROG) is a reactive chemical gas, composed of hydrocarbon compounds that may contribute to the formation of smog by their involvement in atmospheric chemical reactions. No separate health standards exist for ROG as a group. Because some compounds that make up ROG are also toxic, like the carcinogen benzene, they are often evaluated as part of a toxic risk assessment. Total Organic Gases (TOGs) includes all of the ROGs, in addition to low reactivity organic compounds like methane and acetone. ROGs and VOC are subsets of TOG.

Volatile Organic Compounds (VOC) are hydrocarbon compounds that exist in the ambient air. VOCs contribute to the formation of smog and may also be toxic. VOC emissions are a major precursor to the formation of ozone. VOCs often have an odor, and some examples include gasoline, alcohol, and the solvents used in paints.

Oxides of Nitrogen (NO_X) are a family of gaseous nitrogen compounds and is a precursor to the formation of ozone and particulate matter. The major component of NO_X, nitrogen dioxide (NO_2), is a reddish-brown gas that is toxic at high concentrations. NO_X results primarily from the combustion of fossil fuels under high temperature and pressure. On-road and off-road motor vehicles and fuel combustion are the major sources of this air pollutant.

Particulate Matter (PM), also known as particle pollution, is a complex mixture of extremely small particles and liquid droplets. Particle pollution is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. The size of particles is directly linked to their potential for causing health problems. USEPA is concerned about particles that are 10 micrometers in diameter or smaller because those are the particles that generally pass through the throat

and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects. USEPA groups particle pollution into the following three categories based on their size and where they are deposited:

- "Inhalable coarse particles (PM_{10})," such as those found near roadways and dusty industries, are between 2.5 and 10 micrometers in diameter. $PM_{2.5-10}$ is deposited in the thoracic region of the lungs.
- "Fine particles ($PM_{2.5}$)," such as those found in smoke and haze, are 2.5 micrometers in diameter and smaller. These particles can be directly emitted from sources such as forest fires, or they can form when gases emitted from power plants, industries, and automobiles react in the air. They penetrate deeply into the thoracic and alveolar regions of the lungs.
- "Ultrafine particles (UFP)," are very small particles less than 0.1 micrometers in diameter largely resulting from the combustion of fossils fuels, meat, wood, and other hydrocarbons. While UFP mass is a small portion of $PM_{2.5}$, its high surface area, deep lung penetration, and transfer into the bloodstream can result in disproportionate health impacts relative to its mass.

PM_{10}, $PM_{2.5}$, and UFP include primary pollutants (emitted directly to the atmosphere) as well as secondary pollutants (formed in the atmosphere by chemical reactions among precursors). Generally speaking, $PM_{2.5}$ and UFP are emitted by combustion sources like vehicles, power generation, industrial processes, and wood burning, while PM_{10} sources include these same sources plus roads and farming activities. Fugitive windblown dust and other area sources also represent a source of airborne dust.

Numerous scientific studies have linked both long- and short-term particle pollution exposure to a variety of health problems. Long-term exposures, such as those experienced by people living for many years in areas with high particle levels, have been associated with problems such as reduced lung function and the development of chronic bronchitis and even premature death. Short-term exposures to particles (hours or days) can aggravate lung disease, causing asthma attacks and also acute (short-term) bronchitis, and may also increase susceptibility to respiratory infections. In people with heart disease, short-term exposures have been linked to heart attacks and arrhythmias. Healthy children and adults have not been reported to suffer serious effects from short term exposures, although they may experience temporary minor irritation when particle levels are elevated.

Carbon Monoxide (CO) is an odorless, colorless gas that is highly toxic. It is formed by the incomplete combustion of fuels and is emitted directly into the air (unlike ozone). The main source of CO is on-road motor vehicles. Other CO sources include other mobile sources, miscellaneous processes, and fuel combustion from stationary sources. Because of the local nature of CO problems, California Air Resources Board (CARB) and USEPA designate urban areas as CO nonattainment areas instead of the entire basin as with ozone and PM_{10}. Motor vehicles are by far the largest source of CO emissions. Emissions from motor vehicles have been declining since 1985, despite increases in vehicle miles traveled, with the introduction of new automotive emission controls and fleet turnover.

Sulfur Dioxide (SO_2) is a colorless, irritating gas with a "rotten egg" smell formed primarily by the combustion of sulfur-containing fossil fuels. However, like airborne NO_X, suspended sulfur oxides (SO_X) particles contribute to the poor visibility. These SO_X particles can also combine with other pollutants to form $PM_{2.5}$. The prevalence of low-sulfur fuel use has minimized problems from this pollutant.

Lead (Pb) is a metal that is a natural constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, so it essentially persists forever. The health effects of lead poisoning include loss of appetite, weakness, apathy, and miscarriage. Lead can also cause lesions of the neuromuscular system, circulatory system, brain, and gastrointestinal tract. Gasoline-powered automobile

engines were a major source of airborne lead through the use of leaded fuels. The use of lead fuel has been mostly phased out, with the result that ambient concentrations of lead have dropped dramatically.

Hydrogen Sulfide (H_2S) is associated with geothermal activity, oil and gas production, refining, sewage treatment plants, and confined animal feeding operations. Hydrogen sulfide is extremely hazardous in high concentrations; especially in enclosed spaces (800 ppm can cause death). Occupational Safety and Health Administration (OSHA) regulates workplace exposure to H_2S.

Other Pollutants

The State of California has established air quality standards for some pollutants not addressed by federal standards. CARB has established State standards for hydrogen sulfide, sulfates, vinyl chloride, and visibility reducing particles. The following section summarizes these pollutants and provides a description of the pollutants' physical properties, health and other effects, sources, and the extent of the problems.

Sulfates (SO_4^{2-}) are the fully oxidized ionic form of sulfur. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to SO_2 during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features.

The CARB sulfates standard is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in ventilator function, aggravation of asthmatic symptoms, and an increased risk of cardio-pulmonary disease. Sulfates are particularly effective in degrading visibility, and, due to the fact that they are usually acidic, can harm ecosystems and damage materials and property.

Visibility Reducing Particles are a mixture of suspended particulate matter consisting of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. The standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

Vinyl Chloride (C_2H_3Cl or **VCM)** is a colorless gas that does not occur naturally. It is formed when other substances such as trichloroethane, trichloroethylene, and tetrachloroethylene break down. VCM is used to make polyvinyl chloride which is used to make a variety of plastic products, including pipes, wire and cable coatings, and packaging materials.

4.3.2 Impact Analysis

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

No Impact. The GCAPCD does not have established thresholds of significance for project related emission generation. As a result, the thresholds of significance that have been established and implemented by the Sacramento Metropolitan Air Quality Management District (SMAQMD) have been used to determine the level of impact that the Project would result in.[5] Both the GCAPCD and the SMAQMD are located within the NVSAB and experience similar air quality conditions due to similar topography, climate, and air circulation patterns. Projects that would result in a significant increase in emissions, in excess of SMAQMD significance thresholds, would also be considered to potentially conflict with or obstruct

[5] (Sacramento Metropolitan Air Quality Management District 2020)

implementation of applicable air quality attainment plans. As shown in the tables below, the Project would not result in significant short-term or long-term increases of criteria air pollutants that would exceed applicable thresholds. As such, the Project would not conflict with or obstruct the implementation of an applicable air quality plan. There would be no impact.

b) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Less than Significant Impact. Construction and operation criteria air pollutant emissions were estimated using The CalEEMod air quality model, version 2020.4.0, and the SacMetro Road Construction Model, version 9.0.1 (see Appendix A). A summary of construction emissions is included in Table 4-5 and Table 4-6. Operation emissions are included in Table 4-7 and Table 4-8.

Table 4-5. Estimated Annual Construction Criteria Air Pollutant Emissions in Tons per Year

Emissions Source	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Turnouts	0.1878	1.2969	1.4080	2.6700e-003	0.0987	0.0694
Eight-mile Pipeline	0.0600	0.5700	1.0200	0	0.6900	0.1600
Total	0.2478	1.8669	2.428	2.6700e-003	0.7887	0.2294
SMAQMD Threshold	None	None	None	None	14.6	15
Threshold Exceeded?	No	No	No	No	No	No

Table 4-6. Estimated Daily Construction Criteria Air Pollutant Emissions in Pounds per Day

Emissions Source	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Turnouts	3.6833	14.914	13.3657	0.0254	7.7695	4.0029
Eight-mile Pipeline	0.4900	4.3000	7.7400	0.0100	5.2200	1.2300
Total	4.1733	19.214	21.1057	0.0354	12.9895	5.2329
SMAQMD Threshold	None	85	None	None	80	82
Threshold Exceeded?	No	No	No	No	No	No

Table 4-7. Estimated Annual Operation Criteria Air Pollutant Emissions in Tons per Year

Emissions Source	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Total	5.0100e-003	0	4.6000e-004	0	0	0
SMAQMD Threshold	None	None	None	None	14.6	15
Threshold Exceeded?	No	No	No	No	No	No

Table 4-8. Estimated Daily Operation Criteria Air Pollutant Emissions in Pounds per Day

Emissions Source	ROG	NO_X	CO	SO_X	PM_{10}	$PM_{2.5}$
Total	0.0277	5.0000e-005	5.1000e-003	0	2.0000e-005	2.0000e-005
SMAQMD Threshold	65	65	None	None	80	82
Threshold Exceeded?	No	No	No	No	No	No

As shown in Table 4-5 and Table 4-6, construction related emissions would not exceed an annual or daily threshold set by the SMAQMD. Additionally, Table 4-7 and Table 4-8 show that the Project would not exceed an established SMAQMD threshold for annual or daily emissions relating to operational activities. These tables reveal that there would not be a considerable net increase in any criteria pollutants. Therefore, there would be a less than significant impact.

c) Would the project expose sensitive receptors to substantial pollutant concentrations?

Less than Significant Impact. The Project Area would be spread throughout the OAWD service area, resulting in several uses and potential sensitive receptors to be located within the vicinity of the Project. Short-term air quality impacts would be associated with construction and would generally arise from dust generation (fugitive dust) and operation of construction equipment. Fugitive dust results from land clearing, grading, excavation, concrete work, and vehicle traffic on paved and unpaved roads. Fugitive dust is a source of airborne particulates, including PM_{10} (particulate matter less than 10 microns in diameter) and $PM_{2.5}$ (particulate matter less than 2.5 microns in diameter). Large earth-moving equipment, trucks, and other mobile sources powered by diesel or gasoline are also sources of combustion emissions, such as NO_2, CO, CO_2, ROG, SO_2, and small amounts of other air pollutants. As shown above, the emission estimates resulting from construction and operation do not exceed the SMAQMD threshold and construction emissions would be temporary. As such, sensitive receptors would not be exposed to substantial pollutant concentrations. There would be a less than significant impact.

d) Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Less than Significant Impact. The Project would be largely passive during operation, so there would be minimal operational emissions generated by its implementation. Operational emissions would be a result of passive use of equipment and vehicle trips to the Project area for routine maintenance activities. Therefore, operation would produce minimal other emissions, such as those leading to odors, which would adversely affect a substantial number of people. Any emissions leading to odors during construction would be limited and temporary in nature, dissipating quickly as a result. As such, there would be a less than significant impact.

4.4 BIOLOGICAL RESOURCES

Table 4-9: Biological Resources Impacts

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

4.4.1 Baseline Conditions

General

The Project is located north of the community of Artois and south of the City of Orland, within the eastern portion of Glenn County and near the western edge of the Sacramento Valley. The topography of the Project area is relatively flat. The elevation ranges from approximately 178 feet to 246 feet above mean sea level.

Like most of California, the Project area experiences a Mediterranean climate. Warm, dry summers are followed by cool, moist winters. In the summer, average high temperatures range between 85- and 95-

degrees Fahrenheit (˚F), but often exceeds 95˚F in the Project area. Average winter low temperatures are near 40˚F. The average annual precipitation is approximately 18-21 inches, falling mainly from October through April.

Hydrology

Watersheds are made up of many smaller subwatersheds that drain into a particular stream, river, or lake. The Project area is located within the Walker Creek, Sacramento River, or Colusa Drain watersheds, as described below:

- Lassen Land Improvement Area, Road F Improvement Area, Big W Improvement Area, Road 28 Improvement Area: Portions of the Project area lie within the Middle Walker Creek subwatershed; Hydrologic Unit Code (HUC): 180201040202, which is a part of the Walker Creek watershed; HUC: 1802010402. The nearest water source to Lassen Land Improvement Area is an unnamed creek that is 0.4 miles west, an unnamed creek that is 0.8 miles north, and connects to Walker Creek which is 1.4 miles east. The nearest water source to Road F Improvement Area is Walker Creek, which is 0.8 miles east, and TCC which is directly south, where the pipeline would connect. The nearest water source to Big W Improvement Area is an unnamed stream the pipeline is directly adjacent to, and TCC, which is directly east, where the pipeline would connect. The nearest water source to Road 28 Improvement Area is an unnamed creek north across the road, and TCC where the pipeline would connect.

- Hart 330 Improvement Area, Hart 342 Improvement Area, Knight 33 Improvement Area, 99W Improvement Area, Patton Improvement Area, 99W Alternative Improvement Area, 0.6 SAR Improvement Area, 0.6 Woolf Improvement Area: Portions of the Project area lies within the Lower Walker Creek subwatershed; HUC: 180201040202, which is a part of the Walker Creek watershed; HUC: 1802010402. The nearest water source to Hart 330 Improvement Area is TCC which is directly north, where the pipeline would connect. The nearest water source to Hart 342 Improvement Area is Walker Creek which is 0.5-mile east, and TCC which is 2.5 miles west. The nearest water source to Knight 33 Improvement Area is Wilson Creek which is 0.1 southwest, and TCC which is 1.5 miles north. The nearest water source to 99W Improvement Area is Walker Creek, which is 0.5 miles west of the pipeline, and TCC, which is directly north, where the pipeline would connect. The nearest water source to Patton Improvement Area is Walker Creek, which is directly west of the pipeline and TCC, which is directly north, where the pipeline would connect. The nearest water source to the 99W Alternative Improvement Area is Walker Creek, which is 1 mile west, and TCC, which is directly north. The nearest water source to 0.6 SAR Improvement Area is an unnamed canal which is 1 mile east. The nearest water source to 0.6 Woolf Improvement Area is the same unnamed canal located 1.5 miles east. This canal contained pond water during the survey due to the ongoing storm event, but no water was observed flowing. This canal is not currently in use by the District.

- Sanford Improvement Area, 33.6E Improvement Area: Portions of the Project area lies within the Lagoon-Sacramento River subwatershed; HUC: 180201041202, which is a part of the Sacramento River watershed; HUC: 1802010412. The nearest water source to Sanford Improvement Area is the TCC, which is directly north, where the pipeline would connect. The nearest water source to 33.6E Improvement Area are TCC which is 2.5 miles west, an unnamed Canal which is 3 miles east, and Stony Creek which is 2.7 miles north and 5.5 miles east.

- 33.6N Improvement Area, Hart HQ Improvement Area: Portions of the Project area lies within Deadmans Reach- Sacramento River subwatershed; HUC: 180201041201, which is a part of the Sacramento River watershed; HUC: 1802010412. The nearest water source to the 33.6N Improvement Area is TCC which is 1 mile west. The nearest water source to the Hart HQ Improvement Area is an unnamed Canal which is 0.9 miles east and Stony Creek which is 2 miles north and 4 miles east.

- Knight 27 Extension Improvement Area, Lateral 2.6 Booster Pump Station Improvement Area, 0.6 Booster Pump Improvement Area: Portions of the Project area lies within the Colusa Drain subwatershed; HUC: 180201040400, which is a part of the Colusa Drain watershed; HUC: 1802010404. The nearest water source to the Knight 27 Extension Improvement Area is an unnamed canal which is 0.6 miles west. The nearest water source to the Lateral 2.6 Booster Pump Station Improvement Area is an unnamed canal which is 0.4 miles west, and TCC which is 3.5 miles northwest. The nearest water source to the 0.6 Booster Pump Improvement Area is the no longer used unnamed canal which is directly north and connects to TCC that is 1.2 miles northwest.

The TCC receives water from the Sacramento River. This canal spans four counties (Tehama, Glenn, Colusa, and Yolo) along the west side of the Sacramento Valley before terminating. The TCC does not drain into any jurisdictional waters. North Fork Walker Creek starts in the uplands and flows into Walker Creek which goes past the Project area. Walker Creek then turns into Wilson Creek which turns into Willow Creek before then flowing into unnamed canals.[6]

Soils

Twenty-four (24) soil mapping units representing twelve (12) soil types were identified within the Project area and are listed in Table 4-10 (see Appendix B: Biological Evaluation for the complete Web Soil Survey reports). The soils are displayed with their core properties in the table below, according to the Major Land Resource Area of California. Generally, these twelve soils are primarily used for dryland and irrigated orchards, irrigated row and field crops, or livestock grazing.

Table 4-10. List of Soils Located Onsite and Their Basic Properties

Soil	Soil Map Unit	Percent of APEs	Hydric Unit	Hydric Minor Units	Drainage	Permeability	Runoff
Arbuckle	Gravelly loam, 0 to 2 percent slopes	8.3%	No	No	Well drained	Moderately slow permeability	Low runoff
	Gravelly loam, clayey substratum, 0 to 2 percent slopes	0.7%	No	Yes	Well drained	Moderately slow permeability	Medium runoff
	Gravelly sandy loam, 0 percent slopes	0.4%	No	Yes	Well drained	Moderately slow permeability	Medium runoff
Artois	Clay loam	0.0%	No	No	Moderately well drained	Slow permeability	High runoff
	Gravelly loam	1.2%	No	No	Moderately well drained	Slow permeability	High runoff

[6] (United States Environmental Protection Agency (USEPA) 2023)

Soil	Soil Map Unit	Percent of APEs	Hydric Unit	Hydric Minor Units	Drainage	Permeability	Runoff
Capay	Clay, 0 to 4 percent slopes	0.3%	No	Yes	Somewhat poorly drained	Slow permeability	High runoff
Corning-Redding	Gravelly loams, 1 to 3 percent slopes	1.2%	No	Yes	Moderately well drained	Slow permeability	Very high runoff
Cortina	Gravelly fine sandy loam shallow	0.8%	No	Yes	Somewhat excessively drained	Rapid permeability	Very low runoff
	Very gravelly sandy loam, 0 to 3 percent slopes	13.9%	No	Yes	Somewhat excessively drained	Rapid permeability	Very low runoff
	Very gravelly sandy loam, moderately deep	4.6%	No	Yes	Somewhat excessively drained	Rapid permeability	Very low runoff
Hillgate	Loam, 0 to 2 percent slopes	2.5%	No	Yes	Well drained	Slow permeability	Very low runoff
	Clay loam, 0 to 3 percent slopes	0.6%	No	Yes	Well drained	Slow permeability	Very high runoff
	Gravelly loam, 0 to 2 percent slopes	6.2%	No	Yes	Well drained	Slow permeability	Very high runoff
Jacinto	Fine sandy loam, 0 to 2 percent slopes	2.9%	No	No	Well drained	Moderately rapid permeability	Low runoff
Kimball	Loam, 0 to 2 percent slopes	0.6%	No	Yes	Well drained	Slow permeability	Very high runoff
	Gravelly loam, 0 to 2 percent slopes	0.3%	No	Yes	Well drained	Slow permeability	Very high runoff
Orland	Loam, moderately deep over gravel, 0 to 2 percent slopes	0.7%	No	Yes	Well drained	Moderate permeability	Low runoff
Pleasanton	Gravelly loam, 0 to 2 percent slopes	1.8%	No	No	Well drained	Moderately slow permeability	Medium runoff
Riverwash	-	0.2%	Yes	No	Excessively drained	-	Very low runoff
Tehama	Loam, moderately deep over gravel, 0 to 2 percent slopes	0.4%	No	No	Well drained	Slow permeability	Medium runoff
	Loam, deep to gravel, 0 to 3 percent slopes	11.0%	No	No	Well drained	Slow permeability	Medium runoff
	Gravelly loam, 0 to 3 percent slopes	0.0%	No	No	Well drained	Slow permeability	High runoff
	Silt loam, 0 to 3 percent slopes	36.3%	No	No	Well drained	Slow permeability	High runoff

Soil	Soil Map Unit	Percent of APEs	Hydric Unit	Hydric Minor Units	Drainage	Permeability	Runoff
Wyo	Loam, deep over gravel	1.0%	No	No	Well drained	Rapid permeability	Low runoff
	Gravelly loam, moderately deep over gravel	3.9%	No	No	Well drained	Rapid permeability	Low runoff

Hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions such that under sufficiently wet conditions, hydrophytic vegetation can be supported. While one major component and some minor components were identified as hydric, the soils of Project area are predominantly nonhydric.

Biotic Habitats

Four biotic habitats were identified within the Project area: Riverine/Riparian, Annual Grassland, Canal/Ditches, and Ruderal/Agricultural. The habitat types in the Project area are summarized below, in Table 4-11. Following Table 4-11 are descriptions of each habitat type, which include the constituent plant and animal species observed within the habitat. Selected photographs of these habitats are presented in Appendix B: Biological Evaluation.

Table 4-11. Summary of Habitat Types with Each APE

APE Name	Habitat Type and Presence in the APEs			
	Riverine/ Riparian	Annual Grassland	Canal/Ditches	Ruderal/ Agricultural
Lassen Land Improvement Area			X	X
Road F Improvement Area			X	X
Patton Improvement Area			X	X
Big W Improvement Area	X	X	X	X
Road 28 Improvement Area			X	X
Hart 330 Improvement Area			X	X
Hart 342 Improvement Area				X
Knight 33 Improvement Area			X	X
99W Improvement Area		X	X	X
33.6N Improvement Area			X	X
Sanford Improvement Area			X	X
Hart HQ Improvement Area			X	X

APE Name	Habitat Type and Presence in the APEs			
	Riverine/ Riparian	Annual Grassland	Canal/Ditches	Ruderal/ Agricultural
33.6E Improvement Area			X	X
Knight 27 Extension Improvement Area			X	X
0.6 Booster Pump Improvement Area			X	X
0.6 SAR Improvement Area			X	X
0.6 Woolf Improvement Area			X	X
Lateral 2.6 Booster Pump Station Improvement Area			X	X
99W Alternative Improvement Area			X	X

Riverine/Riparian

In and around the Project area experienced higher than average rainfall preceding and during the field survey, with the National Oceanic and Atmospheric Administration's (NOAA) Online Weather Data reporting 0.65 inches of rain in the week before the survey and 0.97 inches of rain on the first day of the survey. Heavy rainfall resulted in water high flows in several local creeks. The Big W Improvement Area was the only area that contained riverine habitat. An unnamed stream was within the 50-foot buffer of the Project area. The stream contained water at the time of the biological survey. Vegetation within the unnamed stream included invasive grasses, willow (*Salix* spp.), eucalyptus (*Eucalyptus* sp.), carob tree (*Ceratonia siliqua*), and Fremont cottonwoods (*Populus fremontii*).

The survey of this habitat resulted in the identification of numerous bird species including white-crowned sparrow (*Zonotrichia leucophrys*), black phoebe (*Sayornis nigricans*), American robin (*Turdus migratorius*), house finch (*Haemorhous mexicanus*), turkey vulture (*Cathartes aura*), wild turkey (*Meleagris gallopavo*), Canada goose (*Branta canadensis*), European starlings (*Sturnus vulgaris*), and western bluebird (*Sialia Mexicana*). Other species observed along the stream included a deer carcass. This area would be avoided during Project activities and would not be impacted.

Annual Grassland

The Big W Improvement Area and 99W Improvement Area contained annual grassland habitat. Vegetation within this habitat is subject to frequent disturbance, including grazing and discing. Invasive annuals were dominant within these habitats. Vegetation within this habitat included wild oats (*Avena fatua*), common fiddleneck (*Amsinckia menziesii*), wall barley (*Hordeum murinum*), mustards (*Brassica spp.*), redstem filaree (*Erodium cicutarium*), and bromes (*Bromus spp.*). Species of wildlife observed in these habitats during the survey include European starling, killdeer (*Charadrius vociferus*), California scrub jay (*Aphelocoma californica*), and black phoebe. Additionally, cattle scat was observed throughout the field adjacent to Interstate 5 within the 99W Improvement Area.

While these areas are highly disturbed, they have the potential to serve as foraging habitat for canids, raptors, and bats. Ground nesting birds such as killdeer would also be expected to utilize these habitats.

Canal/Ditches

Due to heavy rainfall before and during the survey, canals and ditches were full and overflowing in many areas. With the exception of the Hart 342 Improvement Area, all areas contained this habitat. The canal habitat included TCC and various ditches, which were located along the sides of the paved and agricultural roads. Vegetation observed in this habitat included invasive grasses, yellow star thistle (*Centaurea solstitialis*), redstem filaree, broadleaf cattail (*Typha latifolia*), flax leaved horseweed (*Conyza bonariensis*), curly dock (*Rumex crispus*), Johnson grass (*Sorghum halepense*), sedge (*Carex* sp.), wild radish (*Raphanus raphanistrum*), dove weed (*Croton setiger*), mustard, and tall flatsedge. Natural recruits of pistachio (*Pistacia* sp.), pecan (*Carya illinoinensis*), olive (*Olea europaea*) trees were also observed in some of the dry ditches.

The survey of this habitat resulted in the identification of numerous bird species including killdeer, hermit thrush (*Catharus guttatus*), white-crowned sparrow, American pipet (*Anthus rubescens*), western meadowlark (*Sturnella neglecta*), bufflehead (*Bucephala albeola*), and American robin.

At Lateral 2.6 Booster Pump Station Improvement Area California ground squirrels (*Otospermophilus beecheyi*) were observed running and burrowing throughout the Project area. A dead cat (*Felis catus*) and evidence of Botta's pocket gopher (*Thomomys bottae*) were observed on the bottom of the ditch and a large den was observed in the side wall of the ditch. There were also beekeeping boxes on the southeast side of the ditch at this area.

Ruderal/Agricultural

The Project area contained ruderal/agricultural habitat. The region has been under intensive agricultural production for several decades, with crops reports in Glenn County dating back to 1910. Many areas contain permanent crops including fruit and nut orchards. The ruderal/agricultural portion of the Project area contained gravel roads through agricultural orchards. Vegetation in this habitat included invasive grasses, stinkwort (*Datura stramonium*), redstem filaree, cheeseweed mallow (*Malva parviflora*), eucalyptus, field bindweed (*Convolvulus arvensis*), velvetleaf (*Abutilon theophrasti*), suaeda (*Suaeda* sp.), dove weed, Russian thistle (*Salsola tragus*), mustard, yellow star thistle, Barnyard grass (*Echinochloa* sp.), flax leaved horseweed, Johnson grass, mint (*Mentha* sp.), valley oak trees (*Quercus lobata*), horseweed (*Erigeron canadensis*), field bindweed (*Convolvulus arvensis*), tall flatsedge, green sprangletop (*Leptochloa dubia*), vetch (*Vicia* sp.), curly dock, mule fat (*Baccharis salicifolia*), willow, cactus (*Cactaceae* sp.), milk thistle (*Silybum marianum*), yellow star thistle, Gooddings willow (*Salix gooddingii*), and Fremont cottonwood.

The survey of this habitat resulted in the identification of numerous bird species including western meadowlark, killdeer, white-crowned sparrow, American robin, red-tailed hawk (*Buteo jamaicensis*), mourning dove (*Zenaida macroura*), yellow-rumped warbler (*Setophaga coronata*), house finch, black phoebe, northern flicker (*Colaptes auratus*), California towhee (*Melozone crissalis*), vesper sparrow (*Pooecetes gramineus*), lesser goldfinch (*Spinus psaltria*), red-winged blackbird (*Agelaius phoeniceus*), Brewers blackbird (*Euphagus cyanocephalus*), savannah sparrow (*Passerculus sandwichensis*), American crow (*Corvus brachyrhynchos*), house sparrow (*Passer domesticus*), Canada goose, wild turkey, ruby-crowned kinglet (*Regulus calendula*), and a hawk (*Buteo* sp.).

Wildlife and Plant Species

A query of the California Natural Diversity Database (CNDDB) for occurrences of special status animal and plant species was conducted for the Fruto NE, Orland, Hamilton City, and Stone Valley 7.5-minute U.S. Geological Survey (USGS) quadrangles that contain the APEs in their entirety, and for the 14 surrounding

USGS quadrangles: Sehorn Creek, Black Butte Dam, Kirkwood, Foster Island, Nord, Ord Ferry, Llano Seco, Glenn, Willows, Logandale, Logan Ridge, Rail Canyon, Fruto, and Julian Rocks. The U.S. Fish and Wildlife's Information for Planning and Consultation (IPaC) System was also queried for federally listed, proposed, and candidate species using the boundaries of the Project area. These species, and their potential to occur within the Project area, are listed in Table 4-12 and Table 4-13 on the following pages. Other species that have the potential to occur within the Project area that did not show up in the CNDDB or IPaC query are also included in Table 4-12. Species lists obtained from CNDDB and IPaC are available in Appendix B: Biological Evaluation. All relevant sources of information, as discussed in the Study Methodology section of this report, as well as field observations, were used to determine if any special status species may occur within the Project area.

Table 4-12. List of Special Status Animals with Potential to Occur on the Project Area and/or in the Vicinity

Species	Status*	Habitat	Occurrence within the Project Area*			
			Likely	Possible	Unlikely	Absent
American badger (*Taxidea taxus*)	CSSC	Grasslands, savannas, and mountain meadows near timberline are preferred. Most abundant in drier open spaces of shrub and grassland. Burrows in soil.	-	-	**All.** The entire Project area and surrounding areas have high human disturbance due to agricultural activities. An American Badger could easily pass through the region, but it is unlikely they would den within Project area. The nearest recorded observation of this species was approximately 7.5 miles north in 1993.	-
Bald eagle (*Haliaeetus leucocephalus*)	CE, CFP	Resides in old growth forests as well as lower montane coniferous forests. Nests are generally found in large, old-growth trees within a mile of water. Nests and winters along ocean shores, lake margins, and rivers.	-	**Patton Improvement Area.** This species is regionally abundant and there is high quality suitable nesting habitat adjacent to this APE. The nearest recorded observation of this species was approximately 7 miles southeast of the APEs in 2021. The most recent recorded observation of this species was approximately 11.5 miles northwest of the APEs in 2022.	**Lassen Land Improvement Area, Road F Improvement Area, Big W Improvement Area, Road 28 Improvement Area, Hart 330 Improvement Area, Hart 342 Improvement Area, Knight 33 Improvement Area, 99W Improvement Area, Sanford Improvement Area, Hart HQ Improvement Area, 33.6N Improvement Area, 33.6E Improvement Area, Knight 27 Extension Improvement Area, 0.6 Booster Pump Improvement Area, 0.6 SAR Improvement Area, 0.6 Woolf Improvement Area, Lateral 2.6 Booster Pump Station Improvement Area, 99W**	-

Species	Status*	Habitat	Occurrence within the Project Area*			
			Likely	Possible	Unlikely	Absent
					Alternative Improvement Area. This species is regionally abundant but there is minimal suitable nesting habitat adjacent to these **Project area**.	
Bank swallow (*Riparia riparia*)	CT	These aerial insectivores nest colonially in burrows constructed along vertical banks and bluffs near waterbodies. This disturbance tolerant species is also known to nest in man-made sites, such as quarries, mounds of gravel or dirt, and road cuts.	-	-	**All.** The Project area and surrounding areas lack bluffs and suitable habitat. The nearest recorded observation of this species was approximately 6.5 miles east in 2010, along the Sacramento River.	-
Burrowing owl (*Athene cunicularia*)	CSSC	Resides in open, dry annual or perennial grasslands, deserts, and scrublands with low growing vegetation. Nests underground in existing burrows created by mammals, most often ground squirrels.	-	**Big W Improvement Area, 99W Improvement Area.** These areas contain grassland habitat that is marginal for this species. The nearest recorded observation of this species was approximately 0.5 miles southwest of the APE in 1993. The most recent recorded observation of this species was approximately 13 miles northeast in 2022.	**Lassen Land Improvement Area, Road F Improvement Area, Patton Improvement Area, Road 28 Improvement Area, Hart 330 Improvement Area, Hart 342 Improvement Area, Knight 33 Improvement Area, Sanford Improvement Area, Hart HQ Improvement Area, 33.6N Improvement Area, 33.6E Improvement Area, Knight 27 Extension Improvement Area, 0.6 Booster Pump Improvement Area, 0.6 SAR Improvement Area, 0.6 Woolf Improvement Area, Lateral 2.6 Booster Pump Station**	-

Species	Status*	Habitat	Occurrence within the Project Area*			
			Likely	Possible	Unlikely	Absent
					Improvement Area, 99W Alternative Improvement Area. These areas and the surrounding areas have high human disturbance and lack suitable habitat.	
Conservancy fairy shrimp (*Branchinecta conservatio*)	FE	Endemic to the grasslands of the northern two-thirds of the Central Valley. Found in large, turbid pools.	-	-	-	**All.** The Project area and surrounding areas have high human disturbance and lack vernal pool habitat required by this species. The most recent recorded observation of this species was approximately 13 miles northeast in 2015.
Crotch bumble bee (*Bombus crotchii*)	CCE	Occurs throughout coastal California, as well as east to the Sierra-Cascade crest, and south into Mexico. Food plant genera include *Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia*, and *Eriogonum*.	-	-	**All.** The Project area and surrounding areas have high human disturbance, but this species could forage over or pass through the APEs in route to more suitable habitat. The nearest recorded observation of this species was approximately 6.5 miles east in 2022.	-
Foothill yellow-legged frog (*Rana boylii*)	CCT, CSSC	Frequents rocky streams and rivers with rocky substrate and open, sunny banks in forests, chaparral, and woodlands. Occasionally found in isolated pools, vegetated backwaters, and deep, shaded, spring-fed pools.	-	-	-	**All.** The Project area is outside of the current range of this species. These frogs are found in the foothills but not in the valley where the Project is located. There are many observations within the foothills surrounding the Project.

Species	Status*	Habitat	Occurrence within the Project Area*			
			Likely	Possible	Unlikely	Absent
						The nearest recorded observation of this species was approximately 25 miles east in 2020.
Giant gartersnake (*Thamnophis gigas*)	FT, CT	Occurs in marshes, sloughs, drainage canals, irrigation ditches, rice fields, and adjacent uplands. Prefers locations with emergent vegetation for cover and open areas for basking. This species uses small mammal burrows adjacent to aquatic habitats for hibernation in the winter and to escape from excessive heat in the summer.	-	-	Lassen Land Improvement Area, Road F Improvement Area, Patton Improvement Area, Big W Improvement Area, Road 28 Improvement Area, Hart 330 Improvement Area, Knight 33 Improvement Area, 99W Improvement Area, Sanford Improvement Area, Hart HQ Improvement Area, 33.6N Improvement Area, 33.6E Improvement Area, Knight 27 Extension Improvement Area, 0.6 Booster Pump Improvement Area, 0.6 SAR Improvement Area, 0.6 Woolf Improvement Area, Lateral 2.6 Booster Pump Station Improvement Area, 99W Alternative Improvement Area. These Project areas contain minimal suitable habitat for this species due to intensive agricultural activities throughout the area. Additionally, these areas are just outside the range of this species. This	Hart 342 Improvement Area- Suitable habitat for this species is absent within this portion of the Project area.

Species	Status*	Habitat	Occurrence within the Project Area*			
			Likely	Possible	Unlikely	Absent
					species may pass through the canal/ditch habitat but would not be expected to utilize burrows or breed on the area due to marginal habitat for this species. The nearest recorded observation of this species was approximately 6.5 miles southeast in 1954. The most recent recorded observation of this species was approximately 16 miles south in 2022.	
Green sturgeon (*Acipenser medirostris*)	FT	Spawning occurs primarily in cool (11-15 C) sections of mainstem rivers in deep pools (8-9 meters) with substrate containing small to medium sized sand, gravel, cobble, or boulder. Spawns in the Sacramento, Feather, and Yuba Rivers. Non-spawning adults occupy marine/estuarine waters. The Delta Estuary is important for rearing juveniles.	-	-	-	**All.** The Project area lack suitable aquatic habitat. The rivers and creeks that flow past the area do not flow perennially and would not contain green sturgeon. These rivers and creeks would not be impacted by Project activities. The nearest recorded observation of this species was approximately 6.5 miles east in the Sacramento River in 2020.
Monarch butterfly (*Danaus plexippus*)	FC	Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby. Larval host plants consist of milkweeds (*Asclepias* sp.).	-	-	**All.** The Project area and surrounding areas have high human disturbance, but this species could forage over or pass through the area in route to more suitable habitat.	-

Species	Status*	Habitat	Occurrence within the Project Area*			
			Likely	Possible	Unlikely	Absent
		Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico.			Should this species occur within the area, it would be expected to fly out and away from Project activities. The nearest recorded observation of this species was approximately 5.5 miles east in 2018.	
Steelhead – Central Valley DPS (*Oncorhynchus mykiss irideus* pop.11)	FT	This winter-run fish begins migration to fresh water during peak flows during December and February. Spawning season is typically from February to April. After hatching, fry move to deeper, mid-channel habitats in late summer and fall. In general, both juveniles and adults prefer complex habitat boulders, submerged clay and undercut banks, and large woody debris.	-	-	-	**All.** The Project area lacks suitable aquatic habitat. The rivers and creeks that flow past the area are not perennial and would not contain steelhead. The nearest recorded observation of this species was approximately 2.5 miles east in Lower Stony Creek in 2002. The most recent recorded observation of this species was approximately 8 miles east in Big Chico Creek in 2013. This species was also recorded in the Sacramento River.
Swainson's hawk (*Buteo swainsoni*)	CT	Nests in large trees in open areas adjacent to grasslands, grain or alfalfa fields, or livestock pastures suitable for supporting rodent populations.	**All.** There are large trees throughout the Project area that are suitable for this species to nest and fields in the surrounding areas to forage. There are many observations of this species throughout and surrounding areas.	-	-	-
Tricolored blackbird	CT, CSSC	Nests colonially near fresh water in dense cattails or	-	**Road 28 Improvement Area.** Emergent aquatic	**Lassen Land Improvement Area, Road**	-

Species	Status*	Habitat	Occurrence within the Project Area*			
			Likely	Possible	Unlikely	Absent
(*Agelaius tricolor*)		tules, or in thickets of riparian shrubs. Forages in grassland and cropland. Large colonies are often found on dairy farm forage fields.		vegetation that is suitable for this species was observed in the canals in and surrounding area. There are many observations of this species throughout the surrounding area. The nearest recorded observation of this species was approximately 2 miles east in 2014.	**F Improvement Area, Patton Improvement Area, Big W Improvement Area, Road 28 Improvement Area, Hart 330 Improvement Area, Hart 342 Improvement Area, Knight 33 Improvement Area, 99W Improvement Area, Sanford Improvement Area, Hart HQ Improvement Area, 33.6N Improvement Area, 33.6E Improvement Area, Knight 27 Extension Improvement Area, 0.6 Booster Pump Improvement Area, 0.6 SAR Improvement Area, 0.6 Woolf Improvement Area, Lateral 2.6 Booster Pump Station Improvement Area, 99W Alternative Improvement Area.** These areas contained emergent vegetation, but it was not suitable for this species to nest.	
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	FT	Lives in mature elderberry shrubs of the Central Valley and foothills. Adults are active from March to June.	-	-	-	**All.** No elderberry shrubs were observed within, or adjacent to, the Project area during the biological survey. The nearest recorded observation of this species was approximately 6.5 miles east in 2014.

Species	Status*	Habitat	Occurrence within the Project Area*			
			Likely	Possible	Unlikely	Absent
Vernal pool fairy shrimp (*Branchinecta lynchi*)	FT	Occupies vernal pools, clear to tea-colored water, in grass or mud-bottomed swales, and basalt depression pools.	-	-	-	**All.** The Project area and surrounding areas have high human disturbance and lack vernal pool habitat. The nearest recorded observation of this species was approximately 0.5 miles west in 1997. The most recent recorded observation of this species was approximately 13 miles north in 2019.
Vernal pool tadpole shrimp (*Lepidurus packardi*)	FE	Occurs in vernal pools, clear to tea-colored water, in grass or mud-bottomed swales, and basalt depression pools.	-	-	-	**All.** The Project area and surrounding areas have high human disturbance and lack vernal pool habitat. The nearest recorded observation of this species was approximately 8 miles southeast in 2010.
Western mastiff bat (*Eumops perotis californicus*)	CSSC	Found in open, arid to semi-arid habitats, including dry desert washes, flood plains, chaparral, oak woodland, open ponderosa pine forest, grassland, and agricultural areas, where it feeds on insects in flight. Roosts most commonly in crevices in cliff faces but may also use high buildings and tunnels.	-	-	**All.** The Project area lack suitable cliff roosting habitat. This species could forage over or pass through the area in route to more suitable habitat. The nearest recorded observation of this species was approximately 8 miles east 1999.	-
Western pond turtle (*Emys marmorata*)	CSSC	An aquatic turtle of ponds, marshes, slow-moving rivers, streams, and irrigation ditches with riparian vegetation. Requires	-	**Lassen Land Improvement Area, Road F Improvement Area, Big W Improvement Area, Road 28 Improvement**	-	**Hart 342 Improvement Area, Hart 330 Improvement Area.** These areas lack suitable habitat for this species.

Species	Status*	Habitat	Occurrence within the Project Area*			
			Likely	Possible	Unlikely	Absent
		adequate basking sites and sandy banks or grassy open fields to deposit eggs.		**Area, Knight 33 Improvement Area, Patton Improvement Area, 99W Improvement Area, Sanford Improvement Area, Hart HQ Improvement Area, 33.6N Improvement Area, 33.6E Improvement Area, Knight 27 Extension Improvement Area, 0.6 Booster Pump Improvement Area, 0.6 SAR Improvement Area, 0.6 Woolf Improvement Area, Lateral 2.6 Booster Pump Station Improvement Area, 99W Alternative Improvement Area.** These areas and surrounding areas contain irrigation ditches with riparian vegetation and this species could pass through, forage, or rest. The nearest recorded observation of this species was approximately 9.5 miles northwest in 2019.		
Western red bat (*Lasiurus blossevillii*)	CSSC	Roosts primarily in trees, 2–40 ft above ground, from sea level up through mixed conifer forests. Prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging.	-	-	**All.** The Project area lacks suitable roosting habitat. This species could forage over or pass through the area in route to more suitable habitat. The nearest recorded observation of this species was	-

Species	Status*	Habitat	Occurrence within the Project Area*			
			Likely	Possible	Unlikely	Absent
					approximately 8 miles east in 1999.	
Western spadefoot (*Spea hammondii*)	CSSC	Prefers open areas with sandy or gravelly soils, in a variety of habitats including mixed woodlands, grasslands, coastal sage scrub, chaparral, sandy washes, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains. Vernal pools or temporary wetlands, lasting a minimum of three weeks, which do not contain bullfrogs, fish, or crayfish are necessary for breeding.	-	**Big W Improvement Area, 99W Improvement Area.** These areas contain grassland habitat that have the potential to pond. The nearest recorded observation of this species was approximately 15 miles east 2020.	**Lassen Land Improvement Area, Road F Improvement Area, Patton Improvement Area, , Road 28 Improvement Area, Hart 330 Improvement Area, Hart 342 Improvement Area, Knight 33 Improvement Area, Sanford Improvement Area, Hart HQ Improvement Area, 33.6N Improvement Area, 33.6E Improvement Area, Knight 27 Extension Improvement Area, 0.6 Booster Pump Improvement Area, 0.6 SAR Improvement Area, 0.6 Woolf Improvement Area, Lateral 2.6 Booster Pump Station Improvement Area, 99W Alternative Improvement Area.** These areas and the surrounding areas have high human disturbance and lack suitable habitat.	-
Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	FT, CE	Suitable nesting habitat in California include dense riparian willow-cottonwood and mesquite habitats along a perennial river. Once a common breeding species in riparian habitats of lowland	-	-	**All.** Critical habitat for the yellow-billed cuckoo is located 6.5 miles east along the Sacramento River. The nearest recorded observation of this species was	-

Species	Status*	Habitat	Occurrence within the Project Area*			
			Likely	Possible	Unlikely	Absent
		California, this species currently breeds consistently in only two locations in the State: along the Sacramento and South Fork Kern Rivers.			approximately 7.5 miles east along the Sacramento River in 2013. The riparian corridors near the areas do not provide suitable nesting habitat for this species. High quality habitat is abundant in the region; therefore, this species would not be expected to utilize low quality riparian habitat.	

Table 4-13. List of Special Status Plants with Potential to Occur on the APEs and/or in the Vicinity

Species	Status*	Habitat	Occurrence within the APEs*			
			Likely	Possible	Unlikely	Absent
Adobe-lily (*Fritillaria pluriflora*)	CNPS 1B	Found in chaparral, cismontane woodland, valley, and foothill grasslands. Usually on clay soils; sometimes serpentine. Found at elevations between 145-3,100 feet. Blooms February–April.	-	-	-	**All.** Required habitat and soils are absent within the area. Observation of this species was approximately 11.5 miles northeast in 1929.
Ahart's paronychia (*Paronychia ahartii*)	CNPS 1B	Valley and foothill grassland, vernal pools, cismontane woodland. Stony, nearly barren clay of swales and higher ground around vernal pools. Found at elevations between 145-1640 feet. Blooms March–June.	-	-	-	**All.** Required vernal pool habitat is absent within the area and surrounding lands. The nearest recorded observation of this species was approximately 9.5 miles northwest in 2017.
Baker's navarretia (*Navarretia leucocephala* ssp. *bakeri*)	CNPS 1B	Found in meadows, seeps, vernal pools and swales within cismontane woodland, valley and foothill grassland, and lower montane coniferous forest with adobe or alkaline soils at elevations of 10-5,510 feet. Blooms April–July.	-	-	-	**All.** Required habitats are absent within the area and surrounding lands. The nearest recorded observation of this species was approximately 9 miles north in 1955.
Brazilian watermeal (*Wolffia brasiliensis*)	CNPS 2B	Found in shallow freshwater marshes and swamps at elevations from 50-360 feet. Blooms April–December.	-	-	-	**All.** Required marsh habitat is absent within the area and surrounding lands. The nearest recorded observation of this species was approximately 8 miles east in 2000.
Brittlescale (*Atriplex depressa*)	CNPS 1B	Found in the Central Valley in alkaline or clay soils, typically in meadows or annual grassland at elevations below 1050 feet. Sometimes associated with vernal pools. Blooms June–October.	-	-	-	**All.** Required vernal pool habitat is absent within the area and surrounding lands. The nearest recorded observation of this species was approximately 7 miles south in 1920.
Butte County meadowfoam (*Limnanthes floccosa* ssp. *californica*)	FE, CNPS 1B	Found in vernal pools, valley, and foothill grasslands, in wet or flowing drainages and depressions; often not in discrete vernal pools; soils are usually Redding clay with rocks at elevations from 115-1,210 feet. Blooms March–May.	-	-	-	**All.** Required vernal pool habitat is absent within the area and surrounding lands. The nearest recorded observation of this species was approximately 14 miles northeast in 2010.
California alkali grass (*Puccinellia simplex*)	CNPS 1B	Found in the San Joaquin Valley and other parts of California in saline flats and mineral springs within valley grassland and wetland-riparian communities at elevations below 3000 feet. Blooms March–May.	-	-	-	**All.** Required wetland habitat is absent within the area and surrounding lands. The only recorded observation of this species was approximately 16 miles south in 1993.
Colusa grass (*Neostapfia colusana*)	FT, CE, CNPS 1B	Found in vernal pools in adobe soils at elevations below 410 feet. Blooms May – August.	-	-	-	**All.** Required vernal pool habitat is absent within the area and surrounding lands. The only recorded observation of this species within the vicinity was approximately 16 miles southeast in 1986.

Species	Status*	Habitat	Occurrence within the APEs*			
			Likely	Possible	Unlikely	Absent
Colusa Layla (*Layia septentrionalis*)	CNPS 1B	Found in chaparral, cismontane woodland, valley, and foothill grasslands. Generally occurs on grassy slopes in sandy or serpentine soil at elevations from 50-3,600 feet. Blooms April – May.	-	-	-	**All.** Required habitat and serpentine soils are absent within the area and surrounding lands. The nearest recorded observation of this species was approximately 17 miles southwest in 2004.
Dwarf downingia (*Downingia pusilla*)	CNPS 2B	Found in vernal pools in valley and foothill grassland communities at elevations below 1,600 feet. Blooms March – May.	-	-	-	**All.** Required vernal pool habitat is absent within the area and surrounding lands. The most recent recorded observation of this species was approximately 10 miles north in 2017.
Ferris' milk-vetch (*Astragalus tener* var. *ferrisiae*)	CNPS 1B	Found in meadows, seeps, valley grasslands, and foothill grasslands. Often occurs on subalkaline flats on overflow land in the Central Valley; usually seen in dry, adobe soil at elevations below 260 feet. Blooms April – May.	-	-	-	**All.** Required meadow habitat are absent within the area and surrounding lands. The nearest recorded observation of this species was approximately 8 miles northeast in 2002.
Greene's tuctoria (*Tuctoria greenei*)	FE, CR, CNPS 1B	Found in the San Joaquin Valley and other parts of California in vernal pools within valley grassland, wetland, and riparian communities at elevations below 3500 feet. Blooms May – September.	-	-	-	**All.** Required vernal pool habitat is absent within the area and surrounding lands. The nearest recorded observation of this species was approximately 12.5 miles southeast in 2012.
Hairy Orcutt grass (*Orcuttia pilosa*)	FE, CE, CNPS 1B	Found in vernal pools in valley grassland, wetland, and riparian communities at elevations below 650 feet. Blooms May – September.	-	-	-	**All.** Required vernal pool habitat is absent within the area and surrounding lands. The nearest recorded observation of this species was approximately 13.5 miles south in 2011.
Heartscale (*Atriplex cordulata* var. *cordulata*)	CNPS 1B	Found in the Central Valley in saline or alkaline soils within shadscale scrub, valley grassland, and wetland-riparian communities at elevations below 230 feet. Blooms June–July.	-	-	-	**All.** Required wetland habitat is absent within the area and surrounding lands. The nearest recorded observation of this species was approximately 13 miles southeast in 2003.
Heckard's pepper-grass (*Lepidium latipes* var. *heckardii*)	CNPS 1B	Facultative wetland plant species which grows at elevations below 2,297 feet. Found in alkaline soils in valley and foothill grasslands as well as vernal pools. Blooms March – June.	-	-	-	**All.** Required vernal pool habitat is absent within the area and surrounding lands. The nearest recorded observation of this species was approximately 13 miles southeast in 2003.
Hoover's spurge (*Euphorbia hooveri*)	FT, CNPS 1B	Found in the Central Valley in vernal pools within valley grassland, freshwater wetland, and riparian communities at elevations below 800 feet. Blooms July – September.	-	-	-	**All.** Required wetland habitat is absent within the area and surrounding lands. The nearest recorded observation of this species was approximately 11.5 miles northeast in 2011.

Species	Status*	Habitat	Occurrence within the APEs*			
			Likely	Possible	Unlikely	Absent
Palmate-bracted bird's beak (*Chloropyron palmatum*)	FE, CE, CNPS 1B	Found in the Central Valley in alkaline soils (usually Pescadero silty clay) in chenopod scrub, valley, and foothill grassland at elevations below 500 feet. Blooms June–August.	-	-	-	**All.** Required habitat and alkaline soils are absent within the area and surrounding lands. The nearest recorded observation of this species was approximately 13.5 miles southeast in 2007.
Pink creamsacs (*Castilleja rubicundula* var. *rubicundula*)	CNPS 1B	Found in chaparral, cismontane woodland, meadows and seeps, valley grasslands, and foothill grasslands. Often found on serpentine soil at elevations from 65-3,000 feet. Blooms April – June.	-	-	-	**All.** Required habitat and serpentine soils are absent within the area and surrounding lands. The nearest recorded observation of this species was approximately 2 miles north in 1914.
Red Bluff dwarf rush (*Juncus leiospermus* var. *leiospermus*)	CNPS 1B	Found in chaparral, valley and foothill grassland, cismontane woodland, vernal pools, meadows, and seeps. Sometimes found on the edges of vernal pools. Found at elevations from 100- 4,115 feet. Blooms March – May.	-	-	-	**All.** Required vernal pool habitat is absent within the area and surrounding lands. The only recorded observation of this species was approximately 13.5 miles northwest in 1995.
San Joaquin spearscale (*Extriplex joaquinana*)	CNPS 1B	Found in alkali wetlands, sinks, and scrublands in the San Joaquin Valley and Delta-Bay region of California. Associated with Distichlis spicata, Frankenia, and other scrub species at elevations below 1,150 feet. Blooms April – September.	-	-	-	**All.** Required wetland habitat is absent within the area and surrounding lands. The most recent recorded observation of this species was approximately 13.5 miles southeast in 2003.
Silky Cryptantha (*Cryptantha crinite*)	CNPS 1B	Found in cismontane woodland, valley foothill grassland, lower montane coniferous forest, riparian forest, and riparian woodland. Often in gravelly streambeds at elevations from 115-4,000 feet. Blooms April – May.	-	-	-	**All.** Required habitats are absent within the area and surrounding lands. The only recorded observation of this species was approximately 8.5 miles east in 2010.
Stony Creek spurge (*Euphorbia ocellata* ssp. *rattanii*)	CNPS 1B	Found in valley and foothill grassland, chaparral, and riparian scrub. Often in sandy or rocky soils at elevations from 260-1,700 feet. Blooms May – October.	-	-	-	**All.** Required habitats are absent within the area and surrounding lands. The nearest recorded observation of this species was approximately 7.5 miles northwest in 2013.
Vernal pool smallscale (*Atriplex persistens*)	CNPS 1B	Occurs in the Central Valley in alkaline vernal pools at elevations below 375 feet. Blooms June–September.	-	-	-	**All.** Required vernal pool habitat is absent within the area and surrounding lands. The nearest recorded observation of this species was approximately 15 miles south in 2006.
Watershield (*Brasenia schreberi*)	CNPS 2B	Found in marshes and swamps, as well as near artificial waterbodies at elevations below 2200 feet. Blooms April – October.	-	-	-	**All.** Required vernal pool habitat is absent within the area and surrounding lands. The nearest recorded observation of this species was approximately 14 miles east in 1931 but is considered extirpated.

Species	Status*	Habitat	Occurrence within the APEs*			
			Likely	Possible	Unlikely	Absent
Woolly rose-mallow (*Hibiscus lasiocarpos* var. *occidentalis*)	CNPS 1B	Found in freshwater marshes and swamps. Often in moist, freshwater-soaked riverbanks and low peat islands in sloughs; can also occur on riprap and levees. In California, it is known to be in the delta watershed at elevations below 500 feet. Blooms June – September.	-	-	-	**All.** Required freshwater marsh habitat is absent within the area and surrounding lands. The nearest recorded observation of this species was approximately 9.5 miles east in 1990.

*** EXPLANATION OF OCCURRENCE DESIGNATIONS AND STATUS CODES**

Present: Species observed on the APEs at time of field surveys or during recent past.
Likely: Species not observed on the APEs, but it may reasonably be expected to occur there on a regular basis.
Possible: Species not observed on the APEs, but it could occur there from time to time.
Unlikely: Species not observed on the APEs, and would not be expected to occur there except, perhaps, as a transient.
Absent: Species not observed on the APEs and precluded from occurring there due to absence of suitable habitat.

STATUS CODES

FE	Federally Endangered	CE	California Endangered
FT	Federally Threatened	CT	California Threatened
		CCT	California Threatened (Candidate)
		CFP	California Fully Protected
		CSSC	California Species of Special Concern
		CCE	California Endangered (Candidate)

CNPS LISTING

1B	Plants Rare, Threatened, or Endangered in California and elsewhere.	2B	Plants Rare, Threatened, or Endangered in California, but more common elsewhere.

4.4.2 Applicable Regulations

Threatened and Endangered Species

Permits may be required from California Department of Fish and Wildlife (CDFW) and/or United States Fish and Wildlife Service (USFWS) if activities associated with a project have the potential to result in the "take" of a species listed as threatened or endangered under the California Endangered Species Act (CESA) and/or Endangered Species Act (ESA), respectively. Take is defined by CESA as, "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill" (California Fish and Game Code, Section 86). Take is more broadly defined by the ESA to include "harm" (16 USC, Section 1532(19), 50 CFR, Section 17.3). CDFW and USFWS are responsible agencies under CEQA and the National Environmental Policy Act (NEPA). Both agencies review CEQA and NEPA documents in order to determine the adequacy of the treatment of endangered species issues and to make project-specific recommendations for their conservation.

Designated Critical Habitat

When species are listed as threatened or endangered, the USFWS often designates areas of "critical habitat" as defined by section 3(5)(A) of the ESA. Critical habitat is a term defined in the ESA as a specific geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat is a tool that supports the continued conservation of imperiled species by guiding cooperation with the federal government. Designations only affect federal agency actions or federally funded or permitted activities. Critical habitat does not prevent activities that occur within the designated area. Only activities that involve a federal permit, license, or funding and are likely to destroy or adversely modify critical habitat will be affected.

Migratory Birds

The Migratory Bird Treaty Act (MBTA: 16 USC 703-712) prohibits killing, possessing, or trading in any bird species covered in one of four international conventions to which the United States is a party, except in accordance with regulations prescribed by the Secretary of the Interior. The name of the act is misleading, as it covers almost all bird's native to the United States, even those that are non-migratory. The MBTA encompasses whole birds, parts of birds, and bird nests and eggs. Additionally, California Fish and Game Code makes it unlawful to take or possess any non-game birds covered by the MBTA (Section 3513), as well as any other native non-game birds (Section 3800).

Birds of Prey

Birds of prey are protected in California under provisions of California Fish and Game Code (Section 3503.5), which states that it is unlawful to take, possess, or destroy any birds in the order Falconiformes (hawks and eagles) or Strigiformes (owls), as well as their nests and eggs. The bald eagle and golden eagle are afforded additional protection under the Bald and Golden Eagle Protection Act (16 USC 668), which makes it unlawful to kill birds or their eggs, or take feathers or nests, without a permit issued by the United States Secretary of the Interior.

Nesting Birds

In California, protection is afforded to the nests and eggs of all birds. California Fish and Game Code (Section 3503) states that it is "unlawful to take, possess, or needlessly destroy the nest or eggs of any bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Breeding-season disturbance that causes nest abandonment and/or loss of reproductive effort is considered a form of "take" by the CDFW.

Wetlands and other "Jurisdictional Waters"

The definition of "waters of the United States" (WOTUS) often changes from one presidential administration to the next. The current definition, established under the Biden Administration that became effective on March 20, 2023 (i.e., "new rule"), has adopted much of the same WOTUS designations as the pre-2015 rules, but has incorporated the most recent science and court case rulings. Traditional navigable waters, territorial seas, and interstate waters remain covered under the new rule. Natural drainage channels and adjacent wetlands may be considered "waters of the United States" or "jurisdictional waters" subject to the jurisdiction of the USACE if there is a "relatively permanent" surface water connection, or "significant nexus" to WOTUS. The extent of jurisdiction has been defined in the Code of Federal Regulations but is also subject to interpretation by the federal courts. Jurisdictional waters generally include the following categories:

1) Waters which are:
    a. Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
    b. The territorial seas; or
    c. Interstate waters, including interstate wetlands;
2) Impoundments of waters otherwise defined as WOTUS under this definition, other than impoundments of waters identified under item (5) of this section;
3) Tributaries of waters identified in items (1) or (2) of this section:
    a. That are relatively permanent, standing or continuously flowing bodies of water; or
    b. That either alone or in combination with similarly situated waters in the region, significantly affect the chemical, physical, or biological integrity of waters identified in item (1) of this section;
4) Wetlands adjacent to the following waters:
    a. Waters identified in item (1) of this section; or
    b. Relatively permanent, standing or continuously flowing bodies of water identified in items (2) or (3)(i) of this section and with a continuous surface connection to those waters; or
    c. Waters identified in items (2) or (3) of this section when the wetlands either alone or in combination with similarly situated waters in the region, significantly affect the chemical, physical, or biological integrity of waters identified in item (1) of this section;
5) Intrastate lakes and ponds, streams, or wetlands not identified in items (1) through (4) of this section:
    a. That are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in items (1) or (3)(i) of this section; or
    b. That either alone or in combination with similarly situated waters in the region, significantly affect the chemical, physical, or biological integrity of waters identified in item (1) of this section.

Prior exclusions have been consolidated under the new rule, which excludes from jurisdiction any feature that satisfies the following terms:

- Waste treatment systems, including treatment ponds or lagoons;
- Prior converted cropland;
- Ditches excavated wholly in and draining only dry land and do not carry a relatively permanent flow of water;
- Artificially irrigated areas that would revert to dry land if irrigation ceased;

- Artificial lakes or ponds created by excavating or diking dry land for the use of stock watering, irrigation, settling basins or rice growing;
- Artificial reflecting or swimming pools;
- Waterfilled depressions created in dry land; and
- Swales and erosional features (ex. gullies and small washes) characterized by low volume, infrequent, or short duration flow.

The new rule has incorporated the best available science, relevant supreme court cases, public comment, technical expertise, and experience gained from more than 45 years of implementing the pre-2015 "waters of the United States" framework to inform jurisdictional limits. One significant court case involves the U.S. Supreme Court in its *2001 Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers (SWANCC)* decision. It was determined that channels and wetlands isolated from other jurisdictional waters cannot be considered jurisdictional on the basis of their use, hypothetical or observed, by migratory birds.

Similarly, in its 2006 consolidated *Carabell/Rapanos* decision, the United States Supreme Court ruled that a significant nexus between a wetland and other navigable waters must exist for the wetland itself to be considered jurisdictional waters. The Supreme Court heard *Sackett v. United States Environmental Protection Agency (EPA)* in May 2023, to determine governing standards of a significant nexus between waters of the United States and adjacent wetlands. The court decided that adjacent wetlands would be protected under the CWA only if it maintained a continuous surface water connection with a federal water body. This decision has limited protection for networks of wetlands connected to navigable waters through subsurface flow. The final decision is anticipated to be published in October 2023.

The USACE regulates the filling or grading of waters of the United States. under the authority of Section 404 of the CWA. The extent of jurisdiction within drainage channels is defined by "ordinary high-water marks" on opposing channel banks. All activities that involve the discharge of dredge or fill material into Waters of the United States are subject to the permit requirements of the USACE. Such permits are typically issued on the condition that the applicant agrees to provide mitigation that results in no net loss of wetland functions or values. No permit can be issued until the RWQCB issues a Section 401 Water Quality Certification (or waiver of such certification) verifying that the proposed activity will meet state water quality standards.

Under the Porter-Cologne Water Quality Control Act of 1969, the SWRCB has regulatory authority to protect the water quality of all surface water and groundwater in the State of California ("Waters of the State"). Nine RWQCBs oversee water quality at the local and regional level. The RWQCB for a given region regulates discharges of fill or pollutants into Waters of the State through the issuance of various permits and orders. Discharges into Waters of the State that are also Waters of the United States require a Section 401 Water Quality Certification from the RWQCB as a prerequisite to obtaining certain federal permits, such as a Section 404 Clean Water Act permit. Discharges into all Waters of the State, even those that are not also Waters of the United States, require Waste Discharge Requirements (WDRs), or waivers of WDRs, from the RWQCB. The RWQCB also administers the Construction Storm Water Program and the federal National Pollution Discharge Elimination System (NPDES) program. Projects that disturb one acre or more of soil must obtain a Construction General Permit under the Construction Storm Water Program. A prerequisite for this permit is the development of a Storm Water Pollution Prevention Plan (SWPPP) by a certified Qualified SWPPP Developer. Projects that discharge wastewater, storm water, or other pollutants into a Water of the United States may require a NPDES permit.

CDFW has jurisdiction over the bed and bank of natural drainages and lakes according to provisions of Section 1601 and 1602 of the California Fish and Game Code. Activities that may substantially modify such waters through the diversion or obstruction of their natural flow, change or use of any material from their bed or bank, or the deposition of debris require a notification of a Lake or Streambed Alteration. If CDFW determines that the activity may adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement will be prepared. Such an agreement typically stipulates that certain measures will be implemented to protect the habitat values of the lake or drainage in question

Glenn County Ordinance

The Glenn County General Plan Policy Document contains the following goals and policies related to the Project:

Ecosystem and Habitat Resources

Goal COS-3: Protect and maintain sensitive ecosystems, natural habitats, and biological resources within Glenn County.

Policy COS 3-1: Preserve natural riparian habitats throughout the planning area, and specifically along Stony Creek, the Sacramento River, and Butte Creek.

Policy COS 3-2: Recognize that retention of natural areas is important to maintaining adequate populations of wildlife that support recreation and hunting, open space, economic and environmental objectives.

Policy COS 3-4: Coordinate with State and Federal agencies, private landowners and preservation and conservation groups in habitat preservation and protection of rare, endangered, threatened, and special concern species, to ensure consistency in efforts and to encourage joint planning and development of areas to be preserved.

Policy COS 3-5: Recognize the Sacramento River corridor, the Sacramento National Wildlife Refuge, migratory deer herd areas, naturally occurring wetlands, and stream courses such as Butte and Stony Creeks as areas of significant biological importance.

Policy COS 3-6: Direct development away from naturally occurring wetlands and other areas of sensitive and critical habitat throughout the County Planning Area.

Policy COS 3-7: Preserve and enhance biological communities that contribute to the region's biodiversity including, but not limited to, grasslands, freshwater marshes, wetlands, vernal pools, riparian areas, aquatic habitat, oak woodlands, and agricultural lands.

Policy COS 3-8: Focus conservation efforts on high priority conservation areas that contain suitable habitat for endangered, threatened, migratory, or special-status species and that can be managed with minimal interference with nearby urban land uses.

Policy COS 3-9: Conserve existing native vegetation where possible and integrate regionally native plant species into development and infrastructure projects where appropriate.

Policy COS 3-10: Discourage the removal of large, mature, native trees that provide wildlife habitat, visual screening, or contribute to the visual and biological quality of the environment.

4.4.3 Impact Analysis

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

Less than Significant Impact with Mitigation Incorporated. Of the 21 regionally occurring special status animal species, 15 are considered absent from or unlikely to occur within the Project area due to past or ongoing disturbance and/or the absence of suitable habitat. These species include: American badger, bank swallow, conservancy fairy shrimp, Crotch bumble bee, foothill yellow-legged frog, giant garter snake, green sturgeon, monarch butterfly, steelhead, valley elderberry longhorn beetle, vernal pool fairy shrimp, vernal pool tadpole shrimp, western mastiff bat, western red bat, and western yellow-billed cuckoo. Since it is unlikely these species would occur onsite, implementation of the Project should have no impact on these 15 special status species through construction mortality, disturbance, or loss of habitat. Mitigation measures are not warranted.

Of the 25 regionally occurring special status plant species, all 25 are considered absent from or unlikely to occur within the Project area due to past or ongoing disturbance and/or the absence of suitable habitat. Since it is unlikely these species would occur onsite, implementation of the Project would have no impact on these 25 special status species through construction mortality, disturbance, or loss of habitat. Mitigation measures are not warranted.

Species identified as candidate, sensitive, or special status species by CDFW, USFWS, or CNPS, or are protected by State and/or federal laws, that have the potential to be impacted by Project activities in the Project area include: bald eagle, burrowing owl (BUOW), Swainson's hawk, tricolored blackbird, western pond turtle, western spadefoot, and nesting migratory birds and raptors. Discussion and corresponding mitigation measures can be found below.

General Project-Related Impacts

The Project has the potential to impact a number of sensitive resources, as described in more detail in the following sections. Impacts to these resources could be a violation of State and federal laws or considered a potentially significant impact under CEQA.

Mitigation Measures are warranted and are identified in Section 4.4.4 below. Implementation of mitigation measures BIO-1 and BIO-2 will reduce impacts to sensitive resources to a less than significant level under CEQA.

Project-Related Mortality and/or Disturbance to Special Status Species

Special status species, such as western spadefoot, have the potential to occur throughout the Project area. Project activities that impact special status species would be considered a potentially significant impact under CEQA.

Mitigation Measures are warranted and are identified in Section 4.4.4 below. Implementation of mitigation measures BIO-3, BIO-4, and BIO-5 will reduce impacts to special status species to a less than significant level under CEQA.

Project-Related Mortality and/or Disturbance to Burrowing Owl

The Big W Improvement Area and the 99 W Improvement Area within the Project area contain grassland habitat that could potentially be used by BUOW. Construction activities that adversely affect the nesting success of BUOW or result in the mortality of individual birds would constitute a violation of State and federal laws and be considered a significant impact under CEQA.

While foraging habitat for BUOW is present in the Project area, suitable foraging habitat is located adjacent to, or within the vicinity of, the Project area and temporary impacts to the foraging habitat from implementation of the project is not considered a significant impact.

Mitigation Measures are warranted and are identified in Section 4.4.4 below. BIO-6, BIO-7, and BIO-8 would reduce potential impacts to nesting or roosting BUOW to a less than significant level under CEQA and ensure compliance with State and federal laws protecting this avian species. These measures would be implemented at the Big W Improvement Area and the 99 W Improvement Area portions of the Project area.

Project-Related Mortality and/or Disturbance to Swainson's Hawk

Swainson's hawks are regionally abundant and could nest in the large trees surrounding the Project area. Swainson's hawk nesting within the Project area during construction have the potential to be injured or killed by Project-related activities. In addition to the direct "take" of Swainson's hawk, nesting Swainson's hawk within the Project area or adjacent areas could be disturbed by Project-related activities resulting in nest abandonment. Projects that adversely affect the nesting success of Swainson's hawks or result in the mortality of individual birds would be considered a violation of CEQA and State and federal laws that protect this species.

While foraging habitat for migratory birds and raptors, including Swainson's hawk, is present in the Project area, suitable foraging habitat is located adjacent to, or within the vicinity of, the Project area and temporary impacts to the foraging habitat from implementation of the project is not considered a significant impact.

Mitigation Measures are warranted and are identified in Section 4.4.4 below. Implementation of BIO-9, BIO-10, and BIO-11 will reduce potential impacts to nesting Swainson's hawk in or adjacent to the Project area, to a less than significant level under CEQA and will ensure compliance with State and federal laws that protect this species.

Project-Related Mortality and/or Disturbance to Bald Eagles

Suitable nesting and foraging habitat for bald eagles is present adjacent to the Patton Improvement Area APE and this species could nest adjacent to this area. Bald eagles are protected under the Bald and Golden Eagle Protection Act, Migratory Bird Treaty Act, and the California Fish and Game Code. The Bald and Golden Eagle Protection Act prohibits take, possession, sale, purchase, barter, offer to sell, purchase, or barter, transport, or export/import of any eagle, alive or dead, including any part, nest, or egg, unless allowed by permit. The term "take" includes to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb." Project-related activities that result in injury, mortality, or disturbance

to nesting, foraging, or roosting bald eagles would violate State and federal laws protecting these species and would be considered a significant impact under CEQA.

Mitigation Measures are warranted and are identified in Section 4.4.4 below. Implementation of BIO-12, BIO-13, and BIO-14 will reduce potential impacts to bald eagles.

Project-Related Mortality and/or Disturbance to Tricolored Blackbird

Suitable nesting and foraging habitats are present within and adjacent to the Road 28 Improvement Area for tricolored blackbirds. This species is regionally abundant and could nest within or adjacent to this portion of the Project area. There are areas with emergent aquatic vegetation that are suitable for this species to nest in the canals within the Road 28 Improvement Area and in surrounding areas. Projects that adversely affect the nesting success of raptors and migratory birds or result in the mortality of individual birds are considered a violation of State and federal laws and would be considered a potentially significant impact under CEQA.

Mitigation Measures are warranted and are identified in Section 4.4.4 below. Implementation of BIO-15, BIO-16, and BIO-17 will reduce potential impacts to tricolored blackbirds.

Project-Related Mortality and/or Disturbance to Nesting Migratory Birds and Raptors

The Project area contains suitable nesting and foraging habitat for a variety of bird species. It is anticipated that during the nesting bird season, birds could nest on the ground or in shrubs and trees within or adjacent to all of the identified Improvement Areas. Migratory birds and raptors nesting within an Improvement Area during construction have the potential to be injured or killed by Project-related activities. In addition to the direct "take" of migratory nesting birds and raptors, nesting birds and raptors within the Project area or adjacent areas could be disturbed by Project-related activities resulting in nest abandonment. Projects that adversely affect the nesting success of raptors and migratory birds or result in the mortality of individual birds would be a violation of State and federal laws and considered a potentially significant impact under CEQA.

Mitigation Measures are warranted and are identified in Section 4.4.4 below. Implementation of BIO-18, BIO-19, and BIO-20 will reduce potential impacts to nesting migratory birds and raptors to a less than significant level under CEQA and ensure compliance with State and federal laws protecting these avian species.

Project-Related Mortality and/or Disturbance to Western Pond Turtles

Western pond turtle are known to nest in the spring or early summer within 330 feet of a water body, although nest sites as far away as 1,640 feet have also been reported. Noise, vegetation removal, movement of workers, construction, and ground disturbance as a result of Project activities have the potential to significantly impact this species. Without appropriate avoidance and minimization measures for western pond turtle, potentially significant impacts associated with Project activities could include inadvertent entrapment and direct mortality. Project activities that impact western pond turtle would be considered a potentially significant impact under CEQA.

Mitigation Measures are warranted and are identified in Section 4.4.4 below. Implementation of BIO-21 and BIO-22 will reduce potential impacts to western pond turtles to a less than significant level under CEQA.

b) 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 Wildlife or U.S. Fish and Wildlife Service?

No Impact. The nearest water source to Big W Improvement Area is an unnamed stream the pipeline is directly adjacent to. The nearest water source to Patton Improvement Area is Walker Creek, which is directly west of the pipeline. These waterways and their riparian vegetation would not be impacted by Project activities. There is riparian vegetation within the canals and ditches along the roads, but these would not be considered jurisdictional since they are regularly maintained. Mitigation measures are not warranted.

There are no CNDDB-designated "natural communities of special concern" recorded within the Project area; no natural communities of special concern were observed within the Project area during the biological survey. There are six natural communities of special concern in the region: Great Valley Cottonwood Riparian Forest, Valley Needlegrass Grassland, Great Valley Oak Riparian Forest, Great Valley Willow Scrub, Coastal and Valley Freshwater Marsh, and Great Valley Mixed Riparian Forest. These communities would not be impacted as they are well outside of the Project area. Mitigation measures are not warranted. There would be no impact.

c) 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?

No Impact. The Project would not have a substantial adverse effect on federally protected wetlands. The unnamed stream and Walker Creek would be avoided during Project activities. Mitigation measures are not warranted. There would be no impact.

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

Less than Significant Impact with Mitigation Incorporated. Rivers, ditches, and canals can function as wildlife movement corridors. Anthropogenic activities would deter wildlife from using these corridors during the day, though these deterrents would likely be absent at night. Project disturbances to the canal and ditches would be temporary and minimal, and no impacts to the streams within the riverine/riparian habitat are proposed. Although, impacts to wildlife movement corridors would be considered a significant impact under CEQA.

Mitigation Measures are warranted and are identified in Section 4.4.4 below. Implementation of BIO-23 and BIO-24 will reduce potential impacts to wildlife movement corridors to a less than significant level under CEQA.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

e and f) No Impact. The Project would be consistent with the applicable goals and policies of the Glenn County General Plan. The Project is not located within the boundaries of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or State habitat conservation plan. There would be no impact and mitigation measures are not warranted.

4.4.4 Mitigation Measures

General Project-Related Impacts:

BIO-1 (*Worker Environmental Awareness Training*)*:* Prior to initiating construction activities (including staging and mobilization), all personnel associated with Project construction will receive mandatory Worker Environmental Awareness Program (WEAP) training, conducted by a qualified biologist, to aid workers in identifying special status resources that may occur in the Project area. This training may be attended in-person, virtually, or recorded and reviewed prior to the start of construction. The specifics of this program will include identification of the sensitive species and suitable habitats, a description of the regulatory status and general ecological characteristics of sensitive resources, and review of the limits of construction and mitigation measures required to reduce impacts to biological resources within the work area. This training will discuss special status species, describe the laws and regulations in place to provide protection of these species, identify the penalties for violation of applicable environmental laws and regulations, and include a list of required protective measures to avoid "take." A fact sheet summarizing this information, along with photographs or illustrations of sensitive species with potential to occur on the Project site, will also be prepared for distribution to all contractors, their employees, and all other personnel involved with construction of the Project. All trainees will sign a form documenting that they have attended WEAP training and understand the information presented to them.

BIO-2 (*Best Management Practices*)**:** The Project proponent will ensure that all workers employ the following best management practices (BMPs) to help avoid and minimize potential impacts to special status species:

- Pipeline/culvert/siphon excavations and vertical pipes will be covered each night to prevent wildlife from falling in and becoming trapped or injured during migratory or dispersal movements.
- Vehicles will observe a 15-mph speed limit while on the Project site.
- Workers will inspect areas beneath parked vehicles, equipment, and materials prior to mobilization. If special status species are detected, the individual will either be allowed to leave of its own volition, or the appropriate agencies will be contacted to determine how the Project may proceed. "Take" of a State or federal special status species (i.e., rare, California species of special concern, threatened, or endangered) is prohibited.
- The presence of any special status species will be reported to the Project's qualified biologist, who will submit the occurrence to the CNDDB. If necessary, the biologist will report the occurrence to the CDFW, CNPS, and/or USFWS.

Special Status Species:

BIO-3 (***Pre-construction Surveys***)**:** A qualified biologist will conduct a general pre-construction survey for special status species, including western spadefoot, no more than five (5) days prior to the start of construction within the applicable portions of the Project area.

BIO-4 (***Avoidance Buffers***)**:** On the discovery of any western spadefoot the biologist will determine appropriate construction setback distances (avoidance buffers) based on applicable CDFW guidelines, the biology of the species, and work and site conditions. If necessary, avoidance buffers will be identified with flagging, fencing, or other easily visible means, and will be maintained until the end of the project.

BIO-5 (***Take avoidance***)**:** If avoidance buffers cannot be maintained a qualified biologist will prepare a plan to avoid take or impacts to this species.

Burrowing Owl:

BIO-6 (***Pre-construction Take Avoidance Survey***)**:** A qualified biologist will conduct a pre-construction take avoidance survey for BUOW, in accordance with CDFW's *Staff Report on Burrowing Owl Mitigation* (2012), within seven (7) days prior to the start of construction activities. The survey will include the proposed work area and surrounding lands up to 500 feet from the work areas. If no BUOW individuals or active burrows are observed, no further mitigation is required.

BIO-7 (***Avoidance***)**:** If an active BUOW burrow is detected, the occurrence will be reported to the CNDDB, and avoidance buffers will be implemented. A qualified biologist will determine appropriate avoidance buffer distances based on applicable CDFW and/or USFWS guidelines, the biology of the species, conditions of the burrow(s), and the level of Project disturbance. If necessary, avoidance buffers will be identified with flagging, fencing, or other easily visible means, and will be maintained until the biologist has determined that the nestlings have fledged and all BUOW have left the Project site.

BIO-8 (***Passive Relocation***)**:** If avoidance of an active BUOW burrow is not feasible, passive relocation during the non-breeding season (September 1 through January 31) could be utilized or during the breeding season (February 1 through August 31) if a qualified biologist determines that there are no young in the burrow. Prior to completion a qualified biologist will prepare a passive relocation plan that would detail the methods to be used. It would include the tools to exclude the BUOW from its burrow (i.e., one-way doors or other devices) and excavate the burrow (i.e., hand tools and machinery, if needed). Following completion of passive relocation, a report will be prepared that would document the methods and results of these efforts.

Swainson's Hawk:

BIO-9 (***Avoidance***)**:** The Project's construction activities will occur, if feasible, between September 16 and January 31 (outside of Swainson's hawk nesting season) to avoid impacts to nesting Swainson's hawks.

BIO-10 (***Swainson's Hawk Surveys***)**:** Prior to the start of construction, a qualified biologist will conduct a survey for Swainson's hawk nests within the proposed work area and

surrounding lands up to a half-mile from the work areas. These surveys will be conducted in accordance with the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000), or current guidance.

BIO-11 (***Avoidance Buffers***)**:** On the discovery of any active Swainson's hawk nests near the Project work areas, the biologist will determine appropriate construction setback distances (avoidance buffers) based on applicable CDFW guidelines, the biology of Swainson's hawk, and work and site conditions. If necessary, avoidance buffers will be identified with flagging, fencing, or other easily visible means, and will be maintained until the biologist has determined that the nestlings have fledged.

Bald Eagles:

BIO-12 (***Avoidance***)**:** The Project's construction activities will occur, if feasible, between August 31 and January 31 (outside of the nesting bird season) to avoid impacts to nesting bald eagles.

BIO-13 (***Pre-construction Surveys***)**:** If activities must occur within the breeding season (February 1 to August 31), a qualified biologist will conduct pre-construction surveys for bald eagle nests within seven (7) days prior to the start of construction. The survey will include the Patton Improvement Area and surrounding lands up to one mile from this part of the Project area. Bald eagle nests are considered "active" upon the nest-building stage.

BIO-14 (***Avoidance Buffers***)**:** On discovery of any active bald eagle nests near work areas, a qualified biologist will determine appropriate construction setback distances based on applicable CDFW and/or USFWS guidelines and/or the biology of bald eagles. If necessary, avoidance buffers will be identified with flagging, fencing, or other easily visible means, and will be maintained until the biologist has determined that the nestlings have fledged.

Tricolored Blackbirds:

BIO-15 (***Avoidance***)**:** The Project's construction activities will occur, if feasible, between August 31 and January 31 (outside of the nesting bird season) to avoid impacts to nesting tricolored blackbirds.

BIO-16 (***Pre-construction Surveys***)**:** If activities must occur within breeding season (February 1 to August 31), a qualified biologist will conduct pre-construction surveys for tricolored blackbird nests and breeding colonies within seven (7) days prior to the start of construction. The survey will include the Road 28 Improvement Area and all accessible lands within up to 200 feet from this portion of the Project area.

BIO-17 (***Avoidance Buffers***)**:** On discovery of any active nests or breeding colonies near work areas, the biologist will determine appropriate construction setback distances based on applicable CDFW and/or USFWS guidelines and/or the biology of the species in question. If necessary, avoidance buffers will be identified with flagging, fencing, or other easily visible means, and will be maintained until the biologist has determined that the nestlings have fledged.

Nesting Migratory Birds and Raptors:

BIO-18 (*Avoidance*)**:** The Project's construction activities will occur, if feasible, between August 31 and January 31 (outside of the nesting bird season) to avoid impacts to nesting birds.

BIO-19 (*Pre-construction Surveys*)**:** If activities must occur within the nesting bird season (February 1 to August 31), a qualified biologist will conduct a pre-construction survey for active migratory bird nests no more than seven (7) days prior to the start of the construction within the Project area and surrounding lands up to 50 feet from the each of the Improvement Areas within the Project area and for active raptor nests within the Improvement Areas and all accessible lands up to 450-feet from the Improvement Areas. All raptor nests would be considered "active" upon the nest-building stage.

BIO-20 (*Avoidance Buffers*)**:** On discovery of any active nests near work areas, the biologist will determine appropriate construction setback distances (avoidance buffers) based on applicable CDFW and/or USFWS guidelines, the biology of the species, and work and site conditions. If necessary, avoidance buffers will be identified with flagging, fencing, or other easily visible means, and will be maintained until the biologist has determined that the nestlings have fledged.

Western Pond Turtles:

BIO-21 (*Pre-construction Survey and Avoidance Buffers*)**:** Within seven (7) days prior to the start of construction within the above-mentioned Project area Improvement Areas, a qualified biologist will conduct a pre-construction survey for western pond turtle within the Improvement Area and all accessible areas within up to 330 feet. Pre-construction surveys will be conducted in accordance with the draft *Western Pond Turtle (Emys marmorata) Visual Survey Protocol for the Southcoast Ecoregion* (United States Geological Survey 2006). If no western pond turtles are observed during the pre-construction survey, then construction activities may begin. If construction is delayed or halted for more than seven (7) days, another pre-construction survey for western pond turtles will be conducted. If the surveys result in the identification of a western pond turtle or an individual is found on the Project site during construction activities, it will be allowed to leave the Project site on its own and the qualified biologist will determine appropriate buffers to be implemented to avoid impacts to the individual(s).

BIO-22 (*Monitor*)**:** If western pond turtles are observed in a Project area, a qualified biologist will conduct a pre-activity clearance survey each day and remain onsite to oversee all vegetation clearing and ground disturbing activities. If western pond turtles are detected, the individual will either be allowed to leave of its own volition or will be captured by the qualified biologist (must possess appropriate collecting/handling permits) and relocated out of harm's way to the nearest suitable habitat beyond the influence of the Project work area. "Take" of a State or federal special status (rare, California Species of Special Concern, threatened, or endangered) species is prohibited.

Wildlife Movement Corridors and Native Wildlife Nursery Sites:

BIO-23 (*Operational Hours*): Construction activities will be limited to a half hour after sunrise through a half hour before sunset to reduce potential impacts to wildlife movement corridors.

BIO-24 (*Wildlife Access*): At no point will access be blocked outside of construction hours or during overnight hours or weekends. If construction must block both sides of a potential wildlife access route, an alternative route through the construction area will be identified by a qualified biologist and maintained throughout the construction schedule timeframe.

4.5 CULTURAL RESOURCES

Table 4-14: Cultural Resources Impacts

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource pursuant to in § 15064.5?	☐	☒	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

4.5.1 Baseline Conditions

Glenn County was organized in 1891 from portions of northern Colusa County, which was one of the original 27 counties in the State; the boundaries of which have changed over time. The first Americans settled in southern Colusa County in 1846, and the small settlement grew into the town of Colusa in 1850 along the Sacramento River, becoming the county seat in 1854. The nearby communities of Princeton and Colusa emerged in the 1860's to service the historic transportation industry along the Sacramento River, as well as the local farms which had begun to drain large tracts of land along and west of the Sacramento River during this same period.

The area that would become Glenn County was the most abundant grain growing region in the Sacramento valley into the early 1870s. To increase yields, some farmers in the region dug gravity fed ditches from the Sacramento River to irrigate their low-lying lands during periods of high water. Shipping points with large grain warehouses along the Sacramento River at Jacinto, Princeton, and Sidds Landing sprung up as millions of sacks of grain and barley were sent to market.

The growth in agriculture through the late 19th and into the early 20th Centuries fostered the development of local trade, and additional communities emerged in this part of the Valley. But Orland stood out as one of the larger grain shipping points in Northern California, and later became the center of the Orland Federal Irrigation Project (OFIP), a precursor to the Central Valley Project, covering an area of 20,000 acres watered by Stony Creek. OFIP began in the early 1900's, at which time it represented the only irrigation project in California constructed and operated by the Reclamation.

Much later, following implementation of the CVP, the TCC was constructed in the region. While the CVP was initially authorized in 1935, it would be another 15 years before Sacramento Canals Division of the Reclamation would be authorized. This latter act allowed for the construction of the Red Bluff Diversion Dam, and two gravity-fed canals: the Corning Canal and the TCC. The 21-mile-long Corning Canal was completed in 1959, while the 110-mile long TCC was completed in 1980. Due to ever-increasing federal regulations regarding salmonids, water diversion into the canal system decreased drastically, and in 2013, the Red Bluff Diversion Dam was decommissioned. No longer able to receive water from its original source, surface water sources were tapped to continue providing contractual water delivery commitments.

Additional historic themes for the Orland area include water storage and water diversion projects, and more recent urban expansion. Collectively, these various historic and contemporary activities have impacted the local cultural resource base, although with less severe consequences than historic gold mining did elsewhere in northern California.

Records Search

Several types of information were considered relevant to evaluating the types of archaeological sites and site distribution that might be encountered within the Project area or Area of Potential Effect (APE). The information evaluated prior to conducting the pedestrian survey includes data maintained by the Northeast Information Center, and available published and unpublished documents relevant to regional prehistory, ethnography, and early historic developments.

Northeast Information Center Records

The official Glenn County archaeological records were examined on December 23, 2022 (I.C. File # D22-428). This search documented the following existing conditions for a 0.25-mile radius centered on each APE component:

- According to the Information Center's records, one (1) cultural resource (P-11-670) has been documented within the APE. One (1) additional cultural resource (P-11-675) has been formally documented within the 0.25-mile search radius.
- According to the Information Center, approximately 10% of the APE has been subjected to previous cultural resources survey, as a result of three (3) previous investigations. Four (4) additional investigations have been documented outside of the APE, but within the search radius. See Appendix C for a summary of the seven investigations mentioned above.

Historic Resources

As noted in the Northeast Information Center Records section, above, one cultural resource (P-11-670) had been documented within the APE. Identified and recorded by Windmiller in 2006, the resource is described as a water well complex consisting of a windmill, steel water tank and concrete livestock trough. The resource is depicted immediately adjacent to the east side of Road H in Section 17, immediately west of the present APE, and approximately 0.25-miles north of Road 28. Field inspection of this resource confirmed that its location was actually west of the present APE, and its plotting by the Northeastern Information Center (NEIC) was simply the result of map scale. Consequently, it was confirmed via topographic maps, aerial images and ground truthing that this resource is located wholly outside of the present APE.

While no cultural resources, meeting the initial threshold of exceeding 50 years in age, were identified within the APE, one resource, the TCC, was identified within the APE. Within the APE, the TCC is approximately 60 feet in width. The proposed project components contacting the TCC will involve small steel pipes which will allow for drawing water from the canal. As the overall TCC exceeds 110 miles in length, the addition of six (6) turnouts (which are notably indistinguishable from existing turnouts) are consistent with numerous existing pipes that exit/enter the TCC, and does not change the function, use or visible appearance of the TCC.

Reclamation has indicated that the TCC was constructed between 1965 and 1980 as part of the Sacramento River Division Canals Unit of Reclamation's CVP to convey irrigation water south from the Red Bluff Diversion Dam through Tehama, Glenn, and Colusa Counties. The TCC is approximately 110 miles long and terminates in Yolo County approximately 2 miles south of Dunnigan, California.

Native American Outreach

Consultation was undertaken with the Native American Heritage Commission (NAHC) concerning sacred land listings for the property. An information request letter was delivered to the NAHC on December 19, 2022. The NAHC responded on January 15, 2023, indicating that a search of their Sacred Lands File was negative. The consultation list from the NAHC included the following:

- Glenda Nelson, Estom Yumeka Maidu Tribe of the Enterprise Rancheria.
- Ronald Kirk, Grindstone Indian Rancheria of Wintun-Wailaki.
- Andrew Alejandre, Paskenta Band of Nomlaki Indians.
- Dennis Ramirez, Mechoopda Indian Tribe.
- Benjamin Clark and Guy Taylor, Mooretown Rancheria of Maidu Indians.
- Daniel Gomez and Clifford Mota, Cachil DeHe Band of Indians of the Colusa Indian Community.
- Beniakem Cromwell, Robinson Rancheria of Pomo Indians

The NAHC findings will be provided to the Reclamation, the agency which will engage in formal consultation in compliance with Section 106 of the National Historic Preservation Act.

Survey Strategy and Field Work

All of the APE (see Appendix C for site photos) was subjected to intensive pedestrian survey by means of walking parallel transects spaced at 5-20-meter intervals, based on sensitivity considerations and ground visibility.

In searching for cultural resources, the surveyor considered the results of background research and was alert for any unusual contours, soil changes, distinctive vegetation patterns, exotic materials, artifacts, feature or feature remnants and other possible markers of cultural sites.

Fieldwork was undertaken on February 8-12, March 10, April 21, 2023, by a professional archaeologist, historian and architectural historian who meets the professional requirements of the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (Federal Register, Vol. 48, No. 190), as demonstrated in his listing on the California Historical Resources Information System list of qualified archaeologists, architectural historians and historians. No special problems were encountered, and all survey objectives were satisfactorily achieved.

4.5.2 Impact Analysis

a) Would the project cause a substantial adverse change in the significance of a historical resource pursuant to in § 15064.5?

b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?

Less than Significant Impact with Mitigation Incorporated. Existing records at the Northeastern Information Center document that approximately 10% of the present APE had been subjected to previous archaeological investigation, and that one cultural resource (P-11-670) had been documented within the APE. Field inspection of this resource confirmed that its location was actually west of the present APE, and its plotting by the NEIC was simply the result of map scale. Also, the present effort included an intensive-level pedestrian survey. No prehistoric cultural resources were identified during the pedestrian survey. The TCC was identified within the APE.

While not yet achieving the 50-year-old threshold necessary for recordation and evaluation, Reclamation indicated that the TCC would be eligible for inclusion in the National Register of Historic Places (NRHP) as a contributing element of the CVP, itself an NRHP eligible property. Reclamation further determined that project components interfacing with the TCC would not constitute an adverse effect to an historic property.

The probability of encountering buried archaeological sites within the APE is low. This conclusion is derived in part from the observed soil matrices which comprise the exposed soil cuts associated with construction of the TCC, and to the degree of disturbance associated with past ground disturbance. Evidence of ground disturbance assisted in determining whether or not subsurface resources were present within the APE. Overall, the soil types present, and contemporary disturbance would warrant a finding of low probability for encountering buried archaeological sites.

Although there is an absence of significant historical resources/unique archaeological resources/historic properties within the APE, CUL-1 and CUL-2 will be incorporated into the Project.

c) Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

Less than Significant Impact with Mitigation Incorporated. There is no evidence or record that the Project has the potential to be an unknown burial site, or the site of buried human remains. In the unlikely event of such a discovery, mitigation will be implemented. With incorporation of mitigation measures CUL-3 and CUL-4 outlined below, impacts resulting from the discovery of remains interred on the Project site would be less than significant.

4.5.3 Mitigation Measures

CUL-1 The present evaluation and recommendations are based on the findings of an inventory-level surface survey only. There is always the possibility that important unidentified cultural materials could be encountered on or below the surface during the course of future repair activities. This possibility is particularly relevant considering the constraints generally to archaeological field survey, and particularly where past ground disturbance activities (e.g., flooding, canal trenching, orchard development, etc.) have partially obscured historic ground surface visibility, as in the present case. In the event of an inadvertent discovery of previously unidentified cultural material, archaeological consultation should be sought immediately.

CUL-2 In the event that previously unidentified cultural resources are discovered as a result of this undertaking, the nearby construction activities would cease, and Reclamation Cultural Resource Staff would be notified and consulted on how to proceed. Reclamation would follow the procedures for post-review discoveries on Federal lands as described in the regulations at 36 CFR § 800.13. Work may not continue in the area of the discovery until Reclamation issues a notice to proceed.

CUL-3 In the event that human remains are inadvertently encountered during any project-associated ground-disturbing activity or at any time subsequently, State law will be followed, which includes but is not limited to immediately contacting the County Coroner's office upon any discovery of human remains.

CUL-4 In the event that human remains are identified during the course of the proposed project, all construction activities would cease, and a Reclamation Archaeologist would be consulted on how to proceed. Note that all Native American human remains identified on lands owned by the Federal government are subject to the Native American Graves Protection and Repatriation Act (NAGPRA) (25 USC 3001). Under the NAGPRA (25 USC 3001) and implementing regulations 43 CFR Part 10, Reclamation is responsible for the protection of Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony that are discovered on Reclamation lands. All human remains and potential human remains must be treated with respect and dignity at all times. In the event that suspected human remains are discovered during proposed project activity on Reclamation land, all activities in the immediate area will cease, and appropriate precautions will be taken to protect the remains and any associated cultural items from further disturbance. Reclamation will follow the procedures outlined in 43 CFR § 10.4 Inadvertent Discoveries. The Reclamation Region 10 Regional Environmental Officer will be immediately notified by telephone and will take responsibly for the discovery by contacting the appropriate law enforcement and Reclamation officials. Within three (3) working days of confirmation of the discovery [see 43 CFR Part 10.4(d)(1)(iii)], the Regional Cultural Resource Officer will ensure that Indian tribes likely to be affiliated with the discovered human remains (e.g., lineal descendant, culturally affiliated Indian tribe, Indian tribe with other cultural relationship, and Indian tribe that aboriginally occupied area) are notified by telephone or in person, with written confirmation. Treatment and handling of the remains will be determined through consultation between Reclamation and consulting tribes. Project implementation in the vicinity of the discovery would not resume until Reclamation complies with the 43 CFR § 10 regulations and provides notification to proceed.

4.6 ENERGY

Table 4-15: Energy Impacts

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

4.6.1 Baseline Conditions

Pacific Gas & Electric (PG&E) provides electric service to the Project area. PG&E obtains its power through an energy mix that includes hydroelectric, thermal (natural gas), geothermal, nuclear, wind, and solar. Electric service is already available within the Project area.

4.6.2 Impact Analysis

a) Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Less than Significant Impact. Implementation of the Project would require the temporary use of energy resources for construction of the proposed water delivery infrastructure. This energy use would primarily be in the form of petroleum products and electricity used to operate the pump stations and construction equipment and consumed during vehicle trips associated with material delivery/debris hauling and commuting workers. While construction activities would result in the temporary consumption of energy resources in the form of vehicle and equipment fuels (gasoline and diesel fuel) and electricity (directly or indirectly), such consumption would be incidental and/or temporary and would not result in wasteful, inefficient, or unnecessary consumption of energy resources. Operation of the pump station would require additional energy consumption by use of electricity. Although there would be an increase in energy consumption due to operation of the pump stations, the pump stations are an essential component to physically transport water; therefore, it would not result in wasteful, inefficient, or unnecessary consumption of energy resources. For these reasons, energy impacts during Project construction, maintenance, and operation would be less than significant.

b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Less than Significant Impact. Maintenance of the constructed structures would require minimal energy use, similar to existing and current infrastructure maintenance activities. These activities would occur on an as-needed basis. Additionally, the Project does not involve constructing habitable structures; therefore, no energy efficiency policies apply. Impacts would be less than significant.

4.7 GEOLOGY AND SOILS

Table 4-16: Geology and Soils Impacts

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii. Strong seismic ground shaking?	☐	☐	☒	☐
iii. Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv. Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994) creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?	☐	☒	☐	☐

4.7.1 Baseline Conditions

Geology and Soils

The topography of the Project area is relatively level with elevation ranges from approximately 178 to 246 feet above median sea level. Twenty-four (24) soil mapping units representing twelve (12) soil types were identified within the Project area. Generally, these 12 soil types are primarily used for dryland and irrigated orchards, irrigated row and field crops, or livestock grazing. Specifics of these can be found in Appendix B: Biological Evaluation. The soils of the site have been significantly disturbed by years of agricultural and residential use and construction and maintenance of the TCC. Such activities include deep-ripping, trenching, discing, grading, and importing of material.

Faults and Seismicity

The Project area contains the Corning Fault, which is considered a Quaternary Fault. A Quaternary fault is one that has been recognized at the surface and that has moved in the past 1.6 million years. That places fault movement within the Quaternary Period, which covers the last 2.6 million years.[7]

The Project is not located within an Alquist-Priolo Earthquake Fault Zone. Under the Alquist-Priolo Earthquake Fault Zoning Act, active faults have a designated zone prohibiting any structure for human occupancy to be placed over the fault and must be placed at a minimum distance (generally fifty (50) feet) from the fault.[8]

Liquefaction

The potential for liquefaction, which is the loss of soil strength due to seismic forces, is dependent on soil types and density, the groundwater table, and the duration and intensity of ground shaking. Soil susceptible to liquefaction includes loose to medium dense sand and gravel, low-plasticity silt, and some low-plasticity clay deposits.[9] According to the DOC, the Project site is not affected by liquefaction.[10]

Soil Subsidence

Subsidence occurs when a large land area settles due to over-saturation or extensive withdrawal of ground water, oil, or natural gas. These areas are typically composed of open-textured soils that become saturated, high in silt or clay content. The Project area overlies the Colusa Subbasin which has been designated as a high priority subbasin under SGMA. Under SGMA, the sustainable management of groundwater is defined as the "management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results.[11] Undesirable results are associated with six sustainability indicators, one being land subsidence. The Colusa Subbasin, along with many other SGMA designated high priority subbasins, are experiencing undesirable results from groundwater overdraft including subsidence.

Dam and Levee Failure

According to the Dam Breach Inundation Map Web Publisher operated and managed by the California Department of Water Resources Division of Safety of Dams, the Project area is not located in an area that would be potentially impacted due to a dam and/or levee failure.[12]

4.7.2 Impact Analysis

a) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other

[7] (United States Geological Survey 2023)
[8] (California Department of Conservation 2023)
[9] (ESA 2014)
[10] (California Department of Conservation 2023)
[11] (Davids Engineering, Inc. et al. 2021)
[12] (California Department of Water Resources 2022)

substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

ii. Strong seismic ground shaking?

iii. Seismic-related ground failure, including liquefaction?

iv. Landslides?

a-i – a-iv) Less than Significant Impact. The Project area does not contain any known Alquist-Priolo Earthquake Fault Zones, as listed by the California Geological Survey. According to the DOC, the Corning Fault is located within the Project area. Although not considered an Alquist-Priolo Earthquake Fault, there is potential for seismic ground shaking due to a potential fault rupture. The Project design specifications for Project components would require the construction contractor to produce final designs that resist the total seismic forces in accordance with the seismic design criteria and with evidence of design specifications and calculations submitted to Glenn County. Risks associated with seismic-related activity such as rupture of a fault, strong ground shaking, and ground failure, including liquefaction would be less than significant. In addition, the Project's topography is virtually flat, resulting in a low to non-existent likelihood for landslide potential. Therefore, any impacts would be less than significant.

b) Would the project result in substantial soil erosion or the loss of topsoil?

Less than Significant Impact. Earthmoving activities associated with the Project would include infrastructure construction needed to deliver water to the annexed parcels. The infrastructure would include new turnouts, two new pump stations, and approximately eight miles of new pipeline. These activities could expose soils to erosion processes, and the extent of erosion would vary depending on slope steepness/stability, vegetation/cover, concentration of runoff, and weather conditions. Implementation of a SWPPP, as required by the SWRCB Construction Storm Water General Permit 2009-0009-DWQ, to implement best management practices (BMPs) ensure that risks of erosion from stormwater are appropriately addressed. Moreover, since the Project site has relatively flat terrain with a low potential for soil erosion, and would comply with the SWRCB requirements, impacts would be less than significant.

c) Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

Less than Significant Impact. As mentioned earlier, the Project area and the rest of the Colusa Subbasin has seen, and is continuing to see, groundwater overdraft impacts such as subsidence. Implementation of the Project would indirectly combat subsidence as it would provide surface water to agricultural users who are historically reliant on groundwater for irrigation purposes. The likelihood for subsidence impacts as a result of the Project would be low. Excavation, grading, and fill operations associated with construction could alter existing slope profiles making them unstable because of over-excavation of slope material, steepening of the slope, or increased loading. However, destabilization of natural or constructed slopes is unlikely to occur as surface topography is relatively flat. Additionally, BMP's provided in the SWPPP would be implemented to maintain stable slopes and excavations during construction, and therefore, impacts would be less than significant.

d) Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

Less than Significant Impact. Expansive soils are typically associated with fine-grained clayey soils that have the potential to shrink and swell with repeated cycles of wetting and drying. The Project contains both sandy and clayey soils. To ensure that impacts would be less than significant, the Project would be consistent with the standards of the seismic design criteria and with evidence of design specifications and calculations submitted to Glenn County. Impacts would be less than significant.

e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No Impact. The Project would not require the use of septic tanks or any type of wastewater disposal systems. The Project would not construct any habitable structures that would indirectly result in the generation of wastewater. Therefore, there would be no impact.

f) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geological feature?

Less than Significant Impact with Mitigation Incorporated. No known paleontological resources have been identified within the Project area to date. However, during construction, there is potential for a paleontological resource to be found. **GEO-1** will be implemented in the unlikely event that paleontological resources are encountered during Project construction.

4.7.3 Mitigation Measures

GEO-1 Should paleontological resources be encountered on the Project area, all ground disturbing activities in the area will stop. A qualified paleontologist will be contacted to assess the discovery. Mitigation may include monitoring, recording the fossil locality, data recovery and analysis, and a final report. Public educational outreach may also be appropriate. Upon completion of the assessment, a report documenting methods, findings, and recommendations will be prepared and submitted to the Orland-Artois Water District for review, and (if paleontological materials are recovered) a paleontological repository, such as the University of California Museum of Paleontology.

4.8 GREENHOUSE GAS EMISSIONS

Table 4-17: Greenhouse Gas Emissions Impacts

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

4.8.1 Baseline Conditions

Gases that trap heat in the atmosphere are often called greenhouse gases. Some greenhouse gases, such as CO_2, occur naturally and are emitted to the atmosphere through natural processes and human activities. Other greenhouse gases (e.g., fluorinated gases) are created and emitted solely through human activities. The principal greenhouse gases that enter the atmosphere because of human activities are CO_2, methane (CH_4), nitrous oxide, and fluorinated gases (USEPA 2019).

Greenhouse gases and climate change are cumulative global issues. The CARB and the USEPA regulate greenhouse gas emissions in California and the United States, respectively. While CARB has the primary regulatory responsibility for greenhouse gas emissions in California, local agencies such as GCAPCD can also adopt policies for greenhouse gas emission reduction.

Climate change refers to significant change in measures of climate (e.g., temperature, precipitation, or wind) lasting for decades or longer. Many environmental changes can contribute to climate change [changes in sun's intensity, changes in ocean circulation, deforestation, urbanization, burning fossil fuels, etc.] (USEPA 2014a). During the past century humans have substantially added to the amount of Greenhouse Gas (GHG) in the atmosphere by burning fossil fuels such as coal, natural gas, oil, and gasoline to power cars, factories, utilities, and appliances. The added gases, primarily CO_2 and CH_4, are enhancing the natural greenhouse effect and contributing to an increase in global average temperature and related climate changes (USEPA 2014b).

Climate change is widely recognized as an imminent threat to the global climate, economy, and population. The national, State, and local climate change regulatory setting is complex and evolving. In 2006, the State of California issued the California Global Warming Solutions Act of 2006, widely known as Assembly Bill (AB) 32, which requires CARB to develop and enforce regulations for the reporting and verification of Statewide GHG emissions. CARB is further directed to set a GHG emission limit, based on 1990 levels, to be achieved by 2020. In addition, the USEPA has issued regulatory actions under the CAA as well as other statutory authorities to address climate change issues (USEPA 2014c). In 2009, the USEPA issued a rule (40 CFR Part 98) for mandatory reporting of GHG by large source emitters and suppliers that emit 25,000 metric tons or more of GHG [as CO_2 equivalents per year] (USEPA 2009). The rule is intended to collect accurate and timely emissions data to guide future policy decisions on climate change and is still undergoing revisions (USEPA 2014c).

Recently, the U.S. Global Research Program (USGRP) concluded in its Climate Science Special Report (2017) that "Many lines of evidence demonstrate that it is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century." The USGRP also concludes that "Global climate is projected to continue to change over this century and beyond. The magnitude of climate change beyond the next few decades will depend primarily on the amount of greenhouse (heat trapping) gases emitted globally and on the remaining uncertainty in the sensitivity of the Earth's climate to those emissions (very high confidence)."

Reclamation developed a global climate model in 2016 for the Sacramento and San Joaquin Basins. The model predicts increased temperatures, increased precipitation, increased runoff, and reduced snowpack at higher latitudes during the 21st century.

4.8.2 Impact Analysis

a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less than Significant Impact. The Project would result in the generation of construction related emissions during construction of the Project. The GCAPCD does not have established thresholds of significance for project related emission generation. As a result, the thresholds of significance that have been established and implemented by the SMAQMD have been used to determine the level of impact that the Project would result in.[13] Both the GCAPCD and the SMAQMD are located within the NVSAB and experience similar air quality conditions due to similar topography, climate, and air circulation patterns. The SMAQMD has set a greenhouse gas emissions threshold of 1,100 Metric Tons of CO2e (MTCO2e) per year for both construction and operational activities.

To gauge construction related CO2e emissions, the CalEEMod version 2020.4.0 air quality model and the SacMetro Road Construction Model version 9.0.1 were run. Construction related greenhouse gas emissions are shown in Table 4-18, while operational related greenhouse gas emissions are shown in Table 4-19. The Project is estimated to produce a maximum annual total of approximately 377.6196 MTCO2e during construction (see Appendix A). Operational emissions would be negligible, occurring only to operate any equipment related to the Project facilities. During operations, emissions would also result from vehicle trips to the site during maintenance activities. As shown in the tables below, the Project would not have an adverse impact to the environment in regard to the generation of greenhouse gases. Therefore, the Project would have a less than significant impact.

Table 4-18. Estimated Construction Related Greenhouse Gas Emissions in Metric Tons per Year

Emissions Source	MTCO2e
Turnouts	225.8596
Eight-mile Pipeline	151.7600
Total	377.6196
SMAQMD Threshold	1,100
Threshold Exceeded?	No

[13] (Sacramento Metropolitan Air Quality Management District 2020)

Table 4-19. Estimated Operational Related Greenhouse Gas Emissions in Metric Tons per Year

Emissions Source	MTCO2e
Total	9.5000e-004
SMAQMD Threshold	1,100
Threshold Exceeded?	No

b) Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

No Impact. As noted in the tables above, greenhouse gas emissions resulting from the construction and operation of the Project would be well below the thresholds established by the SMAQMD. As a result, the Project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing greenhouse gas emissions.

4.9 HAZARDS AND HAZARDOUS MATERIALS

Table 4-20: Hazards and Hazardous Materials Impacts

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☒	☐
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g) Expose people or structures, either directly or indirectly to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☒	☐

4.9.1 Baseline Conditions

Hazardous Materials

The Project area does not involve land that is listed as a hazardous materials site pursuant to Government Code Section 65962.5 and is not included on a list compiled by the Department of Toxic Substances Control (DTSC). EnviroStor is the DTSC's data management system for tracking cleanup, permitting, enforcement, and investigation efforts at hazardous waste facilities and sites with known contamination or sites where there may be reasons to investigate further.

GeoTracker is the SWRCB data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater. GeoTracker contains records for sites that require cleanup, such as Leaking Underground Storage Tank Sites, Department of Defense Sites, and Cleanup Program Sites. GeoTracker also contains records for various unregulated projects as well as permitted facilities including Irrigated Lands, Oil and Gas Production, Permitted Underground Storage Tanks, and Land Disposal Sites.

A search of the DTSC EnviroStor database and the SWRCB Geotracker performed on September 26, 2023, determined that there are no known active hazardous waste generators or hazardous material spill sites within the Project area.[14] The nearest open case hazardous material spill site is located at the Orland Airport located approximately one mile north of the nearest proposed construction site.

Airports

The Project is located within the Orland Airport Influence Area and Safety Zones as described in the Glenn County Airport Land Use Plan.

Emergency Response Plan

The Glenn County Office of Emergency Services coordinates the development and maintenance of the Glenn County Operational Area Emergency Operations Plan.[15]

Sensitive Receptors

The Project spans approximately 16 miles north to south and 12 miles east to west. Due to the Project's large expanse, there are various sensitive receptors located near the Project. Said sensitive receptors are primarily homes scattered throughout the expansive farmland.

4.9.2 Impact Analysis

a) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

b) Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

a and b) Less than Significant Impact. Equipment and materials used during construction activities would include fuels, oils, and lubricants. The routine use or an accidental spill of hazardous materials used in construction could result in inadvertent releases, which could adversely affect construction workers, the public, and the environment.

Construction activities would be required to comply with numerous hazardous materials regulations designed to ensure that hazardous materials are transported, used, stored, and disposed of in a safe manner to protect worker safety, and to reduce the potential for a release of construction-related fuels or other hazardous materials into the environment, including stormwater and downstream receiving water bodies. As discussed in Section 4.3, the construction contractor would be required to apply for

[14] (California Department of Toxic Substances Control 2022); (State of California 2022)
[15] The Glenn County Operational Area Emergency Operations Plan can be found at the following link: Emergency Plans and Response Agencies | County of Glenn

coverage under the NPDES CGP, which requires the preparation and implementation of a SWPPP for construction activities on sites with more than one acre of ground disturbance. Such equipment would be properly maintained to minimize leaks and to prevent spills. Vehicle service and repair would be performed off-site at an appropriate facility per the approved SWPPP.

c) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No Impact. The Project is not located within a quarter mile of an existing or proposed school. Fairview Elementary School, the closest school to the Project area, is located approximately 3.5 miles north-northeast. Therefore, there would be no impact.

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

Less than Significant Impact. The DTSC EnviroStor and the SWRCB Geotracker database were both reviewed on September 26, 2023, for any potential hazardous materials located onsite or in the vicinity of the Project. According to the query results, no such sites were found to be present. Therefore, there would be no impact.

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

Less than Significant Impact. The Project is located within the Orland Airport Influence Area and Safety Zones as described in the Glenn County Airport Land Use Plan.[16] Lands within a certain proximity to the airport are subject to development restrictions to reduce potential hazardous situations with incoming and outgoing aircraft. These zones do not consider noise levels. Although some Project features would be constructed near the airport, the Project would not include habitable structures that would result in permanent residents that would be impacted by aircraft noise. Construction of the Project would place construction crews in the vicinity of the airport, but construction is temporary and wouldn't require permanent crews to remain on-site except for intermittent O&M activities as necessary. Therefore, due to the temporary nature of construction, impacts would be less than significant.

f) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less than Significant Impact. During O&M of the Project, no full or partial road closures would be required for routine inspections and maintenance activities. These activities would occur periodically and would require few vehicles so they would not alter the traffic volumes on roads in the Project area.

Construction of the Project would add truck and vehicle traffic to roadways in the Project area during construction. Additionally, the installation of the pipeline would be done in segments and road detours may be anticipated. A temporary Traffic Control Plan will be prepared and approved by Glenn County in

[16] (Glenn County Airport Land Use Commission 1991)

accordance with their regulations. This would ensure that the Project would not interfere with an emergency response or emergency evacuation plan. As such, impacts would be less than significant.

g) Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Less than Significant Impact. The Project site and the surrounding lands consists of agricultural lands and related infrastructure. The Project would not include any residential components, nor would it require any employees to be stationed permanently at the site on a daily basis. Any impacts from directly or indirectly exposing people or structures to injury or death involving a wildland fire would be considered less than significant.

4.10 HYDROLOGY AND WATER QUALITY

Table 4-21: Hydrology and Water Quality Impacts

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i. result in substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	☐	☐	☒	☐
iii. create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☒	☐
iv. impede or redirect flood flows?	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

4.10.1 **Baseline Conditions**

The Project covers a large span of land containing multiple sub-watersheds. The Project lies within the Middle Walker Creek sub-watershed, the Lower Walker Creek sub-watershed, the Lagoon-Sacramento River sub-watershed, the Deadmans Reach- Sacramento River sub-watershed, and the Colusa Drain sub-watershed. The Middle Walker creek and the Lower Walker Creek sub-watersheds are a part of the Walker Creek watershed, the Lagoon-Sacramento River and the Deadmans Reach-Sacramento River sub-watersheds are a part of the Sacramento River watershed, and the Colusa Drain sub-watershed is a part of the Colusa Drain watershed.

The TCC receives water from the Sacramento River. This canal spans four counties (Tehama, Glenn, Colusa, and Yolo) along the west side of the Sacramento Valley before terminating. The TCC does not drain into any jurisdictional waters. North Fork Walker Creek starts in the uplands and flows into Walker Creek which goes past the Project area. Walker Creek into Wilson Creek which then flows into unnamed canals.

The Project is located within the Colusa Subbasin of the Sacramento Valley Subbasin. The portion of the Colusa Subbasin that the Project overlies is managed by the Glenn County Groundwater Sustainability Agency (GSA).[17]

4.10.2 **Impact Analysis**

a) Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less than Significant Impact. During Project construction, there may be exposure of pollutants which may degrade water quality. As mentioned, the Project is required to prepare a SWPPP, which would describe stormwater and non-stormwater control measures that would be used to minimize the discharge of pollutants to the maximum extent practicable. This would ensure less than significant impacts during construction. During operation, the Project would only involve the delivery of surface water thereby decreasing the area's reliance on groundwater and not substantially degrading the quality of surface or ground water. As such, impacts would be less than significant.

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

No Impact. The Project would encourage and sustain the long-term viability of agriculture within areas proposed to be annexed by decreasing groundwater pumping and increasing use of surface water when available. If insufficient groundwater exists to sustain agriculture at current levels, at least some lands within the region may require either fallowing or conversion to other uses not dependent on irrigation (e.g., dry-land grazing) at some point in the future. The Project would help reduce groundwater consumption and dependency by providing the capability to receive supplemental surface water from OAWD via the proposed water delivery infrastructure. This supplemental water would come from water transfers from willing sellers through the District or the District's supplying the annexed lands with excess surface water not used by the Class 1 water users. The transferred water would be conveyed through the TCC and into existing and new OAWD infrastructure; a portion of which would be constructed through this Project. This would reduce the reliance on groundwater pumping and likely aide in groundwater replenishment. Moreover, the supplemental surface water supplies delivered as a result of the Project would allow the entire District, and its landowners, to meet the SGMA sustainability goals and objectives, as outlined in the GSP, by 2042. As such, there would be no impact.

c) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

[17] The Glenn County GSA website can be found at the following link: Glenn County Groundwater Sustainability Agency | County of Glenn.

i. result in substantial erosion or siltation on- or off-site;

ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;

iii. create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or

iv. impede or redirect flood flows?

c-i – c-iv) Less than Significant Impact. As previously mentioned, the Project would require the construction contractor to prepare and adhere to a SWPPP. Implementation of the SWPPP would minimize the potential for the Project to substantially alter the existing drainage pattern in a manner that would result in substantial erosion or siltation onsite or offsite. Use of chemicals or surfactants would not be generated through the maintenance or operation of the Project and as such, there would be no discharge directly associated with Project implementation that could impact water quality standards. Additionally, there would be no discharge to any surface source. Except during possible temporary alterations during construction of Project facilities, drainage patterns would remain more or less the same post-construction as they are now. Flood flows would not be impeded or redirected. Due to these factors, impacts would be less than significant.

d) Would the project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundations?

Less than Significant Impact. The project is not in a tsunami or seiche zone. The maintenance and operation of the Project would not require the use of chemicals or surfactants. This would greatly reduce any risk of release of pollutants due to flooding. Moreover, much of the constructed infrastructure would be located subsurface. During construction, the implementation of the SWPPP would reduce any potential pollutants to be released to nearby properties or to local water supplies. Therefore, impacts would be less than significant.

e) Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Less than Significant Impact. The Project would not conflict with an existing water quality control plan or groundwater management plan. The Project itself would reduce groundwater reliance, ultimately complying with applicable groundwater management plans outlined in the Glenn County GSA Groundwater Sustainability Plan. As such, impacts would be less than significant.

4.11 LAND USE AND PLANNING

Table 4-22: Land Use and Planning Impacts

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
f) Physically divide an established community?	☐	☐	☐	☒
g) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

4.11.1 Baseline Conditions

The Project area is generally located between the City of Orland and the unincorporated community of Artois within Glenn County. There are several different zone districts throughout the Project area with agricultural zone districts being the most prominent.

4.11.2 Impact Analysis

a) Would the project physically divide an established community?

No Impact. The Project proposes annexing land into OAWD in order to provide those lands with supplemental surface water supplies when available. Surface water proposed to be delivered would be conveyed to irrigated agricultural lands and would not physically divide an established community. As such, there would be no impact.

b) Would the project cause a significant environmental conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

No Impact. The Project involves the annexation of in-production farmland currently dependent on groundwater and construction of water conveyance infrastructure to supply those lands with surface water when available to decrease reliance on pumped groundwater. The lands involved in the Project would continue to be used for agricultural purposes and implementation of the Project would not change current land uses. Implementation of the Project has the potential to enhance the existing agricultural lands by providing a new source of reliable irrigation water. As a result, the Project would not significantly conflict with any land use plan, policy, or regulation in terms of environmental effects. There would be no impact.

4.12 MINERAL RESOURCES

Table 4-23: Mineral Resources Impacts

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

4.12.1 Baseline Conditions

Notable mineral resources in Glenn County include natural gas and construction grade aggregate material.[18] Construction grade aggregate is a broad category of coarse to medium-grained particulate material used in construction, including sand, gravel, crushed stone, slag, recycled concrete and geosynthetic aggregates. The Project area does not contain any active mines.

4.12.2 Impact Analysis

a) Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

b) Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

a and b) No Impact. Mineral resources in the vicinity of the District would not be impacted by any of the Project components as no mines or extraction areas are located within the Project area. The Project would not impact the use of mineral resources and would not result in the loss of availability of any known mineral resource that is of value to the local area, regional area, or the State. All disturbed soils would be utilized as part of the Project and returned to preconstruction conditions. As such, there would be no impact.

[18] (QUAD Consultants 1993)

4.13 NOISE

Table 4-24: Noise Impacts

Would the project result in:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive ground borne vibration or ground borne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐

4.13.1 Baseline Conditions

The Project is located in the midst of land used for agricultural operations, which typically requires the use of diesel-powered equipment or other relatively loud agricultural machinery. Another existing ambient noise source prevalent throughout the Project area are the various pump stations that help convey water over areas of elevation. Vehicle traffic along the existing roads can also be a source of normal ambient noise in the vicinity. Due to the large area covered by the Project, there are various farming residences located within 1,000 feet of proposed construction areas. The nearest urbanized area to the Project is the City of Orland located approximately 0.9 miles north of one of the proposed construction areas. Another source of ambient noise is the Orland Airport, which is located within one mile of the nearest construction area of the Project. Noise associated with the airport derives mainly from aircraft landing and taking off.

Vehicles and equipment required for construction include excavators, trucks, concrete trucks, cranes, and miscellaneous equipment (e.g., pneumatic tools, generators, and portable air compressors as shown below in Table 4-25).

4.13.2 Impact Analysis

a) Would the project result in 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?

Less than Significant Impact. The Project would generate temporary noise during construction. Noise during construction would primarily be generated from various construction equipment used in short intervals in small areas throughout the Project area. Table 4-25 below describes the typical noise associated with common construction equipment.

Table 4-25. Typical Construction Equipment Noise Levels

Typical Construction Equipment Noise Levels	
Equipment	Levels in dBA at 50 feet
Front Loader	73-86
Trucks	82-95
Cranes (Moveable)	75-88
Cranes (Derrick)	86-89
Vibrator	68-82
Saws	77-82
Pneumatic Impact Equipment	83-88
Jackhammers	81-98
Pumps	68-72
Generators	71-83
Compressors	75-87
Concrete Mixers	75-88
Concrete Pumps	81-85
Backhoe	73-85
Pile Driving (Peaks)	95-107
Tractor	77-98
Scraper/Grader	80-93
Paver	85-88
Source: (U.S. Department of Transportation Federal Highway Administration 2017)	

Although there would be noise generated during construction, it would be temporary in nature. Once construction is complete, the Project would be passive in operation with most of the infrastructure placed underground. There would be no new substantial, permanent noise emitted in the area from Project implementation. Additionally, according to the Glenn County municipal code, construction noise is exempt from the provisions of the County's noise regulations.[19]

As mentioned throughout this document, the Project would include multiple pump stations to assist in the delivery of water to various agricultural properties. Pump stations intermittently generate noise; however, due to the pump stations that already exist throughout the scope of the Project area, noise associated with periodic pumping from the newly proposed pump stations would be similar to existing noise conditions and would not exceed existing ambient noise levels.

Therefore, the Project would not result in 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. Impacts would be less than significant.

b) Would the project result in generation of excessive ground borne vibration or ground borne noise levels?

Less than Significant Impact. Operation of the Project would not include any activities that would generate significant levels of vibration. Therefore, it is not anticipated that Project operation would expose sensitive receptors or structures to vibration levels that would result in annoyance. For this reason, the following analysis of the Project's vibration impacts evaluates only the effects of on-site construction activities.

[19] (County of Glenn 2023)

For adverse human reaction, the analysis applies the "strongly perceptible" threshold of 0.9 inch per second (in/sec) peak particle velocity (PPV) for transient sources. For risk of architectural damage to historic buildings and structures, the analysis applies a threshold of 0.12 in/sec PPV.[20] A threshold of 0.3 in/sec PPV is used to assess damage risk for all other buildings. There are no historic structures in the vicinity of the Project site that could be adversely affected by vibration related to Project construction. Construction of the Project would involve the use of excavators, graders, bulldozers, dump trucks, and loaders. The use of bulldozers would be expected to generate the highest vibration levels during construction. Vibration levels of bulldozers are typically 0.089 in/sec PPV at 25 feet, which is typical for a wide range of soils. Under typical propagation conditions, vibration levels at 100 feet would be approximately 0.0111 in/sec PPV, which is well below the Federal Transit Administration's threshold of 0.20 in/sec PPV for building damage. Therefore, with low permissible vibration levels and temporary construction activities this impact would be less than significant.

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

Less than Significant Impact. The Project is located within the Orland Airport Influence Area and Safety Zones as described in the Glenn County Airport Land Use Plan.[21] Lands within a certain proximity to the airport have development restrictions to reduce potential hazardous situations with incoming and outgoing aircraft. These zones do not consider noise levels. Although some Project features would be constructed within one mile of the airport, the Project would not include habitable structures that would result in permanent residents or manned O&M facilities that would be impacted by aircraft noise. Construction of the Project would place people in the vicinity of the airport, but construction is temporary and would not require permanency in terms of work. Therefore, due to the temporary nature of construction, impacts would be less than significant.

[20] (Caltrans 2013)
[21] (Glenn County Airport Land Use Commission 1991)

4.14 POPULATION AND HOUSING

Table 4-26: Population and Housing Impacts

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

4.14.1 Baseline Conditions

The Project area is located in the midst of land used for agricultural operations and is rural in nature. Due to the large Project area to be annexed into the District's boundary, there are many large parcel single-family residences scattered throughout the area. The Project area is not located in an urbanized area, as the lands are predominantly zoned and planned for agricultural purposes by Glenn County and the single-family residences are considered to be farm homes.

4.14.2 Impact Analysis

a) Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

No Impact. Annexation of additional lands for the purpose of providing those lands with the capability to receive irrigated water services would not affect population and housing. Annexation and water conveyance-associated infrastructure would be for agricultural water only and would not be used for domestic purposes, and therefore would not contribute to future population growth of the area. There would be no impact.

b) Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No Impact. The proposed annexation and the construction of water conveyance infrastructure would not affect population or housing as the lands proposed to be utilized for construction are not planned for development. Moreover, the Project would not include any features that would require the destruction or relocation of existing housing or the construction of replacement housing. The Project would not displace any people as a result of the Project or associated activities. Therefore, the Project would not displace substantial numbers of existing residents or promote or remove housing development. As such, there would be no impact.

4.15 PUBLIC SERVICES

Table 4-27: Public Services

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
i. Fire protection?	☐	☐	☐	☒
ii. Police protection?	☐	☐	☐	☒
iii. Schools?	☐	☐	☐	☒
iv. Parks?	☐	☐	☐	☒
v. Other public facilities?	☐	☐	☐	☒

4.15.1 Baseline Conditions

The closest fire station is the Artois Fire District Station located approximately 1.8 miles south of the nearest proposed construction site of the Project area. The area is served by the Glenn County Sheriff's Posse Substation located approximately two miles to the north. Fairview Elementary School, the closest school to the Project area, is located approximately 3.5 miles north-northeast. The closest park/recreational area is the Library Park in the City of Orland located approximately 3.8 miles north of the Project area.

4.15.2 Impact Analysis

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

i. Fire Protection:

ii. Police Protection:

iii. Schools:

iv. Parks:

v. Other public facilities:

a-i – a-v) No Impact. The Project would not include any features or facilities that would require additional or unusual fire protection resources, enhanced levels of police protection, nor does it have the potential

to increase or decrease the area's population and therefore would not require a greater demand on public resources or create a demand for schools or parks. The Project would not result in adverse physical impacts associated with the provision of new or physically altered governmental facilities, not including the TCC. No habitable structures would be constructed on the site that would require any public services. Therefore, the Project would not result in any impacts in regard to public services.

4.16 RECREATION

Table 4-28: Recreation Impacts

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

4.16.1 Baseline Conditions

The Project area is located in Glenn County. Glenn County contains nine parks totaling 100 acres.[22] The closest park/recreational area is the Library Park in the City of Orland located approximately 3.8 miles north of the Project area.

4.16.2 Impact Analysis

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

a and b) No Impact. The Project area mostly includes agricultural lands. The Project would not increase or decrease the area's need for additional neighborhood or regional parks, nor would Project activities impact existing recreational facilities. Implementation of the Project would not expand or construct recreational facilities which might adversely effects on the physical environment. As such, there would be no impacts.

[22] (QUAD Consultants 1993)

4.17 TRANSPORTATION

Table 4-29: Transportation Impacts

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

4.17.1 Baseline Conditions

The Project area is distributed on both sides of Interstate 5 (I-5) generally between the City of Orland and the unincorporated community of Artois. The furthest proposed area of construction is approximately 3.6 miles west and approximately six miles east of I-5 with the nearest construction area 200 feet west of I-5. The Project is located in a predominantly agricultural region containing various County roads. These roads are made up of pavement, gravel, and/or dirt. Traffic control is managed by both traffic lights and stop signs. In addition to standard vehicular circulation systems, the Pacific Railroad runs in a north-south direction of the Project area.

4.17.2 Impact Analysis

a) Would the project conflict with a plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Less than Significant Impact. The Project is not anticipated to create significant additional traffic during construction or the on-going operation and maintenance of the Project facilities. Additionally, once construction activities are complete, the proposed infrastructure including pipelines, pump stations, and turnouts would not result in a significant increase in traffic. In some areas, the Project would require the construction of newly graded access roads on private or District lands, while in others the Project would utilize existing paved, gravel, and dirt roads. If access roads were needed, they would be temporary in nature and would be graded but would remain a dirt road. No other physical road improvements are associated with Project activities. The Project's O&M activities would occur periodically and would require few vehicles. These activities would not alter the traffic volumes on existing roads. Construction would occur in segments over the span of several years and would be temporary in nature. Construction associated with the Project would be restricted to the Project following standard protocols, such as obtaining an encroachment permit from the appropriate local agency when constructing in the right-of-way. Any construction-related impacts would be temporary, and areas restored to preconstruction

conditions. The Project does not conflict with any federal, State or local plan, ordinance, or policy pertaining to transportation systems. As such, there would be less than significant impacts.

b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3 subdivision (b)?

No Impact. Due to the nature of the Project, the Project would not significantly conflict or be inconsistent with CEQA Guidelines section 15064.3 subdivision (b). The Project would not include habitable structures that would result in a permanent increase in vehicle miles traveled. There would be no impact.

c) Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

No Impact. The Project would not involve or include geometric roadway features, or any compatible uses that would increase hazards. The Project would include temporary access roads to construction areas, but these temporary access roads would not be manufactured in a manner that could potentially become a hazard to roadway users. There would be no impact.

d) Would the project result in inadequate emergency access?

Less than Significant Impact. During O&M of the Project, no full or partial road closures would be required for routine inspections and maintenance activities. These activities would occur periodically and would require few vehicle trips and would not alter the traffic volumes on roads.

Construction of the Project would add minor truck and vehicle traffic to roadways, temporarily in the Project area during construction activities. The installation of the pipeline would be done in segments and road detours, or flag personnel may be needed in some areas. A temporary Traffic Control Plan will be prepared and approved by Glenn County in accordance with their regulations. Impacts would be less than significant.

4.18 TRIBAL CULTURAL RESOURCES

Table 4-30: Tribal Cultural Resources Impacts

Would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i. Listed or eligible for listing in the California Register of Historical Resources, or in the local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☒	☐	☐
ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

4.18.1 Baseline Conditions

The Grindstone Indian Rancheria of Wintun-Wailaki Indians is a federally recognized tribe located in Elk Creek, California within Glenn County and has a current population of approximately 164 people. The Rancheria is located in the foothills of the Coastal Mountain Range north of Stony Gorge Reservoir and west of Black Butte Lake Recreation Area. The Tribe originally inhabited the west side of the Sacramento Valley in California. Traditional Wintun territory was some 250 miles from north to south and included stretches along the foothills and stretched through Colusa, Glenn, Yolo, Mendocino, and Shasta counties. Four primary linguistic groupings, each including a number of dialects, made up the Wintun population: the northern Wintun (Wintu), the central Wintun (Nomlaki), and the two subdivisions of the southern Wintun, the Hill and River Patwin.

Public Resources Code Section 21080.3.1, et seq. (Codification of AB 52, 2013-14)

Public Resources Code Section 21080.3.1, et seq. (codification of AB 52, 2013-14) requires that a lead agency, within 14 days of determining that it would undertake a project, must notify in writing any California Native American Tribe traditionally and culturally affiliated with the geographic area of the

project if that Tribe has previously requested notification about projects in that geographic area. The notice must briefly describe the project and inquire whether the Tribe wishes to initiate request formal consultation. Tribes have 30 days from receipt of notification to request formal consultation. The lead agency then has 30 days to initiate the consultation, which then continues until the parties come to an agreement regarding necessary mitigation or agree that no mitigation is needed, or one or both parties determine that negotiation occurred in good faith, but no agreement would be made.

The Orland-Artois Water District has not received any written correspondence from a Tribe pursuant to Public Resources Code Section 21080.3.1 requesting notification of proposed projects.

Native American Outreach

As mentioned in Section 4.5 Cultural Resources, consultation was undertaken with the NAHC concerning sacred land listings for the property. An information request letter was delivered to the NAHC on December 19, 2022. The NAHC responded on January 15, 2023, indicating that a search of their Sacred Lands File was negative. The consultation list from the NAHC included the following tribes:

- Estom Yumeka Maidu Tribe of the Enterprise Rancheria.
- Grindstone Indian Rancheria of Wintun-Wailaki.
- Paskenta Band of Nomlaki Indians.
- Mechoopda Indian Tribe.
- Mooretown Rancheria of Maidu Indians.
- Cachil DeHe Band of Indians of the Colusa Indian Community.
- Robinson Rancheria of Pomo Indians

4.18.2 Impact Assessment

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

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

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

a-I – a-ii) Less than Significant Impact with Mitigation Incorporated. No requests for tribal consultation were received in response to Native American outreach.

In the unlikely event of a tribal resource discovery, mitigation measures will be implemented and include mitigation measures **CUL-1** through **CUL-4** described above in Section 4.5. With the incorporation of these mitigation measures, impacts to Tribal Cultural Resources would be less than significant.

4.18.3 Mitigation Measures

See **CUL-1** through **CUL-4** in Section 4.5.

4.19 UTILITIES AND SERVICE SYSTEMS

Table 4-31: Utilities and Service Systems Impacts

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

4.19.1 Baseline Conditions

Water Supply

The District provides water for agricultural use to approximately 29,000 farmable acres in the Orland and Artois area in the Sacramento Valley. Water is delivered using 110 miles of pipeline and over 300 metered deliveries. OAWD receives water from five diversions off the TCC. The TCC diverts water from the Sacramento River in Red Bluff and ends in Dunnigan, about 120 miles south. The District has a contract with Reclamation for 53,000 AF of surface water annually.[23]

Wastewater Collection and Treatment

Wastewater is managed through individual septic systems known as onsite wastewater systems.[24] Onsite wastewater systems are multi-stage systems that collect, treat, and disperse wastewater generated by a home or business. The wastewater is treated and discharged to the soils rather than collected and transported to a wastewater treatment plant. The typical onsite wastewater system consists of a septic

[23] (Orland-Artois Water District 2022)
[24] (County of Glenn Planning and Community Development Services 2023)

tank and some kind of leach field to disperse the wastewater into the ground.[25] Such wastewater systems are regulated by Glenn County.

Solid Waste/Landfills

Glenn County is responsible for protecting public health and the environment from the potential adverse health and environmental impacts associated with waste and garbage disposal. Glenn County carries out this responsibility by reviewing permits and regulating solid waste facilities for compliance with State and Local regulations. In addition, the County ensures proper handling and disposal of solid waste.[26] The nearest solid waste facility is the Glenn County Disposal Services facility located approximately 7.6 miles south of the Project in Willows, CA.

Stormwater Systems

The Glenn County Public Works Agency manages many special districts, some of which are operated to manage flood control. The districts are designed to provide for the control of the flood and storm water flows within the designated areas of the special districts as well as countywide to protect the land, properties, facilities, and people within the county from damage caused by storm and flood waters. By maintaining a healthy drainage system, the County is able to preserve such waters for beneficial uses such as water supply, groundwater percolation, recreation, and the environment.[27] The Project is located in a rural agricultural region of the County. This area of the County contains roadside and agricultural ditches that are used as a stormwater conveyance system.

4.19.2 Impact Analysis

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

No Impact. The Project would not require a hook-up to wastewater or domestic water facilities. There are no stormwater facilities that would be impacted by the Project construction activities because the majority of the Project occurs in rural agricultural land. As a result, no expansion of existing or new utility services, or construction of new facilities would be required by the Project. No impact on water, wastewater, or stormwater drainage facilities is anticipated.

b) Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Less than Significant Impact. Implementation of the Project would decrease the proposed annexed parcels' groundwater dependency by enabling those lands to receive supplemental surface water from the District.. As mentioned above, the District also has a contract with Reclamation for 53,000 AF of surface water per year. Additionally, groundwater levels are expected to increase in the Project area as the result of decreasing reliance on the use of pumped groundwater by the annexing agricultural users. Impacts from the Project would be less than significant.

[25] (California State Water Resources Control Board 2023)
[26] (County of Glenn Department of Planning and Community Development Services 2023)
[27] (County of Glenn Department of Public Works 2023)

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

No Impact. The Project would include the annexation of parcels and construction of water infrastructure to deliver surface water within the District. No habitable structures are proposed as part of the Project and, therefore, no wastewater disposal or treatment would be required. No hook-up to wastewater facilities would be needed. Therefore, there would be no impact.

d) Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

e) Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

d and e) Less than Significant Impact. The Project would require a small amount of solid waste disposal as part of the construction process. However, impacts would be minimal with no associated solid waste for O&M activities. As such, the Project would not generate excess solid waste according to State or local standards or in excess of the capacity of local waste facilities such as the Glenn County Disposal Services facility located approximately 7.6 miles south of the Project in Willows, CA. All material for disposal resulting from the Project's construction activities would be disposed of in compliance with federal, State, and local statutes and regulations. Therefore, impacts would be less than significant.

4.20 WILDFIRE

Table 4-32: Wildfire Impacts

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrollable spread of wildfire?	☐	☐	☐	☒
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

4.20.1 Baseline Conditions

The Project area is in an agricultural setting surrounded by planted orchards, row crops, fallowed land, and various irrigation facilities such as canals, wells, and turnouts. The Project area would be served by Glenn County for its fire protection needs. The Project area is not located in a State Responsibility Area (SRA).[28] The nearest SRA is approximately 1,000 feet west of one of the proposed canal turnouts.[29] The Project area is not on or near land classified as a very high fire hazard severity zone.[30] The nearest lands determined to be a very high fire hazard severity zone is located approximately ten miles to the north.[31]

4.20.2 Impact Analysis

a) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

b) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project due to slope, prevailing winds, and other factors, exacerbate wildfire risks and thereby

[28] (California Department of Forestry and Fire Protection 2022)
[29] Ibid.
[30] (ArcGIS n.d.)
[31] Ibid.

expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

c) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

d) If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

a-d) No Impact. The Project is not located in or near an SRA nor located on lands classified as very high fire hazard severity zones. Construction and implementation of the Project would not impede any existing or future emergency response plans. The Project area and the surrounding lands consist of agricultural and related infrastructure on relatively flat and open land. Additionally, the Project would not include the construction of any residential components or structures of any kind, nor would it require any employees to be stationed permanently at the site on a daily basis. Therefore, there would be no impact.

4.21 CEQA MANDATORY FINDINGS OF SIGNIFICANCE

Table 4-33: CEQA Mandatory Findings of Significance

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

4.21.1 Statement of Findings

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

Less than Significant Impact with Mitigation Incorporated. The analysis conducted in this IS/MND results in a determination that the Project, with incorporation of mitigation measures, would have a less than significant effect on the environment. The potential for impacts to biological resources, cultural resources, geology and soils, and tribal cultural resources from the construction and operation of the Project would be less than significant with the incorporation of the mitigation measures discussed in Chapter 5 Mitigation, Monitoring, and Reporting Program. Accordingly, the Project would involve no potential for significant impacts through the degradation of the quality of the environment, the reduction in the habitat or population of fish or wildlife, including endangered plants or animals, the elimination of a plant or animal community or example of a major period of California history or prehistory.

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

Less than Significant Impact. As discussed above, the Project would result in less than significant impacts to biological resources, cultural resources, geology and soils, and tribal cultural resources with mitigation incorporated. Project operations would not require any on-site personnel. Maintenance would be performed on an as-needed basis and would not require any permanent on-site personnel. As such, the Project operations would generate minimal Project-related vehicle trips as a result of implementation. The annexation of lands into OAWD's service area and the water conveyance infrastructure would not result in ongoing impacts that are individually limited or cumulatively considerable. The implementation of the identified Project-specific mitigation measures, and compliance with applicable codes, ordinances, laws, and other required regulations would reduce the magnitude of any impacts associated with construction activities to a less than significant level.

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

Less than Significant Impact. The Project would not result in substantial adverse effects on human beings, either directly or indirectly. The implementation of the identified mitigation measures would reduce the Project's potential environmental effects on the public and the environment to less than significant levels. No additional mitigation measures would be required. Adverse effects on human beings resulting from implementation of the Project would be less than significant.

CHAPTER 5 MITIGATION, MONITORING, AND REPORTING PROGRAM

This Mitigation Monitoring and Reporting Program (MMRP) has been formulated based upon the findings of the Initial Study/Mitigated Negative Declaration (IS/MND) for the Project in Glenn County. The MMRP lists mitigation measures recommended in the IS/MND for the Project and identifies monitoring and reporting requirements.

Table 5-1: Mitigation, Monitoring, and Reporting Program presents the mitigation measures identified for the Project. Each mitigation measure is numbered with a symbol indicating the topical section to which it pertains, a hyphen, and the impact number. For example, BIO-2 would be the second mitigation measure identified in the Biological Resources analysis of this IS/MND.

The first column of ***Table 5-1: Mitigation, Monitoring, and Reporting*** Program identifies the mitigation measure. The second column, entitled "When Monitoring is to Occur," identifies the time the mitigation measure should be initiated. The third column, "Frequency of Monitoring," identifies the frequency of the monitoring of the mitigation measure. The fourth column, "Agency Responsible for Monitoring," names the party ultimately responsible for ensuring that the mitigation measure is implemented. The last columns will be used by the Lead and Responsible Agencies to ensure that individual mitigation measures have been complied with and monitored.

Table 5-1: Mitigation, Monitoring, and Reporting Program

Mitigation, Monitoring, and Reporting Program						
Item	Mitigation Measure	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
Biological Resources						
BIO-1	(Worker Environmental Awareness Training): Prior to initiating construction activities (including staging and mobilization), all personnel associated with Project construction will receive mandatory Worker Environmental Awareness Program (WEAP) training, conducted by a qualified biologist, to aid workers in identifying special status resources that may occur in the Project area. This training may be attended in-person, virtually, or recorded and reviewed prior to the start of construction. The specifics of this program will include identification of the sensitive species and suitable habitats, a description of the regulatory status and general ecological characteristics of sensitive resources, and review of the limits of construction and mitigation measures required to reduce impacts to biological resources within the work area. This training will discuss special status species, describe the laws and regulations in place to provide protection of these species, identify the penalties for violation of applicable environmental laws and regulations, and include a list of required protective measures to avoid "take." A fact sheet summarizing this information, along with photographs or illustrations of sensitive species with potential to occur within the Project area, will also be prepared for distribution to all contractors, their employees, and all other personnel involved with construction of the Project. All trainees will sign a form documenting that they have attended WEAP training and understand the information presented to them.	Prior to the start of any construction activities	As needed for any new construction personnel during construction activities	OAWD with assistance of a qualified biological subconsultant	Written reporting/ Signed Forms	
BIO-2	(Best Management Practices): The Project proponent will ensure that all workers employ the	Prior to the start of any construction activities	During Construction	OAWD	Written reporting/	

Mitigation, Monitoring, and Reporting Program						
Item	Mitigation Measure	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
	following BMPs to help avoid and minimize potential impacts to special status species: • Pipeline/culvert/siphon excavations and vertical pipes will be covered each night to prevent wildlife from falling in and becoming trapped or injured during migratory or dispersal movements. • Vehicles will observe a 15-mph speed limit while on each Project area. • Workers will inspect areas beneath parked vehicles, equipment, and materials prior to mobilization. If special status species are detected, the individual will either be allowed to leave of its own volition, or the appropriate agencies will be contacted to determine how the Project may proceed. "Take" of a State or federal special status species (i.e., rare, California species of special concern, threatened, or endangered) is prohibited. • The presence of any special status species will be reported to the Project's qualified biologist, who will submit the occurrence to the CNDDB. If necessary, the biologist will report the occurrence to the CDFW, CNPS, and/or USFWS.				photos if required by biologist in accordance with requirements	
BIO-3	(Pre-construction Surveys): A qualified biologist will conduct a general pre-construction survey for special status species, including western spadefoot, no more than five (5) days prior to the start of construction within the Project area.	5 days Prior to construction	Once, Prior to ground disturbing activities and the start of construction	OAWD with assistance of a qualified biologist	Biologist Report	
BIO-4	(Avoidance Buffers): On the discovery of any western spadefoot the biologist will determine appropriate construction setback distances (avoidance buffers) based on applicable CDFW guidelines, the biology of the species, and work and site conditions. If necessary, avoidance buffers will	Prior to construction activities	Once, Prior to ground disturbing activities and the start of construction	OAWD with assistance of a qualified biologist	Biologist Report	

Mitigation, Monitoring, and Reporting Program						
Item	Mitigation Measure	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
	be identified with flagging, fencing, or other easily visible means, and will be maintained until the end of the project.					
BIO-5	(Take avoidance): If avoidance buffers cannot be maintained a qualified biologist will prepare a plan to avoid take or impacts to this species.	Prior to construction activities	Once, Prior to ground disturbing activities and the start of construction	OAWD with assistance of a qualified biologist	Biologist Report	
BIO-6	(Pre-construction Take Avoidance Survey): A qualified biologist will conduct a pre-construction take avoidance survey for BUOW, in accordance with CDFW's Staff Report on Burrowing Owl Mitigation (2012), within seven (7) days prior to the start of construction activities. The survey will include the proposed work area and surrounding lands up to 500 feet from the work areas. If no BUOW individuals or active burrows are observed, no further mitigation is required.	Within 7 days prior to construction activities	Once, Prior to ground disturbing activities and the start of construction	OAWD with assistance of a qualified biologist	Biologist Report	
BIO-7	(Avoidance): If an active BUOW burrow is detected, the occurrence will be reported to the CNDDB, and avoidance buffers will be implemented. A qualified biologist will determine appropriate avoidance buffer distances based on applicable CDFW and/or USFWS guidelines, the biology of the species, conditions of the burrow(s), and the level of Project disturbance. If necessary, avoidance buffers will be identified with flagging, fencing, or other easily visible means, and will be maintained until the biologist has determined that the nestlings have fledged and all BUOW have left the Project area.	Prior to construction activities	As determined needed by qualified biologist during construction activities	OAWD with assistance of a qualified biologist	Biologist Report	
BIO-8	(Passive Relocation): If avoidance of an active BUOW burrow is not feasible, passive relocation during the non-breeding season (September 1 through January 31) could be utilized or during the breeding season (February 1 through August 31) if a qualified biologist determines that there are no young in the burrow. Prior to completion a qualified biologist will	September 1 to January 31	Once, as determined needed by qualified biologist during construction activities	OAWD with assistance of a qualified biologist	Biologist Report	

Mitigation, Monitoring, and Reporting Program						
Item	Mitigation Measure	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
	prepare a passive relocation plan that would detail the methods to be used. It would include the tools to exclude the BUOW from its burrow (i.e., one-way doors or other devices) and excavate the burrow (i.e., hand tools and machinery, if needed). Following completion of passive relocation, a report will be prepared that would document the methods and results of these efforts.					
BIO-9	(Avoidance): The Project's construction activities will occur, if feasible, between September 16 and January 31 (outside of Swainson's hawk nesting season) to avoid impacts to nesting Swainson's hawks.	September 16 to January 31	Prior to construction activities	OAWD with assistance of a qualified biologist	Biologist Report	
BIO-10	(Swainson's Hawk Surveys): Prior to the start of construction, a qualified biologist will conduct a survey for Swainson's hawk nests within the proposed work area and surrounding lands up to a half-mile from the work areas. These surveys will be conducted in accordance with the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (Swainson's Hawk Technical Advisory Committee 2000), or current guidance.	Prior to construction activities	Prior to construction activities	OAWD with assistance of a qualified biologist	Biologist Report	
BIO-11	(Avoidance Buffers): On the discovery of any active Swainson's hawk nests near the Project area work areas, the biologist will determine appropriate construction setback distances (avoidance buffers) based on applicable CDFW guidelines, the biology of Swainson's hawk, and work and site conditions. If necessary, avoidance buffers will be identified with flagging, fencing, or other easily visible means, and will be maintained until the biologist has determined that the nestlings have fledged.	During construction	As determined needed by qualified biologist during construction activities	OAWD with assistance of a qualified biologist	Biologist Report	
BIO-12	(Avoidance): The Project's construction activities will occur, if feasible, between August 31 and January 31 (outside of the nesting bird season) to avoid impacts to nesting bald eagles.	August 31 to January 31	Prior to construction activities	OAWD with assistance of a qualified biologist	Biologist Report	

Mitigation, Monitoring, and Reporting Program						
Item	Mitigation Measure	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
BIO-13	(Pre-construction Surveys): If activities must occur within the breeding season (February 1 to August 31), a qualified biologist will conduct pre-construction surveys for bald eagle nests within seven (7) days prior to the start of construction. The survey will include the Patton Improvement Area and surrounding lands up to one mile from the Project area. Bald eagle nests are considered "active" upon the nest-building stage.	7 days Prior to construction	Once, Prior to ground disturbing activities and the start of construction	OAWD with assistance of a qualified biologist	Biologist Report	
BIO-14	(Avoidance Buffers): On discovery of any active bald eagle nests near work areas, a qualified biologist will determine appropriate construction setback distances based on applicable CDFW and/or USFWS guidelines and/or the biology of bald eagles. If necessary, avoidance buffers will be identified with flagging, fencing, or other easily visible means, and will be maintained until the biologist has determined that the nestlings have fledged.	During construction	As determined needed by qualified biologist during construction activities	OAWD with assistance of a qualified biologist	Biologist Report	
BIO-15	(Avoidance): The Project's construction activities will occur, if feasible, between August 31 and January 31 (outside of the nesting bird season) to avoid impacts to nesting tricolored blackbirds.	August 31 to January 31	Prior to construction activities	OAWD with assistance of a qualified biologist	Biologist Report	
BIO-16	(Pre-construction Surveys): If activities must occur within breeding season (February 1 to August 31), a qualified biologist will conduct pre-construction surveys for tricolored blackbird nests and breeding colonies within seven (7) days prior to the start of construction. The survey will include the Road 28 Improvement Area and all accessible lands within up to 200 feet.	7 days Prior to construction	Once, Prior to ground disturbing activities and the start of construction	OAWD with assistance of a qualified biologist	Biologist Report	
BIO-17	(Avoidance Buffers): On discovery of any active nests or breeding colonies near work areas, the biologist will determine appropriate construction setback distances based on applicable CDFW and/or USFWS guidelines and/or the biology of the species in question. If necessary, avoidance buffers will be identified with flagging, fencing, or other easily	During construction	As determined needed by qualified biologist during construction activities	OAWD with assistance of a qualified biologist	Biologist Report	

Mitigation, Monitoring, and Reporting Program						
Item	Mitigation Measure	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
	visible means, and will be maintained until the biologist has determined that the nestlings have fledged.					
BIO-18	(Avoidance): The Project's construction activities will occur, if feasible, between August 31 and January 31 (outside of the nesting bird season) to avoid impacts to nesting birds.	August 31 to January 31	Prior to construction activities	OAWD with assistance of a qualified biologist	Biologist Report	
BIO-19	(Pre-construction Surveys): If activities must occur within the nesting bird season (February 1 to August 31), a qualified biologist will conduct a pre-construction survey for active migratory bird nests no more than seven (7) days prior to the start of the construction within the Project area and surrounding lands up to 50 feet and for active raptor nests and all accessible lands up to 450-feet from the Project area. All raptor nests would be considered "active" upon the nest-building stage.	7 days Prior to construction	Once, Prior to ground disturbing activities and the start of construction	OAWD with assistance of a qualified biologist	Biologist Report	
BIO-20	(Avoidance Buffers): On discovery of any active nests near work areas, the biologist will determine appropriate construction setback distances (avoidance buffers) based on applicable CDFW and/or USFWS guidelines, the biology of the species, and work and site conditions. If necessary, avoidance buffers will be identified with flagging, fencing, or other easily visible means, and will be maintained until the biologist has determined that the nestlings have fledged.	During construction	As determined needed by qualified biologist during construction activities	OAWD with assistance of a qualified biologist	Biologist Report	
BIO-21	(Pre-construction Survey and Avoidance Buffers): Within seven (7) days prior to the start of construction within the above-mentioned Project area, a qualified biologist will conduct a pre-construction survey for western pond turtle within the area and all accessible areas within up to 330 feet. Pre-construction surveys will be conducted in accordance with the draft Western Pond Turtle (Emys marmorata) Visual Survey Protocol for the Southcoast Ecoregion (United States Geological	7 days Prior to construction	As determined needed by qualified biologist during construction activities	OAWD with assistance of a qualified biologist	Biologist Report	

Mitigation, Monitoring, and Reporting Program						
Item	Mitigation Measure	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
	Survey 2006). If no western pond turtles are observed during the pre-construction survey, then construction activities may begin. If construction is delayed or halted for more than seven (7) days, another pre-construction survey for western pond turtles will be conducted. If the surveys result in the identification of a western pond turtle or an individual is found within the Project area during construction activities, it will be allowed to leave on its own and the qualified biologist will determine appropriate buffers to be implemented to avoid impacts to the individual(s).					
BIO-22	(Monitor): If western pond turtles are observed within the Project area, a qualified biologist will conduct a pre-activity clearance survey each day and remain onsite to oversee all vegetation clearing and ground disturbing activities. If western pond turtles are detected, the individual will either be allowed to leave of its own volition or will be captured by the qualified biologist (must possess appropriate collecting/handling permits) and relocated out of harm's way to the nearest suitable habitat beyond the influence of the project work area. "Take" of a State or federal special status (rare, California Species of Special Concern, threatened, or endangered) species is prohibited.	During Construction activities	Daily, during all vegetation clearing and ground disturbing activities	OAWD with assistance of a qualified biologist	Biologist Report	
BIO-23	(Operational Hours): Construction activities will be limited to a half hour after sunrise through a half hour before sunset to reduce potential impacts to wildlife movement corridors.	During construction activities	During construction activities	OAWD	Construction Schedule	
BIO-24	(Wildlife Access): At no point will access be blocked outside of construction hours or during overnight hours or weekends. If construction must block both sides of a potential wildlife access route, an alternative route through the construction area will be identified by a qualified biologist and maintained throughout the construction schedule timeframe.	During Construction activities	During construction activities	OAWD with assistance of a qualified biologist	Biologist Report	

Mitigation, Monitoring, and Reporting Program						
Item	Mitigation Measure	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
Cultural Resources and Tribal Cultural Resources						
CUL-1	The present evaluation and recommendations are based on the findings of an inventory-level surface survey only. There is always the possibility that important unidentified cultural materials could be encountered on or below the surface during the course of future repair activities. This possibility is particularly relevant considering the constraints generally to archaeological field survey, and particularly where past ground disturbance activities (e.g., flooding, canal trenching, orchard development, etc.) have partially obscured historic ground surface visibility, as in the present case. In the event of an inadvertent discovery of previously unidentified cultural material, archaeological consultation should be sought immediately.	During Construction Activities	During Construction Activities	OAWD with assistance of a qualified archaeologist		
CUL-2	In the event that previously unidentified cultural resources are discovered as a result of this undertaking, the nearby construction activities would cease and Reclamation Cultural Resource Staff would be notified and consulted on how to proceed. Reclamation would follow the procedures for post-review discoveries on Federal lands as described in the regulations at 36 CFR § 800.13. Work may not continue in the area of the discovery until Reclamation issues a notice to proceed.	During Construction Activities	During Construction Activities	OAWD with assistance of a qualified archaeologist		
CUL-3	In the event that human remains are inadvertently encountered during any project-associated ground-disturbing activity or at any time subsequently, State law will be followed, which includes but is not limited to immediately contacting the County Coroner's office upon any discovery of human remains.	During Construction Activities	During Construction Activities	OAWD with assistance of a County Coroner, NAHC and tribal contacts as necessary		
CUL-4	In the event that human remains are identified during the course of the proposed project, all construction activities would cease and a Reclamation Archaeologist would be consulted on	During Construction Activities	During Construction Activities	OAWD with assistance of a County Coroner, NAHC and tribal		

Mitigation, Monitoring, and Reporting Program						
Item	Mitigation Measure	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
	how to proceed. Note that all Native American human remains identified on lands owned by the Federal government are subject to the Native American Graves Protection and Repatriation Act (NAGPRA) (25 USC 3001). Under the NAGPRA (25 USC 3001) and implementing regulations 43 CFR Part 10, Reclamation is responsible for the protection of Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony that are discovered on Reclamation lands. All human remains and potential human remains must be treated with respect and dignity at all times. In the event that suspected human remains are discovered during proposed project activity on Reclamation land, all activities in the immediate area will cease, and appropriate precautions will be taken to protect the remains and any associated cultural items from further disturbance. Reclamation will follow the procedures outlined in 43 CFR § 10.4 Inadvertent Discoveries. The Reclamation Region 10 Regional Environmental Officer will be immediately notified by telephone and will take responsibly for the discovery by contacting the appropriate law enforcement and Reclamation officials. Within three (3) working days of confirmation of the discovery [see 43 CFR Part 10.4(d)(1)(iii)], the Regional Cultural Resource Officer will ensure that Indian tribes likely to be affiliated with the discovered human remains (e.g., lineal descendant, culturally affiliated Indian tribe, Indian tribe with other cultural relationship, and Indian tribe that aboriginally occupied area) are notified by telephone or in person, with written confirmation. Treatment and handling of the remains will be determined through consultation between Reclamation and consulting tribes. Project implementation in the vicinity of the discovery			contacts as necessary		

Mitigation, Monitoring, and Reporting Program						
Item	Mitigation Measure	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
	would not resume until Reclamation complies with the 43 CFR § 10 regulations and provides notification to proceed.					
Geology and Soils						
GEO-1	Should paleontological resources be encountered on the Project area, all ground disturbing activities in the area will stop. A qualified paleontologist will be contacted to assess the discovery. Mitigation may include monitoring, recording the fossil locality, data recovery and analysis, and a final report. Public educational outreach may also be appropriate. Upon completion of the assessment, a report documenting methods, findings, and recommendations will be prepared and submitted to the Orland-Artois Water District for review, and (if paleontological materials are recovered) a paleontological repository, such as the University of California Museum of Paleontology.	During Construction Activities	During Construction Activities	OAWD with assistance of a qualified paleontologist		
Table Notes						

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Appendix A: CalEEMod Output Files

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

OAWD

Glenn County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	50.00	1000sqft	1.15	50,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	61
Climate Zone	3			**Operational Year**	2024
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 - 25 turnouts x 2,000 sqft

Construction Phase -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value

2.0 Emissions Summary

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

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.1878	1.2969	1.4080	2.6700e-003	0.0432	0.0554	0.0987	0.0160	0.0534	0.0694	0.0000	224.1659	224.1659	0.0350	2.7500e-003	225.8596
Maximum	**0.1878**	**1.2969**	**1.4080**	**2.6700e-003**	**0.0432**	**0.0554**	**0.0987**	**0.0160**	**0.0534**	**0.0694**	**0.0000**	**224.1659**	**224.1659**	**0.0350**	**2.7500e-003**	**225.8596**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.1878	1.2969	1.4079	2.6700e-003	0.0308	0.0554	0.0862	0.0100	0.0534	0.0634	0.0000	224.1657	224.1657	0.0350	2.7500e-003	225.8594
Maximum	**0.1878**	**1.2969**	**1.4079**	**2.6700e-003**	**0.0308**	**0.0554**	**0.0862**	**0.0100**	**0.0534**	**0.0634**	**0.0000**	**224.1657**	**224.1657**	**0.0350**	**2.7500e-003**	**225.8594**

	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	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**28.84**	**0.00**	**12.64**	**37.47**	**0.00**	**8.66**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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)
1	1-4-2023	4-3-2023	0.3098	0.3098
2	4-4-2023	7-3-2023	0.4474	0.4474
3	7-4-2023	9-30-2023	0.4376	0.4376
		Highest	0.4474	0.4474

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	5.0100e-003	0.0000	4.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.9000e-004	8.9000e-004	0.0000	0.0000	9.5000e-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	**5.0100e-003**	**0.0000**	**4.6000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**8.9000e-004**	**8.9000e-004**	**0.0000**	**0.0000**	**9.5000e-004**

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	5.0100e-003	0.0000	4.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.9000e-004	8.9000e-004	0.0000	0.0000	9.5000e-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	**5.0100e-003**	**0.0000**	**4.6000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**8.9000e-004**	**8.9000e-004**	**0.0000**	**0.0000**	**9.5000e-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	N20	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	Site Preparation	Site Preparation	2/1/2023	2/2/2023	5	2	
2	Grading	Grading	2/3/2023	2/8/2023	5	4	
3	Building Construction	Building Construction	2/9/2023	11/15/2023	5	200	

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

4	Paving	Paving	11/16/2023	11/29/2023	5	10	
5	Architectural Coating	Architectural Coating	11/30/2023	12/13/2023	5	10	

Acres of Grading (Site Preparation Phase): 1.88

Acres of Grading (Grading Phase): 4

Acres of Paving: 1.15

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 3,000 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Site Preparation	Graders	1	8.00	187	0.41
Paving	Pavers	1	6.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	7.00	80	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	1	7.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45

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

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	3	8.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	21.00	8.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	4.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 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					6.2700e-003	0.0000	6.2700e-003	3.0000e-003	0.0000	3.0000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.1300e-003	0.0124	6.6400e-003	2.0000e-005		5.1000e-004	5.1000e-004		4.7000e-004	4.7000e-004	0.0000	1.5114	1.5114	4.9000e-004	0.0000	1.5236
Total	**1.1300e-003**	**0.0124**	**6.6400e-003**	**2.0000e-005**	**6.2700e-003**	**5.1000e-004**	**6.7800e-003**	**3.0000e-003**	**4.7000e-004**	**3.4700e-003**	**0.0000**	**1.5114**	**1.5114**	**4.9000e-004**	**0.0000**	**1.5236**

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

3.2 Site Preparation - 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	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	2.0000e-005	2.0000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0514	0.0514	0.0000	0.0000	0.0519
Total	**3.0000e-005**	**2.0000e-005**	**2.0000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0514**	**0.0514**	**0.0000**	**0.0000**	**0.0519**

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					2.4400e-003	0.0000	2.4400e-003	1.1700e-003	0.0000	1.1700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.1300e-003	0.0124	6.6400e-003	2.0000e-005		5.1000e-004	5.1000e-004		4.7000e-004	4.7000e-004	0.0000	1.5114	1.5114	4.9000e-004	0.0000	1.5236
Total	**1.1300e-003**	**0.0124**	**6.6400e-003**	**2.0000e-005**	**2.4400e-003**	**5.1000e-004**	**2.9500e-003**	**1.1700e-003**	**4.7000e-004**	**1.6400e-003**	**0.0000**	**1.5114**	**1.5114**	**4.9000e-004**	**0.0000**	**1.5236**

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

3.2 Site Preparation - 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	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	2.0000e-005	2.0000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0514	0.0514	0.0000	0.0000	0.0519
Total	**3.0000e-005**	**2.0000e-005**	**2.0000e-004**	**0.0000**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0514**	**0.0514**	**0.0000**	**0.0000**	**0.0519**

3.3 Grading - 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					0.0142	0.0000	0.0142	6.8500e-003	0.0000	6.8500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.6700e-003	0.0289	0.0174	4.0000e-005		1.2100e-003	1.2100e-003		1.1100e-003	1.1100e-003	0.0000	3.6208	3.6208	1.1700e-003	0.0000	3.6501
Total	**2.6700e-003**	**0.0289**	**0.0174**	**4.0000e-005**	**0.0142**	**1.2100e-003**	**0.0154**	**6.8500e-003**	**1.1100e-003**	**7.9600e-003**	**0.0000**	**3.6208**	**3.6208**	**1.1700e-003**	**0.0000**	**3.6501**

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

3.3 Grading - 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	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-005	4.0000e-005	5.1000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1286	0.1286	0.0000	0.0000	0.1298
Total	**7.0000e-005**	**4.0000e-005**	**5.1000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1286**	**0.1286**	**0.0000**	**0.0000**	**0.1298**

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					5.5200e-003	0.0000	5.5200e-003	2.6700e-003	0.0000	2.6700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.6700e-003	0.0289	0.0174	4.0000e-005		1.2100e-003	1.2100e-003		1.1100e-003	1.1100e-003	0.0000	3.6208	3.6208	1.1700e-003	0.0000	3.6501
Total	**2.6700e-003**	**0.0289**	**0.0174**	**4.0000e-005**	**5.5200e-003**	**1.2100e-003**	**6.7300e-003**	**2.6700e-003**	**1.1100e-003**	**3.7800e-003**	**0.0000**	**3.6208**	**3.6208**	**1.1700e-003**	**0.0000**	**3.6501**

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

3.3 Grading - 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	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-005	4.0000e-005	5.1000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1286	0.1286	0.0000	0.0000	0.1298
Total	**7.0000e-005**	**4.0000e-005**	**5.1000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1286**	**0.1286**	**0.0000**	**0.0000**	**0.1298**

3.4 Building Construction - 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					
Off-Road	0.1523	1.1710	1.2611	2.2100e-003		0.0515	0.0515		0.0497	0.0497	0.0000	181.5991	181.5991	0.0308	0.0000	182.3701
Total	**0.1523**	**1.1710**	**1.2611**	**2.2100e-003**		**0.0515**	**0.0515**		**0.0497**	**0.0497**	**0.0000**	**181.5991**	**181.5991**	**0.0308**	**0.0000**	**182.3701**

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

3.4 Building Construction - 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	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3000e-003	0.0421	0.0135	1.7000e-004	5.2600e-003	2.8000e-004	5.5400e-003	1.5200e-003	2.7000e-004	1.7900e-003	0.0000	16.0413	16.0413	6.0000e-005	2.3300e-003	16.7375
Worker	6.8900e-003	4.4400e-003	0.0534	1.5000e-004	0.0166	9.0000e-005	0.0167	4.4200e-003	9.0000e-005	4.5100e-003	0.0000	13.5038	13.5038	4.4000e-004	4.0000e-004	13.6334
Total	**8.1900e-003**	**0.0466**	**0.0669**	**3.2000e-004**	**0.0219**	**3.7000e-004**	**0.0223**	**5.9400e-003**	**3.6000e-004**	**6.3000e-003**	**0.0000**	**29.5451**	**29.5451**	**5.0000e-004**	**2.7300e-003**	**30.3709**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1523	1.1710	1.2611	2.2100e-003		0.0515	0.0515		0.0497	0.0497	0.0000	181.5989	181.5989	0.0308	0.0000	182.3698
Total	**0.1523**	**1.1710**	**1.2611**	**2.2100e-003**		**0.0515**	**0.0515**		**0.0497**	**0.0497**	**0.0000**	**181.5989**	**181.5989**	**0.0308**	**0.0000**	**182.3698**

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

3.4 Building Construction - 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	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.3000e-003	0.0421	0.0135	1.7000e-004	5.2600e-003	2.8000e-004	5.5400e-003	1.5200e-003	2.7000e-004	1.7900e-003	0.0000	16.0413	16.0413	6.0000e-005	2.3300e-003	16.7375
Worker	6.8900e-003	4.4400e-003	0.0534	1.5000e-004	0.0166	9.0000e-005	0.0167	4.4200e-003	9.0000e-005	4.5100e-003	0.0000	13.5038	13.5038	4.4000e-004	4.0000e-004	13.6334
Total	**8.1900e-003**	**0.0466**	**0.0669**	**3.2000e-004**	**0.0219**	**3.7000e-004**	**0.0223**	**5.9400e-003**	**3.6000e-004**	**6.3000e-003**	**0.0000**	**29.5451**	**29.5451**	**5.0000e-004**	**2.7300e-003**	**30.3709**

3.5 Paving - 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					
Off-Road	3.2200e-003	0.0312	0.0440	7.0000e-005		1.5400e-003	1.5400e-003		1.4200e-003	1.4200e-003	0.0000	5.8862	5.8862	1.8700e-003	0.0000	5.9329
Paving	1.5100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.7300e-003**	**0.0312**	**0.0440**	**7.0000e-005**		**1.5400e-003**	**1.5400e-003**		**1.4200e-003**	**1.4200e-003**	**0.0000**	**5.8862**	**5.8862**	**1.8700e-003**	**0.0000**	**5.9329**

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

3.5 Paving - 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	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1000e-004	1.4000e-004	1.6500e-003	0.0000	5.1000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4180	0.4180	1.0000e-005	1.0000e-005	0.4220
Total	**2.1000e-004**	**1.4000e-004**	**1.6500e-003**	**0.0000**	**5.1000e-004**	**0.0000**	**5.2000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4180**	**0.4180**	**1.0000e-005**	**1.0000e-005**	**0.4220**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.2200e-003	0.0312	0.0440	7.0000e-005		1.5400e-003	1.5400e-003		1.4200e-003	1.4200e-003	0.0000	5.8862	5.8862	1.8700e-003	0.0000	5.9329
Paving	1.5100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**4.7300e-003**	**0.0312**	**0.0440**	**7.0000e-005**		**1.5400e-003**	**1.5400e-003**		**1.4200e-003**	**1.4200e-003**	**0.0000**	**5.8862**	**5.8862**	**1.8700e-003**	**0.0000**	**5.9329**

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

3.5 Paving - 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	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1000e-004	1.4000e-004	1.6500e-003	0.0000	5.1000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4180	0.4180	1.0000e-005	1.0000e-005	0.4220
Total	**2.1000e-004**	**1.4000e-004**	**1.6500e-003**	**0.0000**	**5.1000e-004**	**0.0000**	**5.2000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4180**	**0.4180**	**1.0000e-005**	**1.0000e-005**	**0.4220**

3.6 Architectural Coating - 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					
Archit. Coating	0.0174					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.6000e-004	6.5100e-003	9.0600e-003	1.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004	0.0000	1.2766	1.2766	8.0000e-005	0.0000	1.2785
Total	**0.0183**	**6.5100e-003**	**9.0600e-003**	**1.0000e-005**		**3.5000e-004**	**3.5000e-004**		**3.5000e-004**	**3.5000e-004**	**0.0000**	**1.2766**	**1.2766**	**8.0000e-005**	**0.0000**	**1.2785**

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

3.6 Architectural Coating - 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	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-005	4.0000e-005	5.1000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1286	0.1286	0.0000	0.0000	0.1298
Total	**7.0000e-005**	**4.0000e-005**	**5.1000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1286**	**0.1286**	**0.0000**	**0.0000**	**0.1298**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.0174					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.6000e-004	6.5100e-003	9.0600e-003	1.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004	0.0000	1.2766	1.2766	8.0000e-005	0.0000	1.2785
Total	**0.0183**	**6.5100e-003**	**9.0600e-003**	**1.0000e-005**		**3.5000e-004**	**3.5000e-004**		**3.5000e-004**	**3.5000e-004**	**0.0000**	**1.2766**	**1.2766**	**8.0000e-005**	**0.0000**	**1.2785**

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

3.6 Architectural Coating - 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	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-005	4.0000e-005	5.1000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1286	0.1286	0.0000	0.0000	0.1298
Total	**7.0000e-005**	**4.0000e-005**	**5.1000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1286**	**0.1286**	**0.0000**	**0.0000**	**0.1298**

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 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 Asphalt Surfaces	9.50	7.30	7.30	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 Asphalt Surfaces	0.517430	0.051905	0.172284	0.149668	0.042431	0.009749	0.008153	0.016424	0.000264	0.000175	0.027278	0.000928	0.003311

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	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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	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	0.0000

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

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	tons/yr										MT/yr					
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
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**	**0.0000**

Mitigated

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

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 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 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

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	5.0100e-003	0.0000	4.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.9000e-004	8.9000e-004	0.0000	0.0000	9.5000e-004
Unmitigated	5.0100e-003	0.0000	4.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.9000e-004	8.9000e-004	0.0000	0.0000	9.5000e-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	1.7400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.2300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.0000e-005	0.0000	4.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.9000e-004	8.9000e-004	0.0000	0.0000	9.5000e-004
Total	**5.0100e-003**	**0.0000**	**4.6000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**8.9000e-004**	**8.9000e-004**	**0.0000**	**0.0000**	**9.5000e-004**

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	1.7400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.2300e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.0000e-005	0.0000	4.6000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.9000e-004	8.9000e-004	0.0000	0.0000	9.5000e-004
Total	**5.0100e-003**	**0.0000**	**4.6000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**8.9000e-004**	**8.9000e-004**	**0.0000**	**0.0000**	**9.5000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

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 Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

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 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

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 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 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

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

Appendix B: Biological Evaluation

Biological Evaluation

ORLAND-ARTOIS WATER DISTRICT

ANNEXATION AND INFRASTRUCTURE PROJECT

JUNE 2023

Shaylea Stark, Biologist
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I. Introduction

The following technical report prepared by Provost & Pritchard Consulting Group (Provost & Pritchard), in compliance with the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA), includes a description of the biological resources present or with the potential to occur within the proposed Orland Artois Water District (District) Annexation and Infrastructure Project (Project) and surrounding areas, and evaluates potential Project-related impacts to those resources.

Project Description

The Project is located north of the City of Willows and south of the City of Orland, California, within the eastern portion of Glenn County and near the western edge of the Sacramento Valley (see **Figure 1** and **Figure 2**). The Project includes annexation of approximately 11,000 acres into the District boundary. The Project would also construct infrastructure needed to deliver water to the proposed annexed parcels. There are nineteen (19) Areas of Potential Effect (APEs): Lassen Land Improvement Area, Road F Improvement Area, Patton Improvement Area, Big W Improvement Area, Road 28 Improvement Area, Hart 330 Improvement Area, Hart 342 Improvement Area, Knight 33 Improvement Area, 99W Improvement Area, Sanford Improvement Area, Hart HQ Improvement Area, 33.6N Improvement Area, 33.6E Improvement Area, Knight 27 Extension Improvement Area, 0.6 Booster Pump Improvement Area, 0.6 SAR Improvement Area, 0.6 Woolf Improvement Area, Lateral 2.6 Booster Pump Station Improvement Area, 99W Alternative Improvement Area (see **Figure 4**). Within these APEs the infrastructure to be constructed would include: seven (7) turnouts (with pumps) from the Tehama Colusa Canal; twenty-four (24) new farm turnout locations; two (2) new pump stations (approximate capacity of 30 cubic-feet-per-second) on existing pipelines; and approximately eight (8) miles of new pipeline. The maximum depth of ground disturbance for pipelines and farm turnouts would be nine (9) feet, while the booster pump stations would have a maximum depth of eighteen (18) feet. Each construction area would contain temporary staging areas for construction equipment laydown. The APEs include farm turnouts, pipeline locations, and staging areas with an additional 50-foot buffer surrounding the project features, which total approximately 166 acres (see **Figure 3**). The 50-foot buffer was chosen to encompass all areas that could be impacted by the Project.

Report Objectives

Construction activities such as those proposed by the project could potentially change biological resources or modify habitats that are crucial for sensitive plant and wildlife species. In cases such as these, development may be regulated by state or federal agencies, and/or addressed by local regulatory agencies.

This report addresses issues related to the following:

1. The presence of sensitive biological resources on each APE, or with the potential to occur on each APE.
2. The federal, state, and local regulations regarding these resources.
3. Mitigation measures that would be required to reduce the magnitude of anticipated impacts and/or comply with permit requirements of state and federal resource agencies.

Therefore, the objectives of this report are:

1. Summarize all APE-specific information related to existing biological resources.
2. Make reasonable inferences about the biological resources that could occur on each APE based on habitat suitability and the proximity of each APE to a species' known range.

3. Summarize all state and federal natural resource protection laws that may be relevant to each APE.
4. Identify and discuss Project impacts and effects to biological resources likely to occur on each APE within the context of the CEQA, NEPA, and/or state or federal laws.
5. Identify a set of avoidance and mitigation measures that would reduce impacts to a less-than-significant level (as identified by CEQA) or avoid and minimize effects (as identified by NEPA) and are generally consistent with recommendations of the resource agencies for sensitive biological resources.

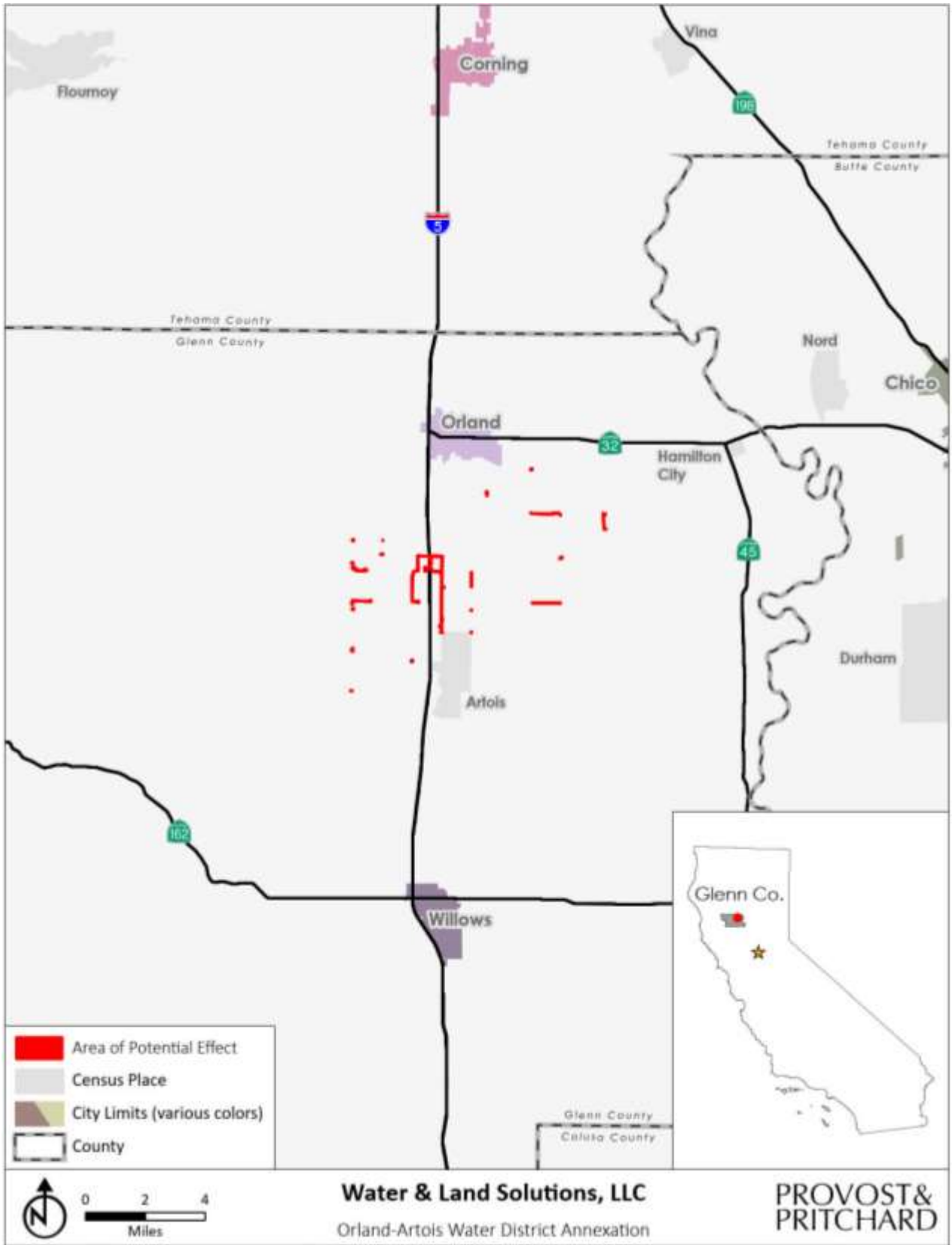

Figure 1. Regional Location Map

Figure 2. Topographic Quadrangle Map

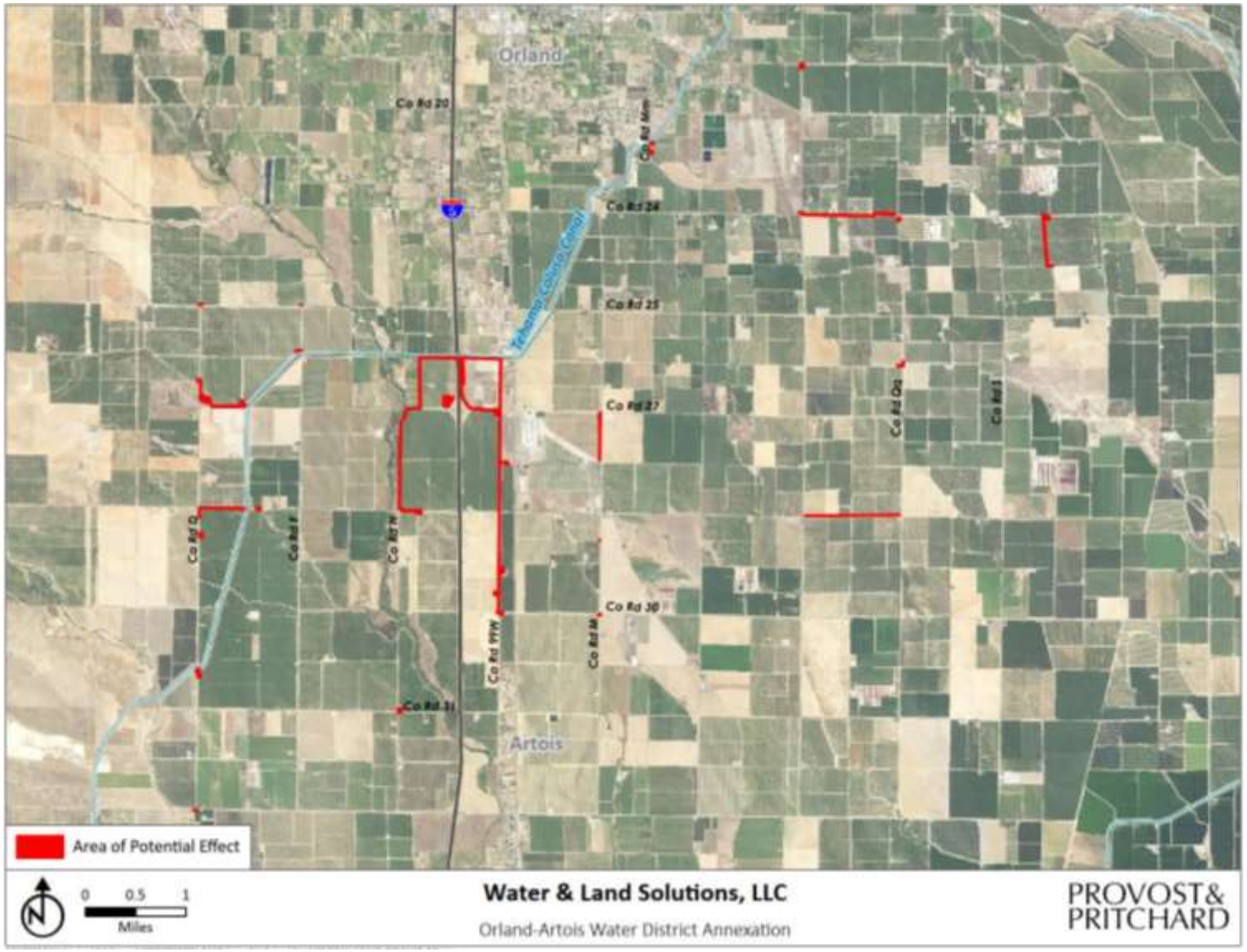

Figure 3. Area of Potential Effect Map

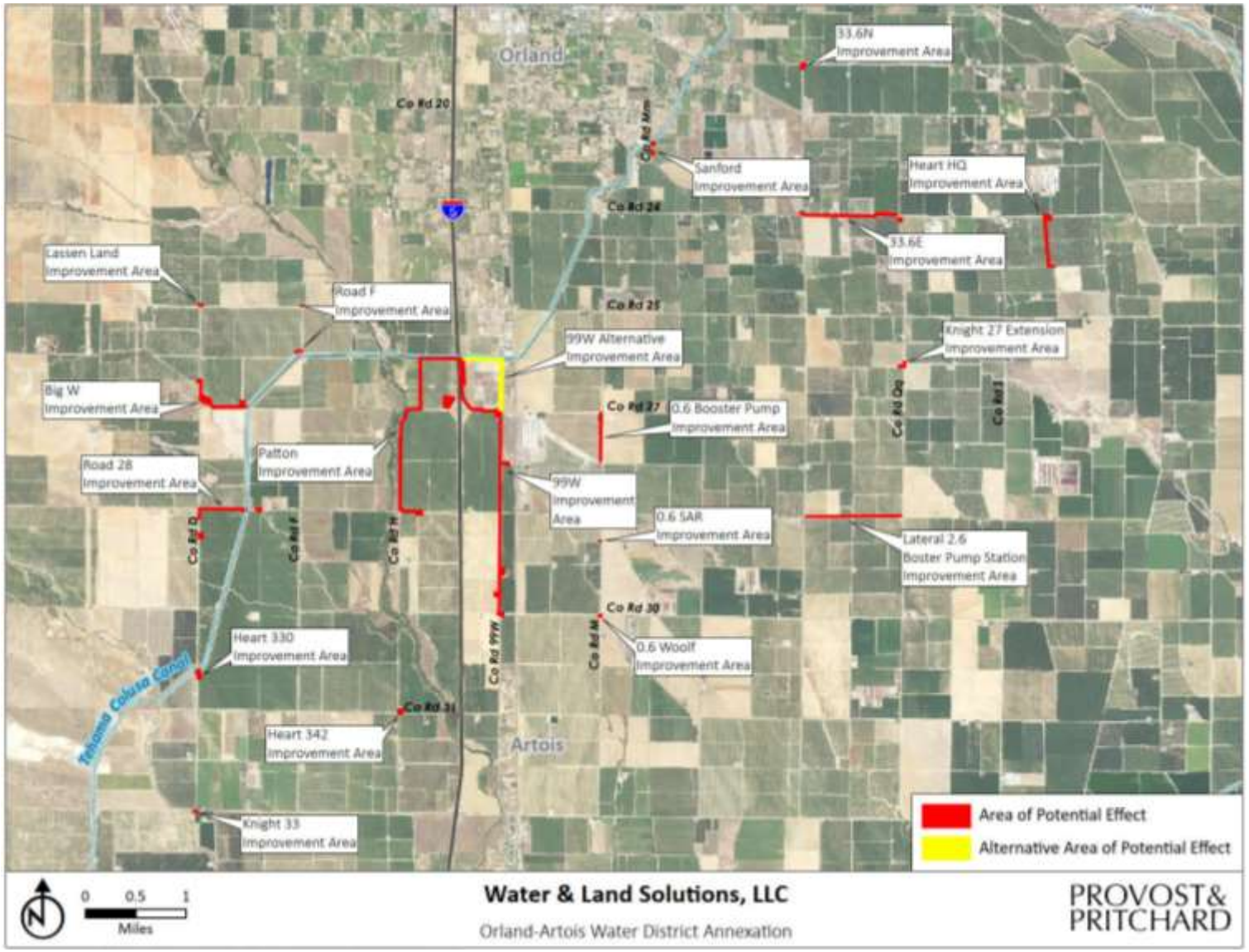

Figure 4. APE Names and Locations

Study Methodology

A reconnaissance-level field survey of the APEs was conducted on November 8, and November 9, 2022, by Provost & Pritchard biologists Shaylea Stark and Mary Beth Bourne. The survey consisted of walking and driving within the APEs while identifying and noting land uses, biological habitats and communities, plant and animal species encountered, and assessing suitable habitats that could be utilized by various special status plant and animal species. Representative photographs of the APEs were taken and are presented in **Appendix A**.

Ms. Stark conducted an analysis of potential project-related impacts to biological resources based on the resources known to exist or with potential to exist within the APEs. Sources of information used in preparation of this analysis included: the California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB; see **Appendix B** for the Species List) and California Wildlife Habitat Relationships (CWHR) database; California Native Plant Society's (CNPS) Online Inventory of Rare and Endangered Vascular Plants of California; CalFlora's online database of California native plants; Jepson Herbarium's online database (i.e., Jepson eFlora); United States Fish and Wildlife Service's (USFWS) Environmental Conservation Online System (ECOS), Information for Planning and Consultation (IPaC; see **Appendix C** for the Species List) system, and National Wetlands Inventory (NWI); iNaturalist; NatureServe Explorer's online database; United States Department of Agriculture (USDA) Natural Resources Conservation Service's (NRCS) Web Soil Survey (see **Appendix D** for the Web Soil Survey Report); California Herps website; and various manuals, reports, and references related to plants and animals of the Sacramento Valley region.

The field survey did not include focused surveys for special status species. The field survey conducted included the appropriate level of detail to assess the significance of potential impacts to sensitive biological resources resulting from implementing the Project. Furthermore, the field survey was sufficient to generally describe those features of the Project that could be subject to the jurisdiction of federal and/or state agencies, such as the United States Army Corps of Engineers (USACE), CDFW, Regional Water Quality Control Board (RWQCB) and the State Water Resources Control Board (SWRCB).

II. Existing Conditions

Regional Setting

Topography

The topography of each APE is relatively flat. The elevation range of the APEs is approximately 178-246 feet above mean sea level.

Climate

Like most of California, the APEs experience a Mediterranean climate. Warm, dry summers are followed by cool, moist winters. In the summer average high temperatures range between 85- and 95-degrees Fahrenheit (˚F), but often exceeds 95˚F in the Project area. Average winter low temperatures are near 40˚F. The average annual precipitation is approximately 18-21 inches, falling mainly from October to April (USA Facts 2022).

Hydrology

Watersheds are made up of many smaller subwatersheds that drain into a particular stream, river, or lake, and the APEs are located within the Walker Creek, Sacramento River, or Colusa Drain watersheds, as described below:

- **Lassen Land Improvement Area, Road F Improvement Area**, **Big W Improvement Area**, **Road 28 Improvement Area:** Portions of the APEs lie within the Middle Walker Creek subwatershed; Hydrologic Unit Code (HUC): 180201040202, which is a part of the Walker Creek watershed; HUC: 1802010402. The nearest water source to Lassen Land Improvement Area is an unnamed creek that is 0.4 miles west, an unnamed creek that is 0.8 miles north and connects to Walker Creek which is 1.4 miles east. The nearest water source to Road F Improvement Area is Walker Creek, which is 0.8 miles east, and Tehama Colusa Canal which is directly south, where the pipeline would connect. The nearest water source to Big W Improvement Area is an unnamed stream the pipeline is directly adjacent to, and Tehama Colusa Canal, which is directly east, where the pipeline would connect. The nearest water source to Road 28 Improvement Area is an unnamed creek north across the road, and Tehama Colusa Canal where the pipeline would connect to.

- **Hart 330 Improvement Area, Hart 342 Improvement Area**, **Knight 33 Improvement Area**, **99W Improvement Area**, **Patton Improvement Area**, **99W Alternative Improvement Area**, **0.6 SAR Improvement Area**, **0.6 Woolf Improvement Area:** Portions of the APEs lie within the Lower Walker Creek subwatershed; Hydrologic Unit Code (HUC): 180201040202, which is a part of the Walker Creek watershed; HUC: 1802010402. The nearest water source to Hart 330 Improvement Area is Tehama Colusa Canal which is directly north, where the pipeline would connect. The nearest water source to Hart 342 Improvement Area is Walker Creek which is 0.5-mile east, and Tehama Colusa Canal which is 2.5 miles west. The nearest water source to Knight 33 Improvement Area is Wilson Creek which is 0.1 southwest, and Tehama Colusa Canal which is 1.5 miles north. The nearest water source to 99W Improvement Area is Walker Creek, which is 0.5 miles west of the pipeline, and Tehama Colusa Canal, which is directly north, where the pipeline would connect. The nearest water source to Patton Improvement Area is Walker Creek, which is directly west of the pipeline and Tehama Colusa Canal, which is directly north, where the pipeline would connect. The nearest water source to the 99W Alternative Improvement Area is Walker Creek, which is 1 mile west, and Tehama Colusa Canal, which is directly north. The nearest water source to 0.6 SAR Improvement Area is an unnamed canal which is 1 mile east. The nearest water source to 0.6 Woolf Improvement Area is the same unnamed canal

located 1.5 miles east. This canal contained pond water during the survey due to the ongoing storm event, but no waster was observed flowing. This canal is not currently in use by the District.

- **Sanford Improvement Area, 33.6E Improvement Area:** Portions of the APEs lie within The Lagoon-Sacramento River subwatershed; Hydrologic Unit Code (HUC): 180201041202, which is a part of the Sacramento River watershed; HUC: 1802010412. The nearest water source to Sanford Improvement Area is the Tehama Colusa Canal, which is directly north, where the pipeline would connect. The nearest water source to 33.6E Improvement Area are Tehama Colusa Canal which is 2.5 miles west, an unnamed Canal which is 3 miles east, and Stony Creek which is 2.7 miles north and 5.5 miles east.

- **33.6N Improvement Area, Hart HQ Improvement Area:** Portions of the APEs lie within Deadmans Reach- Sacramento River subwatershed; Hydrologic Unit Code (HUC): 180201041201, which is a part of the Sacramento River watershed; HUC: 1802010412. The nearest water source to the 33.6N Improvement Area is Tehama Colusa Canal which is 1 mile west. The nearest water source to the Hart HQ Improvement Area is an unnamed Canal which is 0.9 miles east and Stony Creek which is 2 miles north and 4 miles east.

- **Knight 27 Extension Improvement Area**, **Lateral 2.6 Booster Pump Station Improvement Area**, **0.6 Booster Pump Improvement Area**: Portions of the APEs lie within the Colusa Drain subwatershed; Hydrologic Unit Code (HUC): 180201040400, which is a part of the Colusa Drain watershed; HUC: 1802010404. The nearest water source to the Knight 27 Extension Improvement Area is an unnamed canal which is 0.6 miles west. The nearest water source to the Lateral 2.6 Booster Pump Station Improvement Area is an unnamed canal which is 0.4 miles west, and Tehama Colusa Canal which is 3.5 miles northwest. The nearest water source to the 0.6 Booster Pump Improvement Area is the disused unnamed canal which is directly north and connects to Tehama Colusa Canal that is 1.2 miles northwest.

Tehama Colusa Canal receives water from the Sacramento River. This canal spans four counties (Tehama, Glenn, Colusa, and Yolo) along the west side of the Sacramento Valley before terminating. Tehama Colusa Canal does not drain into any jurisdictional waters. North Fork Walker Creek starts in the uplands and flows into Walker Creek which goes past the APEs. Walker Creek then turns into Wilson Creek which turns into Willow Creek which then flows into unnamed canals (United States Environmental Protection Agency (USEPA) 2023).

Soils

Twenty-four soil mapping units representing twelve soil types were identified within the APEs and are listed in **Table 1** (see **Appendix D** for the complete Web Soil Survey reports). The soils are displayed with their core properties in the table below, according to the Major Land Resource Area of California. Generally, these twelve soils are primarily used for dryland and irrigated orchards, irrigated row and field crops, or livestock grazing.

Table 1. List of Soils Located on the APEs and Their Basic Properties

Soil	Soil Map Unit	Percent of APEs	Hydric Unit	Hydric Minor Units	Drainage	Permeability	Runoff
Arbuckle	Gravelly loam, 0 to 2 percent slopes	8.3%	No	No	Well drained	Moderately slow permeability	Low runoff
	Gravelly loam, clayey substratum, 0 to 2 percent slopes	0.7%	No	Yes	Well drained	Moderately slow permeability	Medium runoff

Soil	Soil Map Unit	Percent of APEs	Hydric Unit	Hydric Minor Units	Drainage	Permeability	Runoff
	Gravelly sandy loam, 0 percent slopes	0.4%	No	Yes	Well drained	Moderately slow permeability	Medium runoff
Artois	Clay loam	0.0%	No	No	Moderately well drained	Slow permeability	High runoff
	Gravelly loam	1.2%	No	No	Moderately well drained	Slow permeability	High runoff
Capay	Clay, 0 to 4 percent slopes	0.3%	No	Yes	Somewhat poorly drained	Slow permeability	High runoff
Corning-Redding	Gravelly loams, 1 to 3 percent slopes	1.2%	No	Yes	Moderately well drained	Slow permeability	Very high runoff
Cortina	Gravelly fine sandy loam shallow	0.8%	No	Yes	Somewhat excessively drained	Rapid permeability	Very low runoff
	Very gravelly sandy loam, 0 to 3 percent slopes	13.9%	No	Yes	Somewhat excessively drained	Rapid permeability	Very low runoff
	Very gravelly sandy loam, moderately deep	4.6%	No	Yes	Somewhat excessively drained	Rapid permeability	Very low runoff
Hillgate	Loam, 0 to 2 percent slopes	2.5%	No	Yes	Well drained	Slow permeability	Very low runoff
	Clay loam, 0 to 3 percent slopes	0.6%	No	Yes	Well drained	Slow permeability	Very high runoff
	Gravelly loam, 0 to 2 percent slopes	6.2%	No	Yes	Well drained	Slow permeability	Very high runoff
Jacinto	Fine sandy loam, 0 to 2 percent slopes	2.9%	No	No	Well drained	Moderately rapid permeability	Low runoff
Kimball	Loam, 0 to 2 percent slopes	0.6%	No	Yes	Well drained	Slow permeability	Very high runoff
	Gravelly loam, 0 to 2 percent slopes	0.3%	No	Yes	Well drained	Slow permeability	Very high runoff
Orland	Loam, moderately deep over gravel, 0 to 2 percent slopes	0.7%	No	Yes	Well drained	Moderate permeability	Low runoff
Pleasanton	Gravelly loam, 0 to 2 percent slopes	1.8%	No	No	Well drained	Moderately slow permeability	Medium runoff
Riverwash	-	0.2%	Yes	No	Excessively drained	-	Very low runoff
Tehama	Loam, moderately deep over gravel, 0 to 2 percent slopes	0.4%	No	No	Well drained	Slow permeability	Medium runoff

Soil	Soil Map Unit	Percent of APEs	Hydric Unit	Hydric Minor Units	Drainage	Permeability	Runoff
	Loam, deep to gravel, 0 to 3 percent slopes	11.0%	No	No	Well drained	Slow permeability	Medium runoff
	Gravelly loam, 0 to 3 percent slopes	0.0%	No	No	Well drained	Slow permeability	High runoff
	Silt loam, 0 to 3 percent slopes	36.3%	No	No	Well drained	Slow permeability	High runoff
Wyo	Loam, deep over gravel	1.0%	No	No	Well drained	Rapid permeability	Low runoff
	Gravelly loam, moderately deep over gravel	3.9%	No	No	Well drained	Rapid permeability	Low runoff

Hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions such that under sufficiently wet conditions, hydrophytic vegetation can be supported. While one major component and some minor components were identified as hydric, the soils of each APE are predominantly nonhydric.

Biotic Habitats

Four biotic habitats were identified within the APEs: Riverine/Riparian, Annual Grassland, Canal/Ditches, and Ruderal/Agricultural, and the habitat types that were found within each APE is summarized below, in **Table 2**. Following **Table 2** are descriptions of each habitat type, which include the constituent plant and animal species observed within the habitat. Selected photographs of these habitats are presented in **Appendix A**.

Table 2. Summary of Habitat Types Within Each APE

APE Name	Habitat Type and Presence in the APEs			
	Riverine/ Riparian	Annual Grassland	Canal/Ditches	Ruderal/ Agricultural
Lassen Land Improvement Area			**X**	**X**
Road F Improvement Area			**X**	**X**
Patton Improvement Area			**X**	**X**
Big W Improvement Area	**X**	**X**	**X**	**X**
Road 28 Improvement Area			**X**	**X**
Hart 330 Improvement Area			**X**	**X**
Hart 342 Improvement Area				**X**
Knight 33 Improvement Area			**X**	**X**
99W Improvement Area		**X**	**X**	**X**

APE Name	Habitat Type and Presence in the APEs			
	Riverine/ Riparian	Annual Grassland	Canal/Ditches	Ruderal/ Agricultural
33.6N Improvement Area			X	X
Sanford Improvement Area			X	X
Hart HQ Improvement Area			X	X
33.6E Improvement Area			X	X
Knight 27 Extension Improvement Area			X	X
0.6 Booster Pump Improvement Area			X	X
0.6 SAR Improvement Area			X	X
0.6 Woolf Improvement Area			X	X
Lateral 2.6 Booster Pump Station Improvement Area			X	X
99W Alternative Improvement Area			X	X

Riverine/Riparian

The area with and around the APEs experienced higher than average rainfall preceding and during the field survey, with the National Oceanic and Atmospheric Administration's (NOAA) Online Weather Data reporting 0.65 inches of rain in the week before the survey and 0.97 inches of rain on the first day of the survey. Heavy rainfall resulted in water high flows in several local creeks. The Big W Improvement Area was the only APE that contained riverine habitat. An unnamed stream was within the 50-foot buffer of the APE. The stream contained water at the time of the biological survey. Vegetation within the unnamed stream included invasive grasses, willow (*Salix* spp.), eucalyptus (*Eucalyptus* sp.), carob tree (*Ceratonia siliqua*), and Fremont cottonwoods (*Populus fremontii*).

The survey of this habitat resulted in the identification of numerus bird species including white-crowned sparrow (*Zonotrichia leucophrys*), black phoebe (*Sayornis nigricans*), American robin (*Turdus migratorius*), house finch (*Haemorhous mexicanus*), turkey vulture (*Cathartes aura*), wild turkey (*Meleagris gallopavo*), Canada goose (*Branta canadensis*), European starlings (*Sturnus vulgaris*), and western bluebird (*Sialia Mexicana*). Other species observed along the stream included a deer carcass. This area would be avoided during Project activities and would not be impacted.

Annual Grassland

The Big W Improvement Area and 99W Improvement Area were the only APEs that contained annual grassland habitat. Vegetation within this habitat is subject to frequent disturbance, including grazing and discing. Invasive annuals were dominant within these habitats. Vegetation within this habitat included wild oats (*Avena fatua*), common fiddleneck (*Amsinckia menziesii*), wall barley (*Hordeum murinum*), mustards (*Brassica spp.*), redstem filaree (*Erodium cicutarium*), and bromes (*Bromus spp.*). Species of wildlife observed in these habitats during the survey include European starling, killdeer (*Charadrius vociferus*), California scrub jay (*Aphelocoma californica*), and black phoebe. Additionally, cattle scat was observed throughout the field adjacent to Interstate 5 within the 99W Improvement Area.

While these areas are highly disturbed, they have the potential to serve as foraging habitat for canids, raptors, and bats. Ground nesting birds such as killdeer would also be expected to utilize these habitats.

Canal/Ditches

Due to heavy rainfall before and during the survey, canals and ditches were full and overflowing in many areas. With the exception of the Hart 342 Improvement Area, all areas contained this habitat. The canal habitat included Tehama Colusa Canal and various ditches, which were located along the sides of the paved and agricultural roads. Vegetation observed in this habitat included invasive grasses, yellow star thistle (*Centaurea solstitialis*), redstem filaree, broadleaf cattail (*Typha latifolia*), flax leaved horseweed (*Conyza bonariensis*), curly dock (*Rumex crispus*), Johnson grass (*Sorghum halepense*), sedge (*Carex* sp.), wild radish (*Raphanus raphanistrum*), dove weed (*Croton setiger*), mustard, and tall flatsedge. Natural recruits of pistachio (*Pistacia* sp.), pecan (*Carya illinoinensis*), olive (*Olea europaea*) trees were also observed in some of the dry ditches.

The survey of this habitat resulted in the identification of numerus bird species including killdeer, hermit thrush (*Catharus guttatus*), white-crowned sparrow, American pipet (*Anthus rubescens*), western meadowlark (*Sturnella neglecta*), bufflehead (*Bucephala albeola*), and American robin.

At Lateral 2.6 Booster Pump Station Improvement Area California ground squirrels (*Otospermophilus beecheyi*) were observed running and burrowing throughout the APE. A dead cat (*Felis catus*) and evidence of Botta's pocket gopher (*Thomomys bottae*) were observed on the bottom of the ditch and a large den was observed in the side wall of the ditch. There were also bee keeping boxes on the southeast side of the ditch at this APE.

Ruderal/Agricultural

All APEs contained ruderal/agricultural habitat. The region has been under intensive agricultural production for several decades, with crops reports in Glenn County dating back to 1910. Many APEs contain permanent crops including fruit and nut orchards. The ruderal/agricultural portion of the APEs contained gravel roads through agricultural orchards. Vegetation in this habitat included invasive grasses, stinkwort (*Datura stramonium*), redstem filaree, cheeseweed mallow (*Malva parviflora*), eucalyptus, field bindweed (*Convolvulus arvensis*), velvetleaf (*Abutilon theophrasti*), suaeda (*Suaeda* sp.), dove weed, Russian thistle (*Salsola tragus*), mustard, yellow star thistle, Barnyard grass (*Echinochloa* sp.), flax leaved horseweed, Johnson grass, mint (*Mentha* sp.), valley oak trees (*Quercus lobata*), horseweed (*Erigeron canadensis*), field bindweed (*Convolvulus arvensis*), tall flatsedge, green sprangletop (*Leptochloa dubia*), vetch (*Vicia* sp.), curly dock, mule fat (*Baccharis salicifolia*), willow, cactus (*Cactaceae* sp.), milk thistle (*Silybum marianum*), yellow star thistle, Gooddings willow (*Salix gooddingii*), and Fremont cottonwood.

The survey of this habitat resulted in the identification of numerus bird species including western meadowlark, killdeer, white-crowned sparrow, American robin, red-tailed hawk (*Buteo jamaicensis*), mourning dove (*Zenaida macroura*), yellow-rumped warbler (*Setophaga coronata*), house finch, black phoebe, northern flicker (*Colaptes auratus*), California towhee (*Melozone crissalis*), vesper sparrow (*Pooecetes gramineus*), lesser goldfinch (*Spinus psaltria*), red-winged blackbird (*Agelaius phoeniceus*), Brewers blackbird (*Euphagus cyanocephalus*), savannah sparrow (*Passerculus sandwichensis*), American crow (*Corvus brachyrhynchos*), house sparrow (*Passer domesticus*), Canada goose, wild turkey, ruby-crowned kinglet (*Regulus calendula*), and a hawk (*Buteo* sp.).

Riparian Habitat and Natural Communities of Special Concern

Riparian habitat is composed of plant communities that occur along the banks, and sometimes over the banks, of most waterways and is an important habitat for numerous plant and wildlife species. CDFW has jurisdiction over most riparian habitats in California. As described above, riparian habitat is present within, and adjacent to, the Big W Improvement Area APE. Riparian habitat is absent from all other APEs.

Natural communities of special concern are those that are of limited distribution, distinguished by significant biological diversity, or home to special status species. CDFW has classified and mapped all-natural communities in California. Just as the special status plant and animal species, these natural communities of special concern can be found within the CNDDB. According to the CNDDB and the field survey, no natural communities of special concern were present within the APEs. The only recorded natural communities of special concern within the vicinity of the APEs are Great Valley Cottonwood Riparian Forest, Valley Needlegrass Grassland, Great Valley Oak Riparian Forest, Great Valley Willow Scrub, Coastal and Valley Freshwater Marsh, and Great Valley Mixed Riparian Forest.

Designated Critical Habitat

The USFWS often designates areas of "Critical Habitat" when it lists species as threatened or endangered. Critical habitat is a specific geographic area that contains features essential for the conservation of a threatened or endangered species, which may require special management and protection. According to the IPaC, designated critical habitat is absent within the APEs. Within the vicinity of the APEs there is critical habitat for yellow-billed cuckoo and vernal pool fairy shrimp.

Wildlife Movement Corridors and Native Wildlife Nursery Sites

Wildlife movement corridors are routes that animals regularly and predictably follow during seasonal migration, dispersal from native ranges, daily travel within home ranges, and inter-population movements. Movement corridors in California are typically associated with valleys, ridgelines, and rivers and creeks supporting riparian vegetation. The APEs contain features that may function as wildlife movement corridors. The various canals, ditches and streams could be used as wildlife movement corridors.

Native wildlife nursery sites are areas where a species or group of similar species raise their young in a concentrated place, such as a maternity bat roost. The APEs do not contain suitable features to act as native wildlife nursery sites.

Special Status Plants and Animals

California contains several rare plant and animal species. In this context, "rare" is defined as species known to have low populations or limited distributions. As the human population grows, urban expansion encroaches on the already-limited suitable habitat for rare species. This results in sensitive species becoming increasingly more vulnerable to extirpation. State and federal regulations have provided the CDFW and the USFWS with a mechanism for conserving and protecting the diversity of plant and animal species native to California. Numerous native plants and animals have been formally designated as "threatened" or "endangered" under state and federal endangered species legislation. Other formal designations include "candidate" for listing or "species of special concern" by CDFW. The CNPS has its list of native plants considered rare, threatened, or endangered. Collectively these plants and animals are referred to as "special status species."

A query of the CNDDB for occurrences of special status animal and plant species was conducted for the *Fruto NE*, *Orland*, *Hamilton City*, and *Stone Valley* 7.5-minute U.S. Geological Survey (USGS) quadrangles that contain the APEs in their entirety, and for the 14 surrounding USGS quadrangles: *Sehorn Creek*, *Black Butte Dam*, *Kirkwood*, *Foster Island*, *Nord*, *Ord Ferry*, *Llano Seco*, *Glenn*, *Willows*, *Logandale*, *Logan Ridge*, *Rail Canyon*, *Fruto*, and *Julian Rocks*. The IPaC was also queried for federally listed, proposed, and candidate species using the boundaries of the APEs. These species, and their potential to occur within the APEs, are listed in **Table 3** and **Table 4** on the following pages. Other species that have the potential to occur within the APEs that did not show up in the CNDDB or IPaC query are also included in **Table 3**. Species lists obtained from CNDDB and IPaC are available in **Appendix B** and **Appendix C**, respectively. All relevant sources of information, as discussed in

the Study Methodology section of this report, as well as field observations, were used to determine if any special status species may occur within the APEs.

Table 3. List of Special Status Animals with Potential to Occur on the APEs and/or in the Vicinity.

Species	Status*	Habitat	Occurrence within the APEs*			
			Likely	Possible	Unlikely	Absent
American badger (*Taxidea taxus*)	CSSC	Grasslands, savannas, and mountain meadows near timberline are preferred. Most abundant in drier open spaces of shrub and grassland. Burrows in soil.	-	-	**All APEs.** These APEs and surrounding areas have high human disturbance due to agricultural activities. An American Badger could easily pass through the region, but it is unlikely they would den within these APEs. The nearest recorded observation of this species was approximately 7.5 miles north of the APEs in 1993.	-
Bald eagle (*Haliaeetus leucocephalus*)	CE, CFP	Resides in old growth forests as well as lower montane coniferous forests. Nests are generally found in large, old-growth trees within a mile of water. Nests and winters along ocean shores, lake margins, and rivers.	-	**Patton Improvement Area.** This species is regionally abundant and there is high quality suitable nesting habitat adjacent to this APE. The nearest recorded observation of this species was approximately 7 miles southeast of the APEs in 2021. The most recent recorded observation of this species was approximately 11.5 miles northwest of the APEs in 2022.	**Lassen Land Improvement Area, Road F Improvement Area, Big W Improvement Area, Road 28 Improvement Area, Hart 330 Improvement Area, Hart 342 Improvement Area, Knight 33 Improvement Area, 99W Improvement Area, Sanford Improvement Area, Hart HQ Improvement Area, 33.6N Improvement Area, 33.6E Improvement Area, Knight 27 Extension Improvement Area, 0.6 Booster Pump Improvement Area, 0.6 SAR Improvement Area, 0.6 Woolf Improvement Area, Lateral 2.6 Booster Pump Station Improvement Area, 99W Alternative Improvement Area.** This species is regionally abundant but there is minimal suitable nesting habitat adjacent to these APEs.	-
Bank swallow (*Riparia riparia*)	CT	These aerial insectivores nest colonially in burrows constructed along vertical banks and bluffs near waterbodies. This disturbance tolerant species is also known to nest in man-made sites, such as quarries, mounds of gravel or dirt, and road cuts.	-	-	**All APEs.** The APE and surrounding areas lack bluffs and suitable habitat. The nearest recorded observation of this species was approximately 6.5 miles east of the APE in 2010, along the Sacramento River.	-
Burrowing owl (*Athene cunicularia*)	CSSC	Resides in open, dry annual or perennial grasslands, deserts, and scrublands with low growing vegetation. Nests underground in existing burrows created by mammals, most often ground squirrels.	-	**Big W Improvement Area, 99W Improvement Area.** These APEs contain grassland habitat that is marginal for this species. The nearest recorded observation of this species was approximately 0.5 miles southwest of the APE in 1993. The most recent recorded observation of this species was approximately 13 miles northeast of the APE in 2022.	**Lassen Land Improvement Area, Road F Improvement Area, Patton Improvement Area, Road 28 Improvement Area, Hart 330 Improvement Area, Hart 342 Improvement Area, Knight 33 Improvement Area, Sanford Improvement Area, Hart HQ Improvement Area, 33.6N Improvement Area, 33.6E Improvement Area, Knight 27 Extension Improvement Area, 0.6 Booster Pump Improvement Area, 0.6 SAR Improvement Area, 0.6 Woolf Improvement Area, Lateral 2.6 Booster Pump Station Improvement Area, 99W Alternative Improvement Area.** These APEs and the surrounding areas have high human disturbance and lack suitable habitat.	-
Conservancy fairy shrimp (*Branchinecta conservatio*)	FE	Endemic to the grasslands of the northern two-thirds of the Central Valley. Found in large, turbid pools.	-	-	-	**All APEs.** The APEs and surrounding areas have high human disturbance and lack vernal pool habitat required by this species. The most recent recorded observation of this species was approximately 13 miles northeast of the APEs in 2015.

Species	Status*	Habitat	Occurrence within the APEs*			
			Likely	Possible	Unlikely	Absent
Crotch bumble bee (*Bombus crotchii*)	CCE	Occurs throughout coastal California, as well as east to the Sierra-Cascade crest, and south into Mexico. Food plant genera include *Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia*, and *Eriogonum*.	-	-	**All APEs.** The APEs and surrounding areas have high human disturbance, but this species could forage over or pass through the APEs in route to more suitable habitat. The nearest recorded observation of this species was approximately 6.5 miles east of the APE in 2022.	-
Foothill yellow-legged frog (*Rana boylii*)	CCT, CSSC	Frequents rocky streams and rivers with rocky substrate and open, sunny banks in forests, chaparral, and woodlands. Occasionally found in isolated pools, vegetated backwaters, and deep, shaded, spring-fed pools.	-	-	-	**All APEs.** The APEs are outside of the current range of this species. These frogs are found in the foothills but not in the valley where the Project is located. There are many observations within the foothills surrounding the Project. The nearest recorded observation of this species was approximately 25 miles east of the APEs in 2020.
Giant gartersnake (*Thamnophis gigas*)	FT, CT	Occurs in marshes, sloughs, drainage canals, irrigation ditches, rice fields, and adjacent uplands. Prefers locations with emergent vegetation for cover and open areas for basking. This species uses small mammal burrows adjacent to aquatic habitats for hibernation in the winter and to escape from excessive heat in the summer.	-	-	**Lassen Land Improvement Area, Road F Improvement Area, Patton Improvement Area, Big W Improvement Area, Road 28 Improvement Area, Hart 330 Improvement Area, Knight 33 Improvement Area, 99W Improvement Area, Sanford Improvement Area, Hart HQ Improvement Area, 33.6N Improvement Area, 33.6E Improvement Area, Knight 27 Extension Improvement Area, 0.6 Booster Pump Improvement Area, 0.6 SAR Improvement Area, 0.6 Woolf Improvement Area, Lateral 2.6 Booster Pump Station Improvement Area, 99W Alternative Improvement Area.** The APEs contain minimal suitable habitat for this species due to intensive agricultural activities throughout the area. Addtioanlly, the APEs are just outside the range of this species. This species may pass through the canal/ditch habitat but would not be expected utilize burrows or breed on the APEs due to the APEs marginal habitat for this species. The nearest recorded observation of this species was approximately 6.5 miles southeast of the APEs in 1954. The most recent recorded observation of this species was approximately 16 miles south of the APEs in 2022.	**Hart 342 Improvement Area-** Suitable habitat for this species is absent within this APE.
Green sturgeon (*Acipenser medirostris*)	FT	Spawning occurs primarily in cool (11-15 C) sections of mainstem rivers in deep pools (8-9 meters) with substrate containing small to medium sized sand, gravel, cobble, or boulder. Spawns in the Sacramento, Feather, and Yuba Rivers. Non-spawning adults occupy marine/estuarine waters. The Delta Estuary is important for rearing juveniles.	-	-	-	**All APEs.** The APEs lack suitable aquatic habitat. The rivers and creeks that flow past the APEs do not flow perennially and would not contain green sturgeon. These rivers and creeks would not be impacted by Project activities. The nearest recorded observation of this species was approximately 6.5 miles east of the APEs in the Sacramento River in 2020.
Monarch butterfly (*Danaus plexippus*)	FC	Roosts located in wind-protected tree groves (eucalyptus, Monterey	-	-	**All APEs.** The APEs and surrounding areas have high human disturbance, but this species could	-

Species	Status*	Habitat	Occurrence within the APEs*			
			Likely	Possible	Unlikely	Absent
		pine, cypress), with nectar and water sources nearby. Larval host plants consist of milkweeds (*Asclepias* sp.). Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico.			forage over or pass through the APEs in route to more suitable habitat. Should this species occur on the APES, it would be expected to fly out of the APEs and away from Project activities. The nearest recorded observation of this species was approximately 5.5 miles east of the APEs in 2018.	
Steelhead – Central Valley DPS (*Oncorhynchus mykiss irideus* pop.11)	FT	This winter-run fish begins migration to fresh water during peak flows during December and February. Spawning season is typically from February to April. After hatching, fry move to deeper, mid-channel habitats in late summer and fall. In general, both juveniles and adults prefer complex habitat boulders, submerged clay and undercut banks, and large woody debris.	-	-	-	**All APEs.** The APEs lack suitable aquatic habitat. The rivers and creeks that flow past the APEs are not perennial and would not contain steelhead. The nearest recorded observation of this species was approximately 2.5 miles east of the APEs in Lower Stony Creek in 2002. The most recent recorded observation of this species was approximately 8 miles east of the APEs in Big Chico Creek in 2013. This species was also recorded in the Sacramento River.
Swainson's hawk (*Buteo swainsoni*)	CT	Nests in large trees in open areas adjacent to grasslands, grain or alfalfa fields, or livestock pastures suitable for supporting rodent populations.	**All APEs.** There are large trees throughout the APEs that are suitable for this species to nest and fields in the surrounding areas to forage. There are many observations of this species throughout the APEs and surrounding areas.	-	-	-
Tricolored blackbird (*Agelaius tricolor*)	CT, CSSC	Nests colonially near fresh water in dense cattails or tules, or in thickets of riparian shrubs. Forages in grassland and cropland. Large colonies are often found on dairy farm forage fields.	-	**Road 28 Improvement Area.** Emergent aquatic vegetation that is suitable for this species was observed in the canals in this APE and surrounding area. There are many observations of this species throughout the surrounding area. The nearest recorded observation of this species was approximately 2 miles east of the APE in 2014.	**Lassen Land Improvement Area, Road F Improvement Area, Patton Improvement Area, Big W Improvement Area, Road 28 Improvement Area, Hart 330 Improvement Area, Hart 342 Improvement Area, Knight 33 Improvement Area, 99W Improvement Area, Sanford Improvement Area, Hart HQ Improvement Area, 33.6N Improvement Area, 33.6E Improvement Area, Knight 27 Extension Improvement Area, 0.6 Booster Pump Improvement Area, 0.6 SAR Improvement Area, 0.6 Woolf Improvement Area, Lateral 2.6 Booster Pump Station Improvement Area, 99W Alternative Improvement Area.** These APEs contained emergent vegetation, but it was not suitable for this species to nest.	-
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	FT	Lives in mature elderberry shrubs of the Central Valley and foothills. Adults are active from March to June.	-	-	-	**All APEs.** No elderberry shrubs were observed within, or adjacent to, the APEs during the biological survey. The nearest recorded observation of this species was approximately 6.5 miles east of the APEs in 2014.
Vernal pool fairy shrimp (*Branchinecta lynchi*)	FT	Occupies vernal pools, clear to tea-colored water, in grass or mud-bottomed swales, and basalt depression pools.	-	-	-	**All APEs.** The APEs and surrounding areas have high human disturbance and lack vernal pool habitat. The nearest recorded observation of this species was approximately 0.5 miles west of the APEs in 1997. The most recent recorded observation of this species was approximately 13 miles north of the APEs in 2019.
Vernal pool tadpole shrimp	FE	Occurs in vernal pools, clear to tea-colored water, in grass or	-	-	-	**All APEs.** The APEs and surrounding areas have high human disturbance and lack vernal pool

Species	Status*	Habitat	Occurrence within the APEs*			
			Likely	Possible	Unlikely	Absent
(*Lepidurus packardi*)		mud-bottomed swales, and basalt depression pools.				habitat. The nearest recorded observation of this species was approximately 8 miles southeast of the APEs in 2010.
Western mastiff bat (*Eumops perotis californicus*)	CSSC	Found in open, arid to semi-arid habitats, including dry desert washes, flood plains, chaparral, oak woodland, open ponderosa pine forest, grassland, and agricultural areas, where it feeds on insects in flight. Roosts most commonly in crevices in cliff faces but may also use high buildings and tunnels.	-	-	**All APEs.** The APEs lack suitable cliff roosting habitat. This species could forage over or pass through the APEs in route to more suitable habitat. The nearest recorded observation of this species was approximately 8 miles east of the APEs in 1999.	-
Western pond turtle (*Emys marmorata*)	CSSC	An aquatic turtle of ponds, marshes, slow-moving rivers, streams, and irrigation ditches with riparian vegetation. Requires adequate basking sites and sandy banks or grassy open fields to deposit eggs.	-	**Lassen Land Improvement Area, Road F Improvement Area, Big W Improvement Area, Road 28 Improvement Area, Knight 33 Improvement Area, Patton Improvement Area, 99W Improvement Area, Sanford Improvement Area, Hart HQ Improvement Area, 33.6N Improvement Area, 33.6E Improvement Area, Knight 27 Extension Improvement Area, 0.6 Booster Pump Improvement Area, 0.6 SAR Improvement Area, 0.6 Woolf Improvement Area, Lateral 2.6 Booster Pump Station Improvement Area, 99W Alternative Improvement Area.** These APEs and surrounding areas contain irrigation ditches with riparian vegetation and this species could pass through, forage, or rest on these APEs. The nearest recorded observation of this species was approximately 9.5 miles northwest of the APEs in 2019.	**-**	**Hart 342 Improvement Area, Hart 330 Improvement Area.** These APEs lack suitable habitat for this species.
Western red bat (*Lasiurus blossevillii*)	CSSC	Roosts primarily in trees, 2–40 ft above ground, from sea level up through mixed conifer forests. Prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging.	-	**-**	**All APEs.** The APEs lack suitable roosting habitat. This species could forage over or pass through the APEs in route to more suitable habitat. The nearest recorded observation of this species was approximately 8 miles east of the APEs in 1999.	-
Western spadefoot (*Spea hammondii*)	CSSC	Prefers open areas with sandy or gravelly soils, in a variety of habitats including mixed woodlands, grasslands, coastal sage scrub, chaparral, sandy washes, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains. Vernal pools or temporary wetlands, lasting a minimum of three weeks, which do not contain bullfrogs, fish, or crayfish are necessary for breeding.	**-**	**Big W Improvement Area, 99W Improvement Area.** These APEs contain grassland habitat that have the potential to pond. The nearest recorded observation of this species was approximately 15 miles east of the APEs in 2020.	**Lassen Land Improvement Area, Road F Improvement Area, Patton Improvement Area, , Road 28 Improvement Area, Hart 330 Improvement Area, Hart 342 Improvement Area, Knight 33 Improvement Area, Sanford Improvement Area, Hart HQ Improvement Area, 33.6N Improvement Area, 33.6E Improvement Area, Knight 27 Extension Improvement Area, 0.6 Booster Pump Improvement Area, 0.6 SAR Improvement Area, 0.6 Woolf Improvement Area, Lateral 2.6 Booster Pump Station Improvement Area, 99W Alternative Improvement Area.** These APEs and the surrounding areas have high human disturbance and lack suitable habitat.	-
Western yellow-billed cuckoo	FT, CE	Suitable nesting habitat in California include dense riparian	**-**	-	**All APEs.** Critical habitat for the yellow-billed cuckoo is located 6.5 miles east of the APEs along	-

Species	Status*	Habitat	Occurrence within the APEs*			
			Likely	Possible	Unlikely	Absent
(*Coccyzus americanus occidentalis*)		willow-cottonwood and mesquite habitats along a perennial river. Once a common breeding species in riparian habitats of lowland California, this species currently breeds consistently in only two locations in the State: along the Sacramento and South Fork Kern Rivers.			the Sacramento River. The nearest recorded observation of this species was approximately 7.5 miles east of the APEs along the Sacramento River in 2013. The riparian corridors near the APEs do not provide suitable nesting habitat for this species. High quality habitat is abundant in the region; therefore, this species would not be expected to utilize low quality riparian habitat within the APEs.	

Table 4. List of Special Status Plants with Potential to Occur on the APEs and/or in the Vicinity.

Species	Status*	Habitat	Occurrence within the APEs*			
			Likely	Possible	Unlikely	Absent
Adobe-lily (*Fritillaria pluriflora*)	CNPS 1B	Found in chaparral, cismontane woodland, valley, and foothill grasslands. Usually on clay soils; sometimes serpentine. Found at elevations between 145-3,100 feet. Blooms February–April.	-	-	-	**All APEs.** Required habitat and soils area absent within the APEs and surrounding lands. The nearest recorded observation of this species was approximately 11.5 miles northeast of the APEs in 1929.
Ahart's paronychia (*Paronychia ahartii*)	CNPS 1B	Valley and foothill grassland, vernal pools, cismontane woodland. Stony, nearly barren clay of swales and higher ground around vernal pools. Found at elevations between 145-1640 feet. Blooms March–June.	-	-	-	**All APEs.** Required vernal pool habitat is absent within the APEs and surrounding lands. The nearest recorded observation of this species was approximately 9.5 miles northwest of the APEs in 2017.
Baker's navarretia (*Navarretia leucocephala* ssp. *bakeri*)	CNPS 1B	Found in meadows, seeps, vernal pools and swales within cismontane woodland, valley and foothill grassland, and lower montane coniferous forest with adobe or alkaline soils at elevations of 10-5,510 feet. Blooms April–July.	-	-	-	**All APEs.** Required habitats are absent within the APEs and surrounding lands. The nearest recorded observation of this species was approximately 9 miles north of the APEs in 1955.
Brazilian watermeal (*Wolffia brasiliensis*)	CNPS 2B	Found in shallow freshwater marshes and swamps at elevations from 50-360 feet. Blooms April–December.	-	-	-	**All APEs.** Required marsh habitat is absent within the APEs and surrounding lands. The nearest recorded observation of this species was approximately 8 miles east of the APEs in 2000.
Brittlescale (*Atriplex depressa*)	CNPS 1B	Found in the Central Valley in alkaline or clay soils, typically in meadows or annual grassland at elevations below 1050 feet. Sometimes associated with vernal pools. Blooms June–October.	-	-	-	**All APEs.** Required vernal pool habitat is absent within the APEs and surrounding lands. The nearest recorded observation of this species was approximately 7 miles south of the APEs in 1920.
Butte County meadowfoam (*Limnanthes floccosa* ssp. *californica*)	FE, CNPS 1B	Found in vernal pools, valley, and foothill grasslands, in wet or flowing drainages and depressions; often not in discrete vernal pools; soils are usually Redding clay with rocks at elevations from 115-1,210 feet. Blooms March–May.	-	-	-	**All APEs.** Required vernal pool habitat is absent within the APEs and surrounding lands. The nearest recorded observation of this species was approximately 14 miles northeast of the APEs in 2010.
California alkali grass (*Puccinellia simplex*)	CNPS 1B	Found in the San Joaquin Valley and other parts of California in	-	-	-	**All APEs.** Required wetland habitat is absent within the APEs and surrounding lands. The only recorded

Species	Status*	Habitat	Occurrence within the APEs*			
			Likely	Possible	Unlikely	Absent
		saline flats and mineral springs within valley grassland and wetland-riparian communities at elevations below 3000 feet. Blooms March–May.				observation of this species was approximately 16 miles south of the APEs in 1993.
Colusa grass (*Neostapfia colusana*)	FT, CE, CNPS 1B	Found in vernal pools in adobe soils at elevations below 410 feet. Blooms May – August.	-	-	-	**All APEs.** Required vernal pool habitat is absent within the APEs and surrounding lands. The only recorded observation of this species within the vicinity was approximately 16 miles southeast of the APEs in 1986.
Colusa Layla (*Layia septentrionalis*)	CNPS 1B	Found in chaparral, cismontane woodland, valley, and foothill grasslands. Generally occurs on grassy slopes in sandy or serpentine soil at elevations from 50-3,600 feet. Blooms April – May.	-	-	-	**All APEs.** Required habitat and serpentine soils are absent within the APEs and surrounding lands. The nearest recorded observation of this species was approximately 17 miles southwest of the APEs in 2004.
Dwarf downingia (*Downingia pusilla*)	CNPS 2B	Found in vernal pools in valley and foothill grassland communities at elevations below 1,600 feet. Blooms March – May.	-	-	-	**All APEs.** Required vernal pool habitat is absent within the APEs and surrounding lands. The most recent recorded observation of this species was approximately 10 miles north of the APEs in 2017.
Ferris' milk-vetch (*Astragalus tener* var. *ferrisiae*)	CNPS 1B	Found in meadows, seeps, valley grasslands, and foothill grasslands. Often occurs on subalkaline flats on overflow land in the Central Valley; usually seen in dry, adobe soil at elevations below 260 feet. Blooms April – May.	-	-	-	**All APEs.** Required meadow habitat are absent within the APEs and surrounding lands. The nearest recorded observation of this species was approximately 8 miles northeast of the APEs in 2002.
Greene's tuctoria (*Tuctoria greenei*)	FE, CR, CNPS 1B	Found in the San Joaquin Valley and other parts of California in vernal pools within valley grassland, wetland, and riparian communities at elevations below 3500 feet. Blooms May – September.	-	-	-	**All APEs.** Required vernal pool habitat is absent within the APEs and surrounding lands. The nearest recorded observation of this species was approximately 12.5 miles southeast of the APEs in 2012.
Hairy Orcutt grass (*Orcuttia pilosa*)	FE, CE, CNPS 1B	Found in vernal pools in valley grassland, wetland, and riparian communities at elevations below 650 feet. Blooms May – September.	-	-	-	**All APEs.** Required vernal pool habitat is absent within the APEs and surrounding lands. The nearest recorded observation of this species was approximately 13.5 miles south of the APEs in 2011.
Heartscale (*Atriplex cordulata* var. *cordulata*)	CNPS 1B	Found in the Central Valley in saline or alkaline soils within shadscale scrub, valley grassland, and wetland-riparian communities at elevations below 230 feet. Blooms June–July.	-	-	-	**All APEs.** Required wetland habitat is absent within the APEs and surrounding lands. The nearest recorded observation of this species was approximately 13 miles southeast of the APEs in 2003.
Heckard's pepper-grass (*Lepidium latipes* var. *heckardii*)	CNPS 1B	Facultative wetland plant species which grows at elevations below 2,297 feet. Found in alkaline soils in valley and foothill grasslands as well as vernal pools. Blooms March – June.	-	-	-	**All APEs.** Required vernal pool habitat is absent within the APEs and surrounding lands. The nearest recorded observation of this species was approximately 13 miles southeast of the APEs in 2003.

Species	Status*	Habitat	Occurrence within the APEs*			
			Likely	Possible	Unlikely	Absent
Hoover's spurge (*Euphorbia hooveri*)	FT, CNPS 1B	Found in the Central Valley in vernal pools within valley grassland, freshwater wetland, and riparian communities at elevations below 800 feet. Blooms July – September.	-	-	-	**All APEs.** Required wetland habitat is absent within the APEs and surrounding lands. The nearest recorded observation of this species was approximately 11.5 miles northeast of the APEs in 2011.
Palmate-bracted bird's beak (*Chloropyron palmatum*)	FE, CE, CNPS 1B	Found in the Central Valley in alkaline soils (usually Pescadero silty clay) in chenopod scrub, valley, and foothill grassland at elevations below 500 feet. Blooms June–August.	-	-	-	**All APEs.** Required habitat and alkaline soils are absent within the APEs and surrounding lands. The nearest recorded observation of this species was approximately 13.5 miles southeast of the APEs in 2007.
Pink creamsacs (*Castilleja rubicundula* var. *rubicundula*)	CNPS 1B	Found in chaparral, cismontane woodland, meadows and seeps, valley grasslands, and foothill grasslands. Often found on serpentine soil at elevations from 65- 3,000 feet. Blooms April – June.	-	-	-	**All APEs.** Required habitat and serpentine soils are absent within the APEs and surrounding lands. The nearest recorded observation of this species was approximately 2 miles north of the APEs in 1914.
Red Bluff dwarf rush (*Juncus leiospermus* var. *leiospermus*)	CNPS 1B	Found in chaparral, valley and foothill grassland, cismontane woodland, vernal pools, meadows, and seeps. Sometimes found on the edges of vernal pools. Found at elevations from 100- 4,115 feet. Blooms March – May.	-	-	-	**All APEs.** Required vernal pool habitat is absent within the APEs and surrounding lands. The only recorded observation of this species was approximately 13.5 miles northwest of the APEs in 1995.
San Joaquin spearscale (*Extriplex joaquinana*)	CNPS 1B	Found in alkali wetlands, sinks, and scrublands in the San Joaquin Valley and Delta-Bay region of California. Associated with Distichlis spicata, Frankenia, and other scrub species at elevations below 1,150 feet. Blooms April – September.	-	-	-	**All APEs.** Required wetland habitat is absent within the APEs and surrounding lands. The most recent recorded observation of this species was approximately 13.5 miles southeast of the APEs in 2003.
Silky Cryptantha (*Cryptantha crinite*)	CNPS 1B	Found in cismontane woodland, valley foothill grassland, lower montane coniferous forest, riparian forest, and riparian woodland. Often in gravelly streambeds at elevations from 115-4,000 feet. Blooms April – May.	-	-	-	**All APEs.** Required habitats are absent within the APEs and surrounding lands. The only recorded observation of this species was approximately 8.5 miles east of the APEs in 2010.
Stony Creek spurge (*Euphorbia ocellata* ssp. *rattanii*)	CNPS 1B	Found in valley and foothill grassland, chaparral, and riparian scrub. Often in sandy or rocky soils at elevations from 260-1,700 feet. Blooms May – October.	-	-	-	**All APEs.** Required habitats are absent within the APEs and surrounding lands. The nearest recorded observation of this species was approximately 7.5 miles northwest of the APEs in 2013.
Vernal pool smallscale (*Atriplex persistens*)	CNPS 1B	Occurs in the Central Valley in alkaline vernal pools at elevations below 375 feet. Blooms June–September.	-	-	-	**All APEs.** Required vernal pool habitat is absent within the APEs and surrounding lands. The nearest recorded observation of this species was approximately 15 miles south of the APEs in 2006.

Species	Status*	Habitat	Occurrence within the APEs*			
			Likely	Possible	Unlikely	Absent
Watershield (*Brasenia schreberi*)	CNPS 2B	Found in marshes and swamps, as well as near artificial waterbodies at elevations below 2200 feet. Blooms April – October.	-	-	-	**All APEs.** Required vernal pool habitat is absent within the APEs and surrounding lands. The nearest recorded observation of this species was approximately 14 miles east of the APEs in 1931 but is considered extirpated.
Woolly rose-mallow (*Hibiscus lasiocarpos* var. *occidentalis*)	CNPS 1B	Found in freshwater marshes and swamps. Often in moist, freshwater-soaked riverbanks and low peat islands in sloughs; can also occur on riprap and levees. In California, it is known to be in the delta watershed at elevations below 500 feet. Blooms June – September.	-	-	-	**All APEs.** Required freshwater marsh habitat is absent within the APEs and surrounding lands. The nearest recorded observation of this species was approximately 9.5 miles east of the APEs in 1990.

*** EXPLANATION OF OCCURRENCE DESIGNATIONS AND STATUS CODES**

Present:	Species observed on the APEs at time of field surveys or during recent past.
Likely:	Species not observed on the APEs, but it may reasonably be expected to occur there on a regular basis.
Possible:	Species not observed on the APEs, but it could occur there from time to time.
Unlikely:	Species not observed on the APEs, and would not be expected to occur there except, perhaps, as a transient.
Absent:	Species not observed on the APEs and precluded from occurring there due to absence of suitable habitat.

STATUS CODES

FE	Federally Endangered	CE	California Endangered
FT	Federally Threatened	CT	California Threatened
		CCT	California Threatened (Candidate)
		CFP	California Fully Protected
		CSSC	California Species of Special Concern
		CCE	California Endangered (Candidate)

CNPS LISTING

1B	Plants Rare, Threatened, or Endangered in California and elsewhere.	2B	Plants Rare, Threatened, or Endangered in California, but more common elsewhere.

III. Impacts and Mitigation

Significance Criteria

CEQA

General plans, area plans, and specific projects are subject to the provisions of CEQA. The purpose of CEQA is to assess the impacts of proposed projects on the environment prior to project implementation. Impacts to biological resources are just one type of environmental impact assessed under CEQA and vary from project to project in terms of scope and magnitude. Projects requiring removal of vegetation may result in the mortality or displacement of animals associated with this vegetation. Animals adapted to humans, roads, buildings, and pets may replace those species formerly occurring on a site. Plants and animals that are rare may be destroyed or displaced. Sensitive habitats such as wetlands and riparian woodlands may be altered or destroyed. Such impacts may be considered either "significant" or "less than significant" under CEQA. According to *CEQA Statute and Guidelines* (AEP 2023), "significant effect on the environment" means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic interest. Specific project impacts to biological resources may be considered "significant" if they 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 the 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 the CDFW or USFWS;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (CWA) (including, but not limited to, marsh, vernal pool, coastal, etc.) 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 Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, or state HCP.

Furthermore, CEQA Guidelines Section 15065(a) states that a project may trigger the requirement to make a "mandatory finding of significance" if the project has the potential to:

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

NEPA

Federal projects are subject to the provisions of NEPA. The purpose of NEPA is to assess the effects of a proposed action on the human environment, assess the significance of those effects, and recommend measures that if implemented would mitigate those effects. As used in NEPA, a determination that certain effects on the human environment are "significant" requires considerations of both context and intensity (40 Code of Federal Regulations (CFR) 1508.27).

For the purposes of assessing effects of an action on biological resources, the relevant context is often local. The analysis may, however, require a comparison of the action area's biological resources with the biological resources of an entire region. Project activities must have a federal nexus and discuss federally listed species, and/or designated critical habitat that may be affected in the action area.

Federal agencies are required to determine whether their actions may affect listed or proposed species and designated critical habitat. The primary role of this document is to provide agencies conclusion and the rationale to support those conclusions regarding the effects of any proposed actions of the project on protected resources. Document content and recommended elements are identified in 50 CFR 402.12(f).

Under section 7 of the Endangered Species Act, federal agencies must consult with NOAA Fisheries or the USFWS, depending on the species, through an informal or formal consultation when any action the agency carries out, funds, or authorizes may affect either a species listed as threatened or endangered under the Act, or any critical habitat designated for it.

Once resources are assessed an Endangered Species Act Section 7 finding needs to be made regarding proposed or listed species and/or designated critical habitat that may be present in the project area. This report will provide the necessary information for the lead federal agency to make a determination on affects. This finding may result in one of the following determinations:

- *"*No effect*"* - means there will be no impacts, positive or negative, to listed or proposed resources. Generally, this means no listed resources will be exposed to action and its environmental consequences. Concurrence from the Service is not required.

- *"*May affect, but not likely to adversely affect" means that all effects are beneficial, insignificant, or discountable. Beneficial effects have contemporaneous positive effects without any adverse effects to the species or habitat. Insignificant effects relate to the size of the impact and include those effects that are undetectable, not measurable, or cannot be evaluated. Discountable effects are those extremely unlikely to occur. These determinations require written concurrence from the Service.

- *"*May affect, likely to adversely affect" means that listed resources are likely to be exposed to the action or its environmental consequences and will respond in a negative manner to the exposure.

Relevant Goals, Policies, and Laws

Glenn County Ordinance

The Glenn County General Plan Policy Document contains the following goals and policies related to the Project:

Ecosystem and Habitat Resources

Goal COS-3: Protect and maintain sensitive ecosystems, natural habitats, and biological resources within Glenn County.

Policy COS 3-1: Preserve natural riparian habitats throughout the planning area, and specifically along Stony Creek, the Sacramento River, and Butte Creek.

Policy COS 3-2: Recognize that retention of natural areas is important to maintaining adequate populations of wildlife that support recreation and hunting, open space, economic and environmental objectives.

Policy COS 3-4: Coordinate with State and Federal agencies, private landowners and preservation and conservation groups in habitat preservation and protection of rare, endangered, threatened, and special concern species, to ensure consistency in efforts and to encourage joint planning and development of areas to be preserved.

Policy COS 3-5: Recognize the Sacramento River corridor, the Sacramento National Wildlife Refuge, migratory deer herd areas, naturally occurring wetlands, and stream courses such as Butte and Stony Creeks as areas of significant biological importance.

Policy COS 3-6: Direct development away from naturally occurring wetlands and other areas of sensitive and critical habitat throughout the County Planning Area

Policy COS 3-7: Preserve and enhance biological communities that contribute to the region's biodiversity including, but not limited to, grasslands, freshwater marshes, wetlands, vernal pools, riparian areas, aquatic habitat, oak woodlands, and agricultural lands.

Policy COS 3-8: Focus conservation efforts on high priority conservation areas that contain suitable habitat for endangered, threatened, migratory, or special-status species and that can be managed with minimal interference with nearby urban land uses.

Policy COS 3-9: Conserve existing native vegetation where possible and integrate regionally native plant species into development and infrastructure projects where appropriate.

Policy COS 3-10: Discourage the removal of large, mature, native trees that provide wildlife habitat, visual screening, or contribute to the visual and biological quality of the environment.

Threatened and Endangered Species

Permits may be required from CDFW and/or USFWS if activities associated with a project have the potential to result in the "take" of a species listed as threatened or endangered under the California Endangered Species Act (CESA) and/or Endangered Species Act (ESA), respectively. Take is defined by CESA as, "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill" (California Fish and Game Code, Section 86). Take is more broadly defined by the ESA to include "harm" (16 USC, Section 1532(19), 50 CFR, Section 17.3). CDFW and USFWS are responsible agencies under CEQA and NEPA. Both agencies review CEQA and NEPA documents in order to determine the adequacy of the treatment of endangered species issues and to make project-specific recommendations for their conservation.

Designated Critical Habitat

When species are listed as threatened or endangered, the USFWS often designates areas of "critical habitat" as defined by section 3(5)(A) of the ESA. Critical habitat is a term defined in the ESA as a specific geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. Critical habitat is a tool that supports the continued conservation of imperiled species by guiding cooperation with the federal government. Designations only affect federal agency actions or federally funded or permitted activities. Critical habitat does not prevent activities that occur

within the designated area. Only activities that involve a federal permit, license, or funding and are likely to destroy or adversely modify critical habitat will be affected.

Migratory Birds

The Migratory Bird Treaty Act (MBTA: 16 USC 703-712) prohibits killing, possessing, or trading in any bird species covered in one of four international conventions to which the United States is a party, except in accordance with regulations prescribed by the Secretary of the Interior. The name of the act is misleading, as it covers almost all bird's native to the United States, even those that are non-migratory. The MBTA encompasses whole birds, parts of birds, and bird nests and eggs. Additionally, California Fish and Game Code makes it unlawful to take or possess any non-game birds covered by the MBTA (Section 3513), as well as any other native non-game birds (Section 3800).

Birds of Prey

Birds of prey are protected in California under provisions of California Fish and Game Code (Section 3503.5), which states that it is unlawful to take, possess, or destroy any birds in the order Falconiformes (hawks and eagles) or Strigiformes (owls), as well as their nests and eggs. The bald eagle and golden eagle are afforded additional protection under the Bald and Golden Eagle Protection Act (16 USC 668), which makes it unlawful to kill birds or their eggs, or take feathers or nests, without a permit issued by the U.S. Secretary of the Interior.

Nesting Birds

In California, protection is afforded to the nests and eggs of all birds. California Fish and Game Code (Section 3503) states that it is "unlawful to take, possess, or needlessly destroy the nest or eggs of any bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Breeding-season disturbance that causes nest abandonment and/or loss of reproductive effort is considered a form of "take" by the CDFW.

Wetlands and other "Jurisdictional Waters"

The definition of "waters of the United States" (WOTUS) often changes from one presidential administration to the next. The current definition, established under the Biden Administration that became effective on March 20, 2023 (i.e., "new rule"), has adopted much of the same WOTUS designations as the pre-2015 rules, but has incorporated the most recent science and court case rulings. Traditional navigable waters, territorial seas, and interstate waters remain covered under the new rule. Natural drainage channels and adjacent wetlands may be considered "waters of the United States" or "jurisdictional waters" subject to the jurisdiction of the USACE if there is a "relatively permanent" surface water connection, or "significant nexus" to WOTUS. The extent of jurisdiction has been defined in the Code of Federal Regulations but is also subject to interpretation by the federal courts. Jurisdictional waters generally include the following categories:

1) Waters which are:
    a. Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
    b. The territorial seas; or
    c. Interstate waters, including interstate wetlands;
2) Impoundments of waters otherwise defined as WOTUS under this definition, other than impoundments of waters identified under item (5) of this section;
3) Tributaries of waters identified in items (1) or (2) of this section:
    a. That are relatively permanent, standing or continuously flowing bodies of water; or

   b. That either alone or in combination with similarly situated waters in the region, significantly affect the chemical, physical, or biological integrity of waters identified in item (1) of this section;
4) Wetlands adjacent to the following waters:
   a. Waters identified in item (1) of this section; or
   b. Relatively permanent, standing or continuously flowing bodies of water identified in items (2) or (3)(i) of this section and with a continuous surface connection to those waters; or
   c. Waters identified in items (2) or (3) of this section when the wetlands either alone or in combination with similarly situated waters in the region, significantly affect the chemical, physical, or biological integrity of waters identified in item (1) of this section;
5) Intrastate lakes and ponds, streams, or wetlands not identified in items (1) through (4) of this section:
   a. That are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in items (1) or (3)(i) of this section; or
   b. That either alone or in combination with similarly situated waters in the region, significantly affect the chemical, physical, or biological integrity of waters identified in item (1) of this section.

Prior exclusions have been consolidated under the new rule, which excludes from jurisdiction any feature that satisfies the following terms:

- Waste treatment systems, including treatment ponds or lagoons;
- Prior converted cropland;
- Ditches excavated wholly in and draining only dry land and do not carry a relatively permanent flow of water;
- Artificially irrigated areas that would revert to dry land if irrigation ceased;
- Artificial lakes or ponds created by excavating or diking dry land for the use of stock watering, irrigation, settling basins or rice growing;
- Artificial reflecting or swimming pools;
- Waterfilled depressions created in dry land; and
- Swales and erosional features (ex. gullies and small washes) characterized by low volume, infrequent, or short duration flow.

The new rule has incorporated the best available science, relevant supreme court cases, public comment, technical expertise, and experience gained from more than 45 years of implementing the pre-2015 "waters of the United States" framework to inform jurisdictional limits. One significant court case involves the U.S. Supreme Court in its *2001 Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers (SWANCC)* decision. It was determined that channels and wetlands isolated from other jurisdictional waters cannot be considered jurisdictional on the basis of their use, hypothetical or observed, by migratory birds.

Similarly, in its 2006 consolidated *Carabell/Rapanos* decision, the United States Supreme Court ruled that a significant nexus between a wetland and other navigable waters must exist for the wetland itself to be considered jurisdictional waters. The Supreme Court heard *Sackett v. United States Environmental Protection Agency (EPA)* in May 2023, to determine governing standards of a significant nexus between waters of the United States and adjacent wetlands. The court decided that adjacent wetlands would be protected under the CWA only if it maintained a continuous surface water connection with a federal water body. This decision has limited protection for networks of wetlands connected to navigable waters through subsurface flow. The final decision is anticipated to be published in October 2023.

The USACE regulates the filling or grading of waters of the United States. under the authority of Section 404 of the CWA. The extent of jurisdiction within drainage channels is defined by "ordinary high-water marks" on opposing channel banks. All activities that involve the discharge of dredge or fill material into Waters of the United States are subject to the permit requirements of the USACE. Such permits are typically issued on the condition that the applicant agrees to provide mitigation that results in no net loss of wetland functions or values. No permit can be issued until the RWQCB issues a Section 401 Water Quality Certification (or waiver of such certification) verifying that the proposed activity will meet state water quality standards.

Under the Porter-Cologne Water Quality Control Act of 1969, the SWRCB has regulatory authority to protect the water quality of all surface water and groundwater in the State of California ("Waters of the State"). Nine RWQCBs oversee water quality at the local and regional level. The RWQCB for a given region regulates discharges of fill or pollutants into Waters of the State through the issuance of various permits and orders. Discharges into Waters of the State that are also Waters of the United States require a Section 401 Water Quality Certification from the RWQCB as a prerequisite to obtaining certain federal permits, such as a Section 404 Clean Water Act permit. Discharges into all Waters of the State, even those that are not also Waters of the United States, require Waste Discharge Requirements (WDRs), or waivers of WDRs, from the RWQCB. The RWQCB also administers the Construction Storm Water Program and the federal National Pollution Discharge Elimination System (NPDES) program. Projects that disturb one acre or more of soil must obtain a Construction General Permit under the Construction Storm Water Program. A prerequisite for this permit is the development of a Storm Water Pollution Prevention Plan (SWPPP) by a certified Qualified SWPPP Developer. Projects that discharge wastewater, storm water, or other pollutants into a Water of the United States may require a NPDES permit.

CDFW has jurisdiction over the bed and bank of natural drainages and lakes according to provisions of Section 1601 and 1602 of the California Fish and Game Code. Activities that may substantially modify such waters through the diversion or obstruction of their natural flow, change or use of any material from their bed or bank, or the deposition of debris require a notification of a Lake or Streambed Alteration. If CDFW determines that the activity may adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement will be prepared. Such an agreement typically stipulates that certain measures will be implemented to protect the habitat values of the lake or drainage in question.

Potentially Significant Project-Related Impacts and Mitigation

Species identified as candidate, sensitive, or special status species by CDFW, USFWS, or CNPS, or are protected by state and/or federal laws, that have the potential to be impacted by Project activities at the APEs include: bald eagle, burrowing owl, Swainson's hawk, tricolored blackbird, western pond turtle, western spadefoot, nesting migratory birds and raptors, and wildlife movement corridors. Corresponding mitigation measures can be found below, which are summarized in **Appendix F**.

Mitigation

Mitigation measure requirements are variable across Project areas due to differences in habitat types and special status species requirements. A table of required measures by site is available in **Appendix F**. Additionally, pre-construction surveys may be conducted simultaneously if done within the required timeframe and conducted by a qualified biologist.

General Project-Related Impacts

The Project has the potential to impact a number of sensitive resources, as described in more detail in the following sections. Impacts to these resources could be a violation of state and federal laws or considered a potentially significant impact under CEQA and NEPA. Implementation of the following general measures will help reduce potential impacts to these resources to a less than significant level under CEQA and NEPA and will help ensure compliance with state and federal laws protecting these resources:

Mitigation Measure BIO-1a (*Worker Environmental Awareness Training*): Prior to initiating construction activities (including staging and mobilization), all personnel associated with Project construction will receive mandatory Worker Environmental Awareness Program (WEAP) training, conducted by a qualified biologist, to aid workers in identifying special status resources that may occur in the APEs. This training may be attended in-person, virtually, or recorded and reviewed prior to the start of construction. The specifics of this program will include identification of the sensitive species and suitable habitats, a description of the regulatory status and general ecological characteristics of sensitive resources, and review of the limits of construction and mitigation measures required to reduce impacts to biological resources within the work area. This training will discuss special status species, describe the laws and regulations in place to provide protection of these species, identify the penalties for violation of applicable environmental laws and regulations, and include a list of required protective measures to avoid "take." A fact sheet summarizing this information, along with photographs or illustrations of sensitive species with potential to occur on the APEs, will also be prepared for distribution to all contractors, their employees, and all other personnel involved with construction of the Project. All trainees will sign a form documenting that they have attended WEAP training and understand the information presented to them.

Mitigation Measure BIO-1b (*Best Management Practices*): The Project proponent will ensure that all workers employ the following best management practices (BMPs) to help avoid and minimize potential impacts to special status species:

- Pipeline/culvert/siphon excavations and vertical pipes will be covered each night to prevent wildlife from falling in and becoming trapped or injured during migratory or dispersal movements.
- Vehicles will observe a 15-mph speed limit while on each APE.
- Workers will inspect areas beneath parked vehicles, equipment, and materials prior to mobilization. If special status species are detected, the individual will either be allowed to leave of its own volition, or the appropriate agencies will be contacted to determine how the Project may proceed.

"Take" of a state or federal special status species (i.e., rare, California species of special concern, threatened, or endangered) is prohibited.

- The presence of any special status species will be reported to the Project's qualified biologist, who will submit the occurrence to the CNDDB. If necessary, the biologist will report the occurrence to the CDFW, CNPS, and/or USFWS.

Project-Related Mortality and/or Disturbance to Special Status Species

Special status species, such as western spadefoot, have the potential to occur at all APEs. Project activities that impact special status species would be considered a potentially significant impact under CEQA and NEPA.

The following measures will be implemented prior to the start of construction for all APEs and would reduce potential impacts to special status species to a less than significant level under CEQA and NEPA:

Mitigation Measure BIO-2a (*Pre-construction Surveys*): A qualified biologist will conduct a general pre-construction survey for special status species, including western spadefoot, no more than five (5) days prior to the start of construction within the APEs.

Mitigation Measure BIO-2b (*Avoidance Buffers*): On the discovery of any western spadefoot the biologist will determine appropriate construction setback distances (avoidance buffers) based on applicable CDFW guidelines, the biology of the species, and work and site conditions. If necessary, avoidance buffers will be identified with flagging, fencing, or other easily visible means, and will be maintained until the end of the project.

Mitigation Measure BIO-2c (*Take avoidance*): If avoidance buffers cannot be maintained a qualified biologist will prepare a plan to avoid take or impacts to this species.

Project-Related Mortality and/or Disturbance to Burrowing Owl

The Big W Improvement Area and the 99 W Improvement Area APEs contain grassland habitat that could potentially be used by burrowing owls (BUOW). Construction activities that adversely affect the nesting success of BUOW or result in the mortality of individual birds would constitute a violation of state and federal laws and be considered a significant impact under CEQA and NEPA.

While foraging habitat for BUOW is present on these APEs, suitable foraging habitat is located adjacent to the APEs and within the vicinity of the APEs and temporary impacts to the foraging habitat from implementation of the project is not considered a significant impact.

Implementation of the following measures would reduce potential impacts to nesting or roosting BUOW to a less than significant level under CEQA and NEPA and ensure compliance with state and federal laws protecting this avian species. These measures would be implemented at the Big W Improvement Area and the 99 W Improvement Area APEs

Mitigation Measure BIO-3a (*Pre-construction Take Avoidance Survey*): A qualified biologist will conduct a pre-construction take avoidance survey for BUOW, in accordance with CDFW's *Staff Report on Burrowing Owl Mitigation* (2012), within seven (7) days prior to the start of construction activities. The survey shall include the proposed work area and surrounding lands up to 500 feet from the work areas. If no BUOW individuals or active burrows are observed, no further mitigation is required.

Mitigation Measure BIO-3b (*Avoidance*): If an active BUOW burrow is detected, the occurrence shall be reported to the CNDDB, and avoidance buffers shall be implemented. A qualified biologist will determine appropriate avoidance buffer distances based on applicable CDFW and/or USFWS guidelines, the biology of the species, conditions of the burrow(s), and the level of Project disturbance. If necessary, avoidance buffers will be identified with flagging, fencing, or other easily visible means, and will be maintained until the biologist has determined that the nestlings have fledged and all BUOW have left the APE.

Mitigation Measure BIO-3c (*Passive Relocation*): If avoidance of an active BUOW burrow is not feasible, passive relocation during the non-breeding season (September 1 through January 31) could be utilized or during the breeding season (February 1 through August 31) if a qualified biologist determines that there are no young in the burrow. Prior to completion a qualified biologist shall prepare a passive relocation plan that would detail the methods to be used. It would include the tools to exclude the BUOW from its burrow (i.e., one-way doors or other devices) and excavate the burrow (i.e., hand tools and machinery, if needed). Following completion of passive relocation, a report will be prepared that would document the methods and results of these efforts.

Project-Related Mortality and/or Disturbance to Swainson's Hawk

Swainson's hawks are regionally abundant and could nest in the large trees surrounding the APEs. Swainson's hawk nesting within the APEs during construction have the potential to be injured or killed by Project-related activities. In addition to the direct "take" of Swainson's hawk, nesting Swainson's hawk within the APEs or adjacent areas could be disturbed by Project-related activities resulting in nest abandonment. Projects that adversely affect the nesting success of Swainson's hawks or result in the mortality of individual birds would be considered a violation of CEQA and NEPA and state and federal laws that protect this species.

While foraging habitat for migratory birds and raptors, including Swainson's hawk, is present on the APEs, suitable foraging habitat is located adjacent to the APEs and within the vicinity of the APEs and temporary impacts to the foraging habitat from implementation of the project is not considered a significant impact.

Implementation of the following measures will reduce potential impacts to nesting Swainson's hawk on or adjacent to the APEs, to a less than significant level under CEQA and NEPA and will ensure compliance with state and federal laws that protect this species:

Mitigation Measure BIO-4a (*Avoidance*): The Project's construction activities will occur, if feasible, between September 16 and January 31 (outside of Swainson's hawk nesting season) to avoid impacts to nesting Swainson's hawks.

Mitigation Measure BIO-4b (*Swainson's Hawk Surveys*): Prior to the start of construction, a qualified biologist will conduct a survey for Swainson's hawk nests within the proposed work area and surrounding lands up to a half-mile from the work areas. These surveys will be conducted in accordance with the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000), or current guidance.

Mitigation Measure BIO-4c (*Avoidance Buffers*): On the discovery of any active Swainson's hawk nests near the APE work areas, the biologist will determine appropriate construction setback distances (avoidance buffers) based on applicable CDFW guidelines, the biology of Swainson's hawk, and work and site conditions. If necessary, avoidance buffers will be identified with flagging, fencing, or other easily visible means, and will be maintained until the biologist has determined that the nestlings have fledged.

Project-Related Mortality and/or Disturbance to Bald Eagles

Suitable nesting and foraging habitat for bald eagles is present adjacent to the Patton Improvement Area APE and this species could nest adjacent to this APE. Bald eagles are protected under the Bald and Golden Eagle Protection Act, Migratory Bird Treaty Act, and the California Fish and Game Code. The Bald and Golden Eagle Protection Act prohibits take, possession, sale, purchase, barter, offer to sell, purchase, or barter, transport, or export/import of any eagle, alive or dead, including any part, nest, or egg, unless allowed by permit. The term "take" includes to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb." Project-related activities that result in injury, mortality, or disturbance to nesting, foraging, or roosting bald eagles would violate state and federal laws protecting these species and would be considered a significant impact under CEQA and NEPA. In order to avoid and minimize potential Project-related impacts to bald eagles, the Project proponent will implement the following protective measures:

Mitigation Measure BIO-5a (*Avoidance*): The Project's construction activities will occur, if feasible, between August 31 and January 31 (outside of the nesting bird season) to avoid impacts to nesting bald eagles.

Mitigation Measure BIO-5b (*Pre-construction Surveys*): If activities must occur within the breeding season (February 1 to August 31), a qualified biologist will conduct pre-construction surveys for bald eagle nests within seven (7) days prior to the start of construction. The survey will include the Patton Improvement Area APE and surrounding lands up to one mile from the APE. Bald eagle nests are considered "active" upon the nest-building stage.

Mitigation Measure BIO-5c (*Avoidance Buffers*): On discovery of any active bald eagle nests near work areas, a qualified biologist will determine appropriate construction setback distances based on applicable CDFW and/or USFWS guidelines and/or the biology of bald eagles. If necessary, avoidance buffers will be identified with flagging, fencing, or other easily visible means, and will be maintained until the biologist has determined that the nestlings have fledged.

Project-Related Mortality and/or Disturbance to Tricolored Blackbird

Suitable nesting and foraging habitats are present within and adjacent to the Road 28 Improvement Area APE for tricolored blackbirds. This species is regionally abundant and could nest within or adjacent to this APE. There are areas with emergent aquatic vegetation that is suitable for this species to nest in the canals within this APE and in surrounding areas. Projects that adversely affect the nesting success of raptors and migratory birds or result in the mortality of individual birds are considered a violation of state and federal laws and would be considered a potentially significant impact under CEQA and NEPA.

Mitigation Measure BIO-6a (*Avoidance*): The Project's construction activities will occur, if feasible, between August 31 and January 31 (outside of the nesting bird season) to avoid impacts to nesting tricolored blackbirds.

Mitigation Measure BIO-6b (*Pre-construction Surveys*): If activities must occur within breeding season (February 1 to August 31), a qualified biologist will conduct pre-construction surveys for tricolored blackbird nests and breeding colonies within seven (7) days prior to the start of construction. The survey will include the Road 28 Improvement Area APE and all accessible lands within up to 200 feet from the APE.

Mitigation Measure BIO-6c (*Avoidance Buffers*): On discovery of any active nests or breeding colonies near work areas, the biologist will determine appropriate construction setback distances based on applicable CDFW and/or USFWS guidelines and/or the biology of the species in question. If

necessary, avoidance buffers will be identified with flagging, fencing, or other easily visible means, and will be maintained until the biologist has determined that the nestlings have fledged.

Project-Related Mortality and/or Disturbance to Nesting Migratory Birds and Raptors

All APEs contain suitable nesting and foraging habitat for a variety of bird species. It is anticipated that during the nesting bird season, birds could nest on the ground or in shrubs and trees within or adjacent to each APE. Migratory birds and raptors nesting within an APE during construction have the potential to be injured or killed by Project-related activities. In addition to the direct "take" of migratory nesting birds and raptors, nesting birds and raptors within an APE or adjacent areas could be disturbed by Project-related activities resulting in nest abandonment. Projects that adversely affect the nesting success of raptors and migratory birds or result in the mortality of individual birds would be a violation of state and federal laws and considered a potentially significant impact under CEQA and NEPA.

Implementation of the following measures will reduce potential impacts to nesting migratory birds and raptors to a less than significant level under CEQA and NEPA and ensure compliance with state and federal laws protecting these avian species:

Mitigation Measure BIO-7a (*Avoidance*): The Project's construction activities will occur, if feasible, between August 31 and January 31 (outside of the nesting bird season) to avoid impacts to nesting birds.

Mitigation Measure BIO-7b (*Pre-construction Surveys*): If activities must occur within the nesting bird season (February 1 to August 31), a qualified biologist will conduct a pre-construction survey for active migratory bird nests no more than seven (7) days prior to the start of the construction within the APEs and surrounding lands up to 50 feet from the APEs and for active raptor nests within the APEs and all accessible lands up to 450-feet from the APEs. All raptor nests would be considered "active" upon the nest-building stage.

Mitigation Measure BIO-7c (*Avoidance Buffers*): On discovery of any active nests near work areas, the biologist will determine appropriate construction setback distances (avoidance buffers) based on applicable CDFW and/or USFWS guidelines, the biology of the species, and work and site conditions. If necessary, avoidance buffers will be identified with flagging, fencing, or other easily visible means, and will be maintained until the biologist has determined that the nestlings have fledged.

Project-Related Mortality and/or Disturbance to Western Pond Turtles

Western pond turtle are known to nest in the spring or early summer within 330 feet of a water body, although nest sites as far away as 1,640 feet have also been reported. Noise, vegetation removal, movement of workers, construction, and ground disturbance as a result of Project activities have the potential to significantly impact this species. Without appropriate avoidance and minimization measures for western pond turtle, potentially significant impacts associated with Project activities could include inadvertent entrapment and direct mortality. Project activities that impact western pond turtle would be considered a potentially significant impact under CEQA.

The following measures will be implemented prior to the start of and would reduce impacts to western pond turtle to a less than significant level under CEQA.

Mitigation Measure BIO-8a (*Pre-construction Survey and Avoidance Buffers*): Within seven (7) days prior to the start of construction within the above-mentioned APEs, a qualified biologist will conduct a pre-construction survey for western pond turtle within the APE and all accessible areas within up to 330 feet. Pre-construction surveys will be conducted in accordance with the draft *Western*

Pond Turtle (Emys marmorata) Visual Survey Protocol for the Southcoast Ecoregion (United States Geological Survey 2006). If no western pond turtles are observed during the pre-construction survey, then construction activities may begin. If construction is delayed or halted for more than seven (7) days, another pre-construction survey for western pond turtles will be conducted. If the surveys result in the identification of a western pond turtle or an individual is found on the APEs during construction activities, it will be allowed to leave the APE on its own and the qualified biologist will determine appropriate buffers to be implemented to avoid impacts to the individual(s).

Mitigation Measure BIO-8b (*Monitor*): If western pond turtles are observed on an APE, a qualified biologist will conduct a pre-activity clearance survey each day and remain onsite to oversee all vegetation clearing and ground disturbing activities. If western pond turtles are detected, the individual will either be allowed to leave of its own volition or will be captured by the qualified biologist (must possess appropriate collecting/handling permits) and relocated out of harm's way to the nearest suitable habitat beyond the influence of the project work area. "Take" of a state or federal special status (rare, California Species of Special Concern, threatened, or endangered) species is prohibited.

Project-Related Impacts to Wildlife Movement Corridors and Native Wildlife Nursery Sites

Rivers, ditches, and canals can function as wildlife movement corridors. Anthropogenic activities would deter wildlife from using these corridors during the day, though these deterrents would likely be absent at night. Project disturbances to the canal and ditches would be temporary and minimal and no impacts to the streams within the riverine/riparian habitat are proposed. Impacts to wildlife movement corridors would be considered a significant impact under CEQA.

None of the APEs contain features that could act as a wildlife nursery site. Mitigation measures are not warranted.

Mitigation. The following measures would reduce impacts to wildlife movement corridors to a less than significant level under CEQA and must be implemented prior to the start and during construction:

Mitigation Measure BIO-9a (*Operational Hours*): Construction activities will be limited to a half hour after sunrise through a half hour before sunset to reduce potential impacts to wildlife movement corridors.

Mitigation Measure BIO-9b (*Wildlife Access*): At no point will access be blocked outside of construction hours or during overnight hours or weekends. If construction must block both sides of a potential wildlife access route, an alternative route through the construction area will be identified by a qualified biologist and maintained throughout the construction schedule timeframe.

Section 7 Determinations

In addition to the effects analysis performed in **Table 3** and **Table 4** of this document, **Table 5** summarizes Project effect determinations for federally listed species found on the USFWS IPaC list generated on June 19, 2023 (**Appendix C**) and the CNDDB species list (**Appendix B**) in accordance with Section 7 of the Endangered Species Act.

Table 5. All APEs Section 7 Determinations

Species	Determination	Rationale for Determination
Butte County meadowfoam	**No effect**	**Habitat absent.** Required vernal pool habitat is absent within the APEs and surrounding lands.

Species	Determination	Rationale for Determination
(*Limnanthes floccosa* ssp. *californica*)		
Conservancy fairy shrimp *(Branchinecta conservatio)*	**No effect**	**Habitat absent.** Required vernal pool habitat is absent within the APEs and surrounding lands
Colusa grass (*Neostapfia colusana*)	**No effect**	**Habitat absent.** Required vernal pool habitat is absent within the APEs and surrounding lands.
Giant gartersnake *(Thamnophis gigas)*	**No effect**	**Habitat marginal and out of range.** The habitats of the APEs are marginal for this species and the APEs are outside of the known range of this species.
Green sturgeon (*Acipenser medirostris*)	**No effect**	**Habitat absent.** The APEs lack suitable aquatic habitat. The rivers and creeks that flow past the APEs do not flow perennially and would not contain green sturgeon. These rivers and creeks would not be impacted by Project activities.
Greene's tuctoria (Tuctoria greenei)	**No effect**	**Habitat absent.** Required vernal pool habitat is absent within the APEs and surrounding lands.
Hairy Orcutt grass (Orcuttia pilosa)	**No effect**	**Habitat absent.** Required vernal pool habitat is absent within the APEs and surrounding lands.
Hoover's spurge (Euphorbia hooveri)	**No effect**	**Habitat absent.** Required wetland habitat is absent from the APEs.
Monarch butterfly (*Danaus plexippus*)	**No effect**	**Habitat absent**. The APEs and surrounding areas have high human disturbance, but this species could forage over or pass through the APEs in route to more suitable habitat. This species would be expected to fly out of the APEs and not be impacted by Project activities.
Palmate-bracted bird's beak (Chloropyron palmatum)	**No effect**	**Habitat absent.** Required habitat and alkaline soils are absent within the APEs and surrounding lands.
Steelhead – Central Valley DPS (Oncorhynchus mykiss irideus pop.11)	**No effect**	**Habitat absent.** The APEs lack suitable aquatic habitat. The rivers and creeks that flow past the APEs do not flow perennially and do not have the habitat features that this species prefers.
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	**No effect**	**Habitat absent.** The APEs did not contain elderberry shrubs and thus lacked suitable habitat.
Vernal pool fairy shrimp (*Branchinecta lynchi*)	**No effect**	**Habitat absent.** The APEs and surrounding areas lack vernal pool habitat required by this species.
Vernal pool tadpole shrimp (*Lepidurus packardi*)	**No effect**	**Habitat absent.** The APEs and surrounding areas lack vernal pool habitat required by this species.
Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	**No effect**	**Habitat absent.** The APEs lack suitable habitat for this species. The riparian corridors near the APEs also do not provide suitable habitat for this species.

Less Than Significant Project-Related Impacts

Project-Related Impacts to Special Status Animal Species Absent From, or Unlikely to Occur on, the Project Site

Of the 21 regionally occurring special status animal species, 15 are considered absent from or unlikely to occur within the APEs due to past or ongoing disturbance and/or the absence of suitable habitat. These species include: American badger, bank swallow, conservancy fairy shrimp, Crotch bumble bee, foothill yellow-legged frog, giant gartersnake, green sturgeon, monarch butterfly, steelhead, valley elderberry longhorn beetle, vernal pool fairy shrimp, vernal pool tadpole shrimp, western mastiff bat, western red bat, western yellow-billed cuckoo.

Since it is unlikely these species would occur onsite, implementation of the Project should have no impact on these 15 special status species through construction mortality, disturbance, or loss of habitat. Mitigation measures are not warranted.

At the time of the survey, special status fishes were not considered present or likely to occur within the APEs. No aquatic habitat is present within the APEs other than the canals where the pipelines will be connected and ditches along the roads, which are not considered suitable habitat for special status fishes. Furthermore, the canals will be dewatered prior to project work, which would not allow these species to access the project areas. The streams around the APEs will not be impacted during Project activities. Mitigation measures are not warranted.

Project-Related Impacts to Special Status Plant Species Absent From, or Unlikely to Occur on, the Project Site

Of the 25 regionally occurring special status plant species all 25 are considered absent from or unlikely to occur within the APEs due to past or ongoing disturbance and/or the absence of suitable habitat.

Since it is unlikely these species would occur onsite, implementation of the Project would have no impact on these 25 special status species through construction mortality, disturbance, or loss of habitat. Mitigation measures are not warranted.

Project-Related Impacts to Riparian Habitat and Natural Communities of Special Concern

The nearest water to Big W Improvement Area is an unnamed stream the pipeline is directly adjacent to. The nearest water source to Patton Improvement Area is Walker Creek, which is directly west of the pipeline. These waterways and their riparian vegetation would not be impacted by Project activities. There is riparian vegetation within the canals and ditches along the roads, but these would not be considered jurisdictional since they are regularly maintained. Mitigation measures are not warranted.

There are no CNDDB-designated "natural communities of special concern" recorded within the APEs (California Natural Diversity Database 2023). No natural communities of special concern were observed within the APEs during the biological survey. There are six natural communities of special concern in the region: Great Valley Cottonwood Riparian Forest, Valley Needlegrass Grassland, Great Valley Oak Riparian Forest, Great Valley Willow Scrub, Coastal and Valley Freshwater Marsh, and Great Valley Mixed Riparian Forest. These communities would not be impacted as they are well outside of the APEs. Mitigation measures are not warranted.

Project-Related Impacts to Regulated Waters, Wetlands, and Water Quality

The unnamed stream and Walker Creek will be avoided during Project activities. Mitigation measures are not warranted.

In the event construction would involve ground disturbance over an area greater than one acre, the Project would be required to obtain a Construction General Permit under the Construction Storm Water Program administered by the RWQCB. A prerequisite for this permit is the development of a Storm Water Pollution Prevention Plan (SWPPP) to ensure construction activities do not adversely affect water quality.

Project-Related Impacts to Critical Habitat

According to the IPaC, designated critical habitat is absent within the APEs. In the vicinity of the APEs there is critical habitat for yellow-billed cuckoo 6.5 miles east of the APEs. Critical habitat is present for vernal pool fairy shrimp 7.5 miles north of the APEs. These critical habitats would not be impacted as they are well outside of the APEs and mitigation measures are not warranted.

Local Policies or Habitat Conservation Plans

The Project appears to be consistent with the goals and policies of the Glenn County General Plan. There are no known HCPs or NCCPs in the Project vicinity. Mitigation measures are not warranted.

Coastal Zone and Coastal Barriers Resources Act

The Project APEs are not located within the coastal zone. The Project would not impact or be located within or near the Coastal Barrier Resources System or its adjacent wetlands, marshes, estuaries, inlets, and near-shore waters. Mitigation measures are not warranted.

Project-Related Impact to Essential Fish Habitat

Essential Fish Habitat (EFH) and Habitat Areas of Particular Concern (HAPC) are absent from the APEs and surrounding lands, and consultation with the NMFS would not be required. Query results of the NMFS EHF Mapper can be found in **Appendix E**. Mitigation measures are not warranted.

IV. References

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Appendix A: Representative Photos of the APEs

ORLAND-ARTOIS WATER DISTRICT

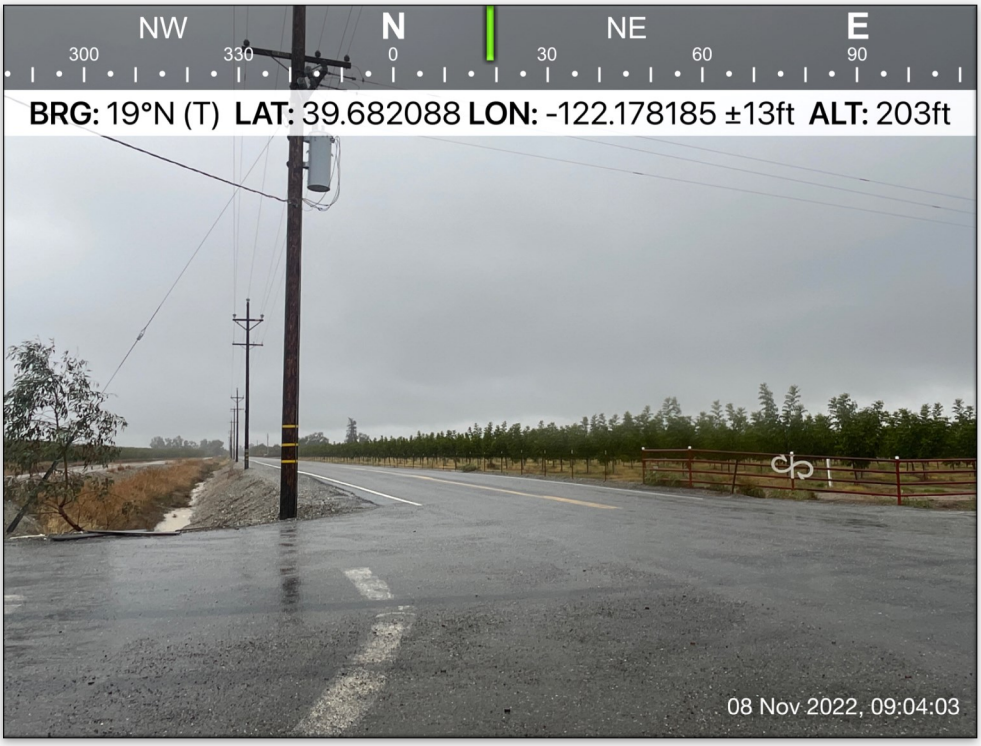
ANNEXATION SUPPORT PROJECT

Photograph 1

0.6 Booster Pump Improvement Area– Location of the new pipeline.

Photograph 2

0.6 Booster Pump Improvement Area– Location of the new pipeline.



Photograph 3

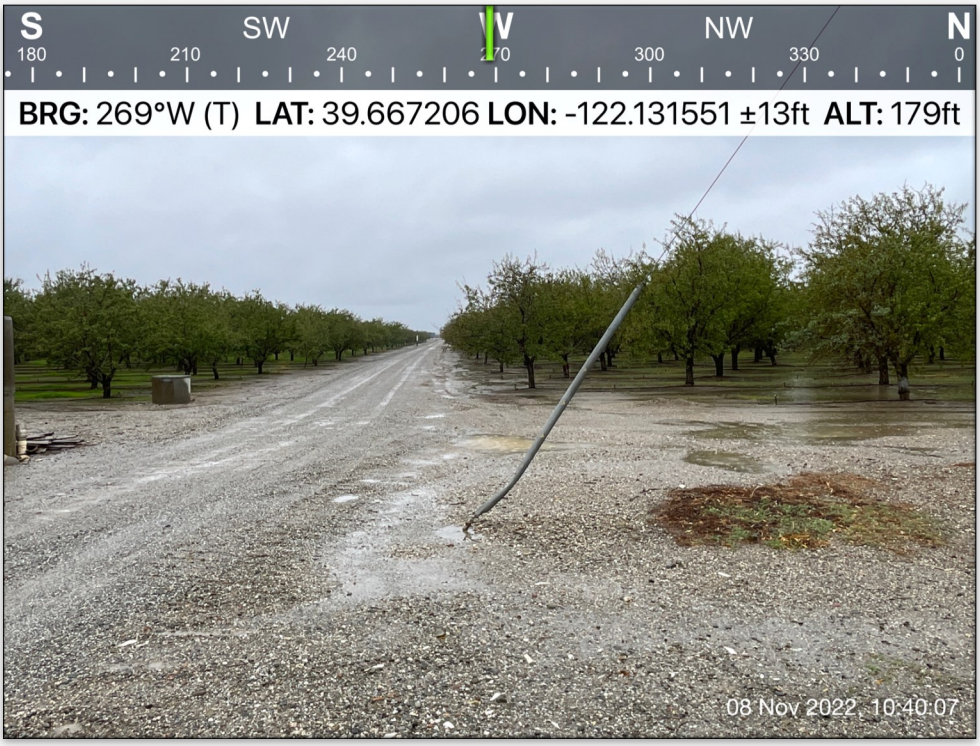
0.6 Booster Pump Improvement Area– Surrounding land to the north consisted of agricultural orchards.

Photograph 4

0.6 Booster Pump Improvement Area– Surrounding land to the south and east consisted of agricultural orchards.

Photograph 5

Lateral 2.6 Booster Pump Station Improvement Area– Location of the new pipeline.



Photograph 6

Lateral 2.6 Booster Pump Station Improvement Area– Location of the new pipeline.

Photograph 7

Lateral 2.6 Booster Pump Station Improvement Area– Location of the new pipeline.

Photograph 8

Lateral 2.6 Booster Pump Station Improvement Area– A large den in the ditch that did not show any signs of activity. There were no tracks or scat surrounding the den.

Photograph 9

Lateral 2.6 Booster Pump Station Improvement Area– Location of the new pipeline.

Photograph 10

Lateral 2.6 Booster Pump Station Improvement Area– Surrounding area.

Photograph 11

Lateral 2.6 Booster Pump Station Improvement Area– Surrounding area.

Photograph 12

Lateral 2.6 Booster Pump Station Improvement Area– Surrounding area. Bee hive boxes were located next to this APE.

Photograph 13

33.6E Improvement Area– Location of new pipeline.

Photograph 14

33.6E Improvement Area– Location of new pipeline.

Photograph 15

33.6E Improvement Area– Location of new pipeline.

Photograph 16

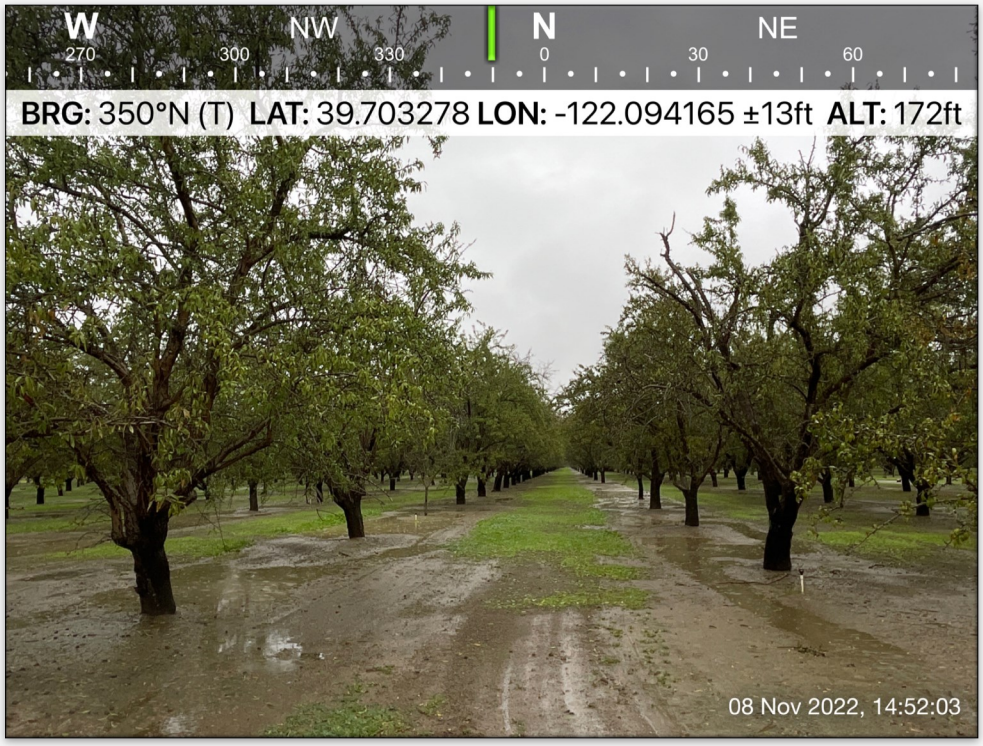
33.6E Improvement Area– Location of new pipeline.

Photograph 17

33.6E Improvement Area– Surrounding land.

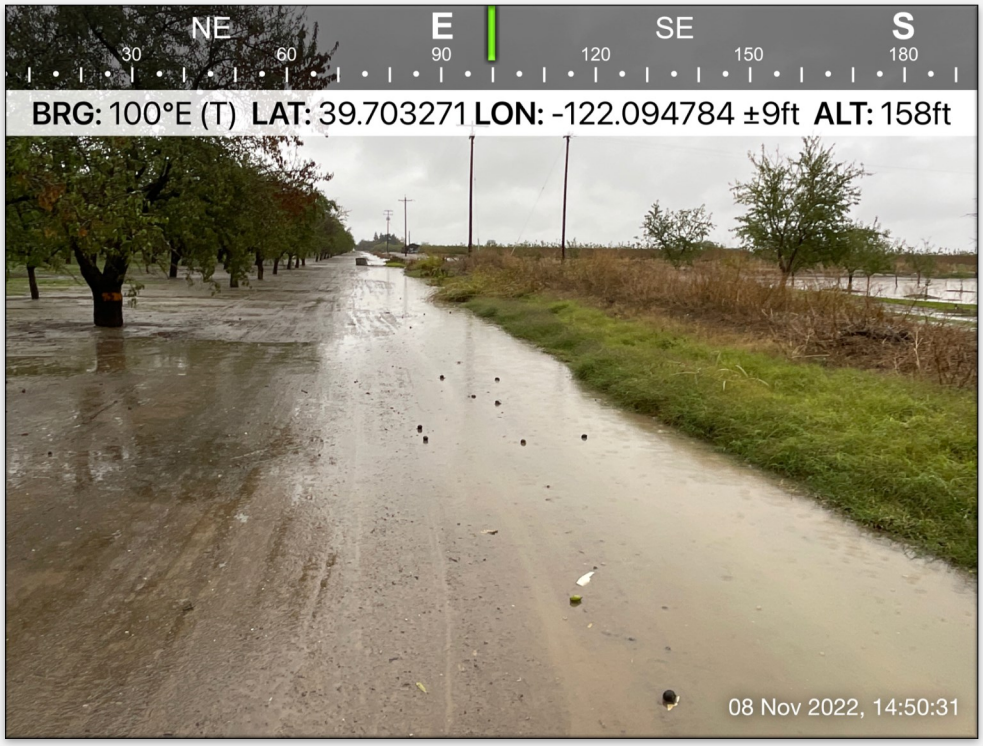
Photograph 18

33.6E Improvement Area– Surrounding land.



Photograph 19

Hart HQ Improvement Area – Location of new pipeline.



Photograph 20

Hart HQ Improvement Area – Location of new pipeline.

Photograph 21

Hart HQ Improvement Area – Surrounding land.

Photograph 22

Hart HQ Improvement Area – Surrounding land.

Photograph 23

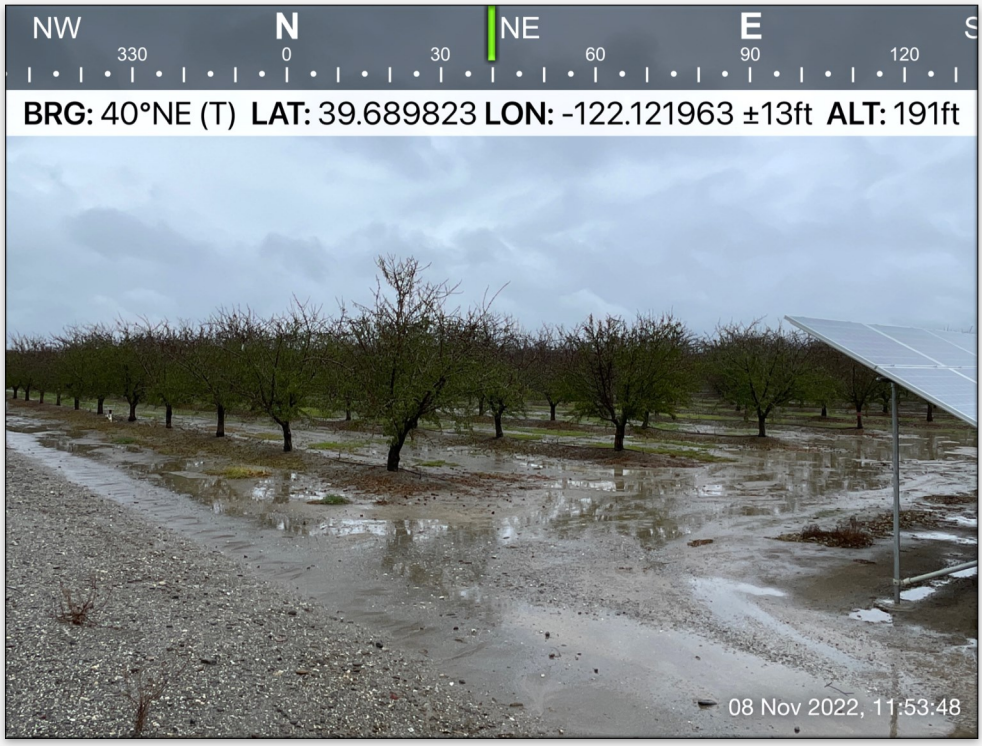
Knight 27 Extension Improvement Area – Location of pipeline.

Photograph 24

Knight 27 Extension Improvement Area – Location of pipeline.

Photograph 25

Knight 27 Extension Improvement Area – Location of new pipeline.



Photograph 26

Knight 27 Extension Improvement Area – Surrounding land.

Photograph 27

Knight 27 Extension Improvement Area – Location of new pipeline.

Photograph 28

Knight 27 Extension Improvement Area – Surrounding land.

Photograph 29

99W Improvement Area– Location of new pipeline.

Photograph 30

99W Improvement Area– Location of new pipeline.

Photograph 31

99W Improvement Area– Location of new pipeline.

Photograph 32

99W Improvement Area– Location of new pipeline.

Photograph 33

99W Improvement Area– Location of new farm turn-out.

Photograph 34

99W Improvement Area– Location of new farm turn-out.

Photograph 35

99W Improvement Area– Location of new pipeline.

Photograph 36

99W Improvement Area– Location of new pipeline.

Photograph 37

99W Improvement Area– Location of new pipeline. Interstate 5 is visible to the right.

Photograph 38

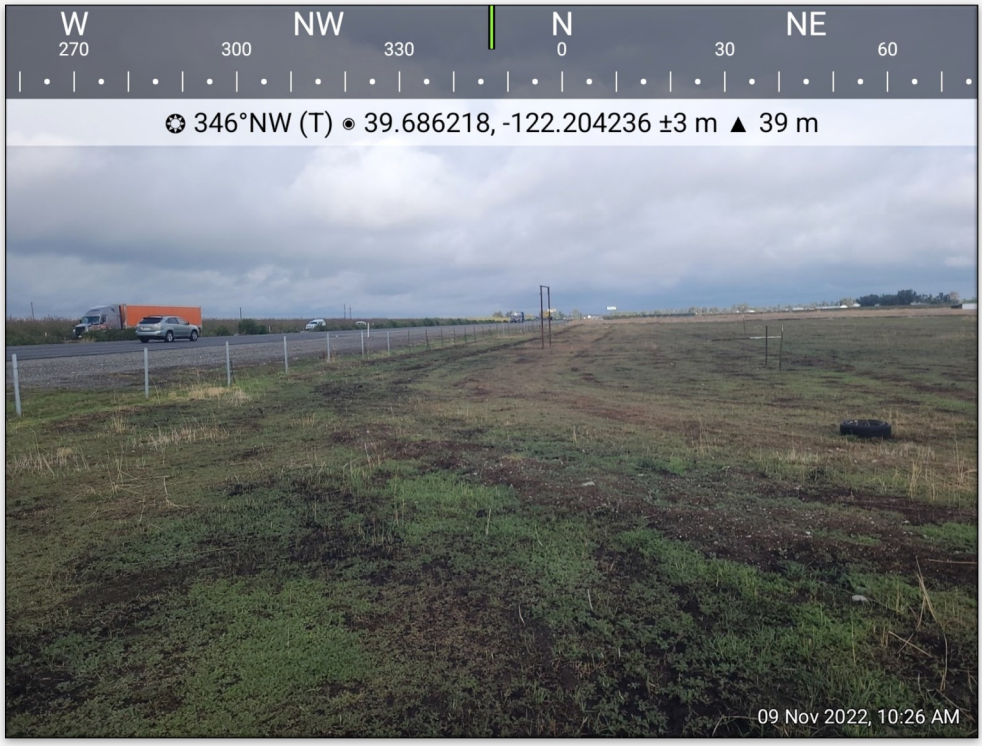
99W Improvement Area– Location of new pipeline.

Photograph 39

99W Improvement Area– Surrounding land.

Photograph 40

99W Improvement Area– Surrounding land.



Photograph 41

99W Improvement Area– Location of new pipeline.

Photograph 42

99W Improvement Area– Location of new pipeline.

Photograph 43

0.6 SAR Improvement Area – Location of new farm turnout.

Photograph 44

0.6 SAR Improvement Area – Surrounding land.

Photograph 45

0.6 Woolf Improvement Area– Location of new pipeline.

Photograph 46

0.6 Woolf Improvement Area– Location of new pipeline.

Photograph 47

0.6 Woolf Improvement Area– Location of new pipeline.

Photograph 48

0.6 Woolf Improvement Area– Location of new farm turnout.

Photograph 49

0.6 Woolf Improvement Area– Surrounding land.

Photograph 50

0.6 Woolf Improvement Area– Surrounding agricultural land.

Photograph 51

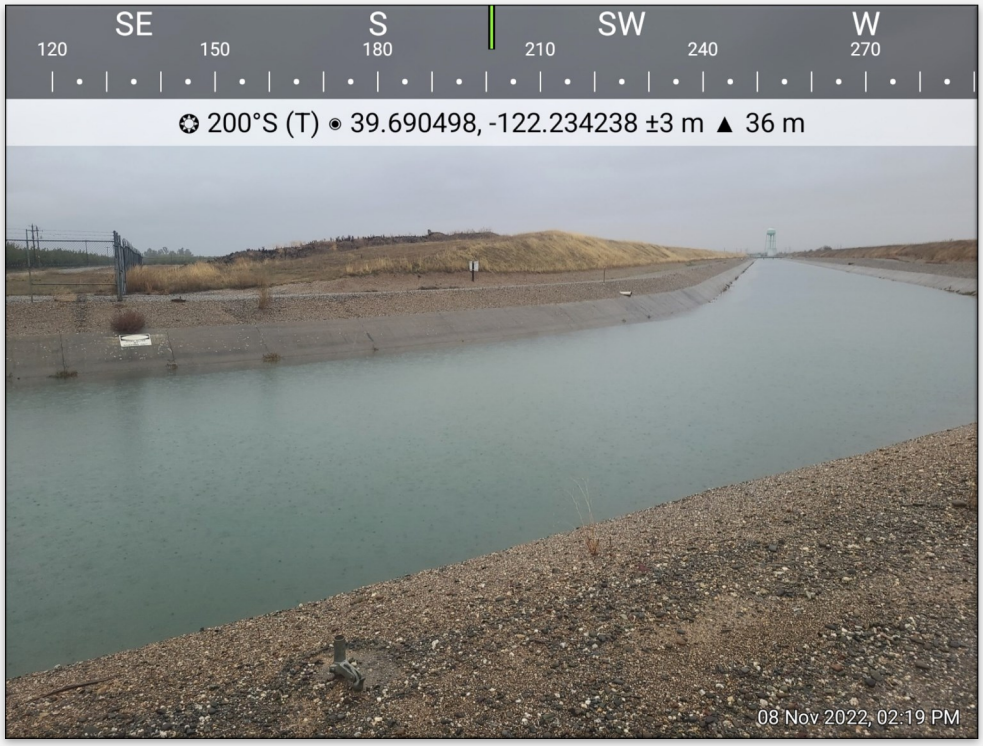
Lassen Land Improvement Area– Existing ditch visible in the foreground.

Photograph 52

Lassen Land Improvement Area– Orchards are visible on either side of Road 25.

Photograph 53

Road F Improvement Area. Photo taken from the Tehama Colusa Canal at Road F.



Photograph 54

Road F Improvement Area. Overview of the Tehama Colusa Canal and surrounding habitat.

Photograph 55

Patton Improvement Area– Tehama Colusa Canal is visible to left.

Photograph 56

Patton Improvement Area– Location of new pipeline.

Photograph 57

Patton Improvement Area– Location of new pipeline.

Photograph 58

Patton Improvement Area– Location of new pipeline.

Photograph 59

Patton Improvement Area– Location of new pipeline.

Photograph 60

Patton Improvement Area– Location of new pipeline.

Photograph 61

Patton Improvement Area– Surrounding agricultural land.

Photograph 62

Patton Improvement Area– Overview of Walker Creek which is to the west of this APE.

Photograph 63

Patton Improvement Area– Another overview of Walker Creek which is to the west of this APE.

Photograph 64

Patton Improvement Area– A deer carcass was observed along Walker Creek.

Photograph 65

Patton Improvement Area– Location of new pipeline.

Photograph 66

Patton Improvement Area– Location of new pipeline.

Photograph 67

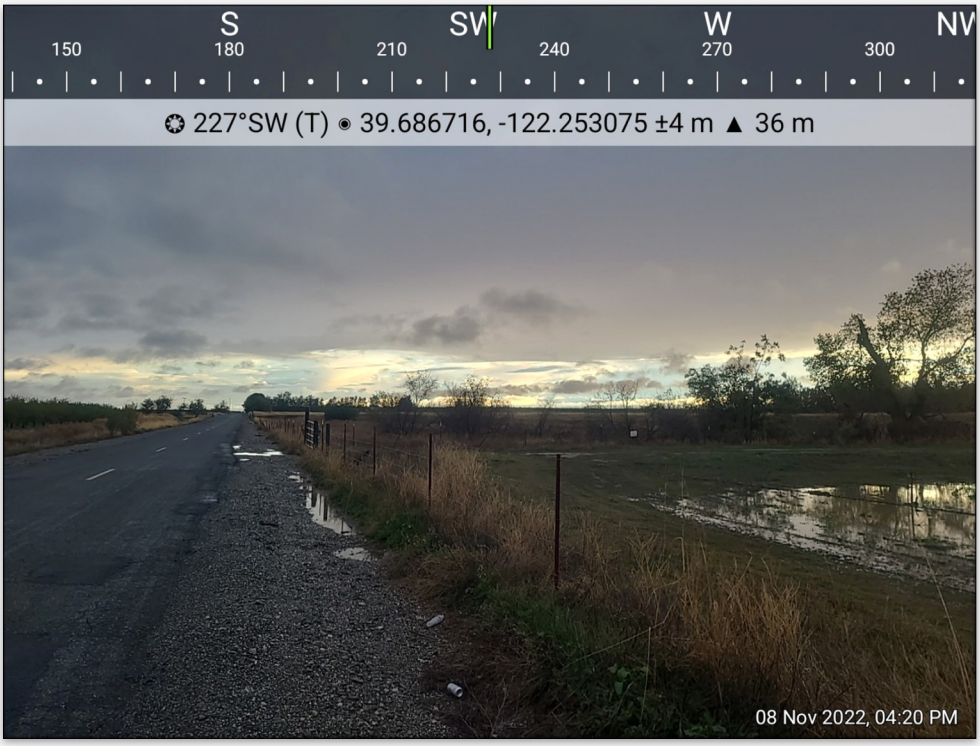
Big W Improvement Area– Large trees can be seen in the background and are located along a creek.

Photograph 68

Big W Improvement Area– Photo taken from the Tehama Colusa Canal.

Photograph 69

Big W Improvement Area– Location of new pipeline.



Photograph 70

Big W Improvement Area– Location of new pipeline.

Photograph 71

Road 28 Improvement Area. Intersection of Road 28 and D is visible in the background.

Photograph 72

Road 28 Improvement Area – from the Tehama Colusa Canal crossing on Road 28.

Photograph 73

Hart 330 Improvement Area – Location of new pipeline.

Photograph 74

Hart 330 Improvement Area – The Tehama Colusa Canal is visible.

Photograph 75

Hart 342 Improvement Area – Location of new farm turnout.

Photograph 76

Hart 342 Improvement Area – Location of new farm turnout. Beehives visible behind existing infrastructure.

Photograph 77

Knight 33 Improvement Area– Location of new farm turnout.

Photograph 78

Knight 33 Improvement Area– Location of proposed pipeline. Overview of existing ditch.

Photograph 79

Alignment towards 99W. Tehama Colusa Canal is visible to the left. The 99W Alternative Improvement Area is visible in the background.

Photograph 80

99W Alternative Improvement Area.

Appendix B: All APEs CNDDB 18-Quad Species List

ORLAND-ARTOIS WATER DISTRICT

ANNEXATION SUPPORT PROJECT

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Fruto (3912254) OR Fruto NE (3912263) OR Orland (3912262) OR Hamilton City (3912261) OR Stone Valley (3912253) OR Sehorn Creek (3912274) OR Black Butte Dam (3912273) OR Kirkwood (3912272) OR Foster Island (3912271) OR Nord (3912178) OR Ord Ferry (3912168) OR Llano Seco (3912158) OR Glenn (3912251) OR Willows (3912252) OR Logan Ridge (3912243) OR Rail Canyon (3912244) OR Julian Rocks (3912264) OR Logandale (3912242))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
adobe-lily	PMLIL0V0F0	None	None	G2G3	S2S3	1B.2
Fritillaria pluriflora						
Ahart's paronychia	PDCAR0L0V0	None	None	G3	S3	1B.1
Paronychia ahartii						
American badger	AMAJF04010	None	None	G5	S3	SSC
Taxidea taxus						
American bumble bee	IIHYM24260	None	None	G3G4	S2	
Bombus pensylvanicus						
Antioch Dunes anthicid beetle	IICOL49020	None	None	G3	S3	
Anthicus antiochensis						
Baker's navarretia	PDPLM0C0E1	None	None	G4T2	S2	1B.1
Navarretia leucocephala ssp. bakeri						
bald eagle	ABNKC10010	Delisted	Endangered	G5	S3	FP
Haliaeetus leucocephalus						
bank swallow	ABPAU08010	None	Threatened	G5	S3	
Riparia riparia						
black-crowned night heron	ABNGA11010	None	None	G5	S4	
Nycticorax nycticorax						
Brazilian watermeal	PMLEM03020	None	None	G5	S2	2B.3
Wolffia brasiliensis						
brittlescale	PDCHE042L0	None	None	G2	S2	1B.2
Atriplex depressa						
burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Athene cunicularia						
Butte County meadowfoam	PDLIM02042	Endangered	Endangered	G4T1	S1	1B.1
Limnanthes floccosa ssp. californica						
California alkali grass	PMPOA53110	None	None	G2	S2	1B.2
Puccinellia simplex						
California linderiella	ICBRA06010	None	None	G2G3	S2S3	
Linderiella occidentalis						
Coastal and Valley Freshwater Marsh	CTT52410CA	None	None	G3	S2.1	
Coastal and Valley Freshwater Marsh						
Colusa grass	PMPOA4C010	Threatened	Endangered	G1	S1	1B.1
Neostapfia colusana						

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Colusa layia *Layia septentrionalis*	PDAST5N0F0	None	None	G2	S2	1B.2
Conservancy fairy shrimp *Branchinecta conservatio*	ICBRA03010	Endangered	None	G2	S2	
Crotch bumble bee *Bombus crotchii*	IIHYM24480	None	Candidate Endangered	G2	S2	
dwarf downingia *Downingia pusilla*	PDCAM060C0	None	None	GU	S2	2B.2
Ferris' milk-vetch *Astragalus tener var. ferrisiae*	PDFAB0F8R3	None	None	G2T1	S1	1B.1
foothill yellow-legged frog - north coast DPS *Rana boylii pop. 1*	AAABH01051	None	None	G3T4	S4	SSC
giant gartersnake *Thamnophis gigas*	ARADB36150	Threatened	Threatened	G2	S2	
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	
great egret *Ardea alba*	ABNGA04040	None	None	G5	S4	
Great Valley Cottonwood Riparian Forest *Great Valley Cottonwood Riparian Forest*	CTT61410CA	None	None	G2	S2.1	
Great Valley Mixed Riparian Forest *Great Valley Mixed Riparian Forest*	CTT61420CA	None	None	G2	S2.2	
Great Valley Valley Oak Riparian Forest *Great Valley Valley Oak Riparian Forest*	CTT61430CA	None	None	G1	S1.1	
Great Valley Willow Scrub *Great Valley Willow Scrub*	CTT63410CA	None	None	G3	S3.2	
green sturgeon - southern DPS *Acipenser medirostris pop. 1*	AFCAA01031	Threatened	None	G2T1	S1	
Greene's tuctoria *Tuctoria greenei*	PMPOA6N010	Endangered	Rare	G1	S1	1B.1
hairy Orcutt grass *Orcuttia pilosa*	PMPOA4G040	Endangered	Endangered	G1	S1	1B.1
heartscale *Atriplex cordulata var. cordulata*	PDCHE040B0	None	None	G3T2	S2	1B.2
Heckard's pepper-grass *Lepidium latipes var. heckardii*	PDBRA1M0K1	None	None	G4T1	S1	1B.2
hoary bat *Lasiurus cinereus*	AMACC05032	None	None	G3G4	S4	
Hoover's spurge *Euphorbia hooveri*	PDEUP0D150	Threatened	None	G1	S1	1B.2
midvalley fairy shrimp *Branchinecta mesovallensis*	ICBRA03150	None	None	G2	S2S3	

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
North American porcupine *Erethizon dorsatum*	AMAFJ01010	None	None	G5	S3	
Northern Hardpan Vernal Pool *Northern Hardpan Vernal Pool*	CTT44110CA	None	None	G3	S3.1	
osprey *Pandion haliaetus*	ABNKC01010	None	None	G5	S4	WL
palmate-bracted bird's-beak *Chloropyron palmatum*	PDSCR0J0J0	Endangered	Endangered	G1	S1	1B.1
pink creamsacs *Castilleja rubicundula var. rubicundula*	PDSCR0D482	None	None	G5T2	S2	1B.2
Red Bluff dwarf rush *Juncus leiospermus var. leiospermus*	PMJUN011L2	None	None	G2T2	S2	1B.1
Sacramento anthicid beetle *Anthicus sacramento*	IICOL49010	None	None	G4	S4	
San Joaquin spearscale *Extriplex joaquinana*	PDCHE041F3	None	None	G2	S2	1B.2
silky cryptantha *Cryptantha crinita*	PDBOR0A0Q0	None	None	G2	S2	1B.2
silver-haired bat *Lasionycteris noctivagans*	AMACC02010	None	None	G3G4	S3S4	
snowy egret *Egretta thula*	ABNGA06030	None	None	G5	S4	
steelhead - Central Valley DPS *Oncorhynchus mykiss irideus pop. 11*	AFCHA0209K	Threatened	None	G5T2Q	S2	
Stony Creek spurge *Euphorbia ocellata ssp. rattanii*	PDEUP0D1P1	None	None	G4T2?	S2?	1B.2
Swainson's hawk *Buteo swainsoni*	ABNKC19070	None	Threatened	G5	S4	
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Threatened	G1G2	S2	SSC
valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	IICOL48011	Threatened	None	G3T2T3	S3	
Valley Needlegrass Grassland *Valley Needlegrass Grassland*	CTT42110CA	None	None	G3	S3.1	
vernal pool fairy shrimp *Branchinecta lynchi*	ICBRA03030	Threatened	None	G3	S3	
vernal pool smallscale *Atriplex persistens*	PDCHE042P0	None	None	G2	S2	1B.2
vernal pool tadpole shrimp *Lepidurus packardi*	ICBRA10010	Endangered	None	G4	S3	
watershield *Brasenia schreberi*	PDCAB01010	None	None	G5	S3	2B.3

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
western mastiff bat *Eumops perotis californicus*	AMACD02011	None	None	G4G5T4	S3S4	SSC
western pond turtle *Emys marmorata*	ARAAD02030	None	None	G3G4	S3	SSC
western red bat *Lasiurus frantzii*	AMACC05080	None	None	G4	S3	SSC
western spadefoot *Spea hammondii*	AAABF02020	None	None	G2G3	S3S4	SSC
western yellow-billed cuckoo *Coccyzus americanus occidentalis*	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
woolly meadowfoam *Limnanthes floccosa ssp. floccosa*	PDLIM02043	None	None	G4T4	S3	4.2
woolly rose-mallow *Hibiscus lasiocarpos var. occidentalis*	PDMAL0H0R3	None	None	G5T3	S3	1B.2
Yuma myotis *Myotis yumanensis*	AMACC01020	None	None	G5	S4	

Record Count: 67

Appendix C: All APEs IPaC Species List

ORLAND-ARTOIS WATER DISTRICT

ANNEXATION SUPPORT PROJECT

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To:
Project Code: 2023-0065238
Project Name: OAWD Annexation Support Project

June 19, 2023

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

To Whom It May Concern:

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

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

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

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

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

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

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/birds/bird-enthusiasts/threats-to-birds.php.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/birds/policies-and-regulations/executive-orders/e0-13186.php.

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

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

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

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

PROJECT SUMMARY

Project Code: 2023-0065238
Project Name: OAWD Annexation Support Project
Project Type: Water Supply Pipeline - Maintenance/Modification - Below Ground
Project Description: The Project includes annexation of 11,443.24 acres into the District boundary. The Project would also construct infrastructure needed to deliver water to the proposed annexed parcels. The infrastructure to be constructed would include: seven (7) turnouts (with pumps) from the Tehama Colusa Canal; twenty-four (24) new farm turnout locations; two (2) new pump stations (approximate capacity of 30 cubic-feet-per-second) on existing pipelines; and approximately eight miles of new pipeline.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@39.66725805,-122.13136585636013,14z

Counties: Glenn County, California

ENDANGERED SPECIES ACT SPECIES

There is a total of 7 threatened, endangered, or candidate species on this species list.

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

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

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

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

BIRDS

NAME	STATUS
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

REPTILES

NAME	STATUS
Giant Garter Snake *Thamnophis gigas* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7850	Threatened

CRUSTACEANS

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

CRITICAL HABITATS

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

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Provost & Pritchard Consulting
Name: Shaylea Stark
Address: 455 W Fir Ave
City: Clovis
State: CA
Zip: 93612
Email sstark@ppeng.com
Phone: 5594492700

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Bureau of Reclamation

Appendix D: All APEs NRCS Web Soil Survey Report

ORLAND-ARTOIS WATER DISTRICT

ANNEXATION SUPPORT PROJECT

United States Department of Agriculture

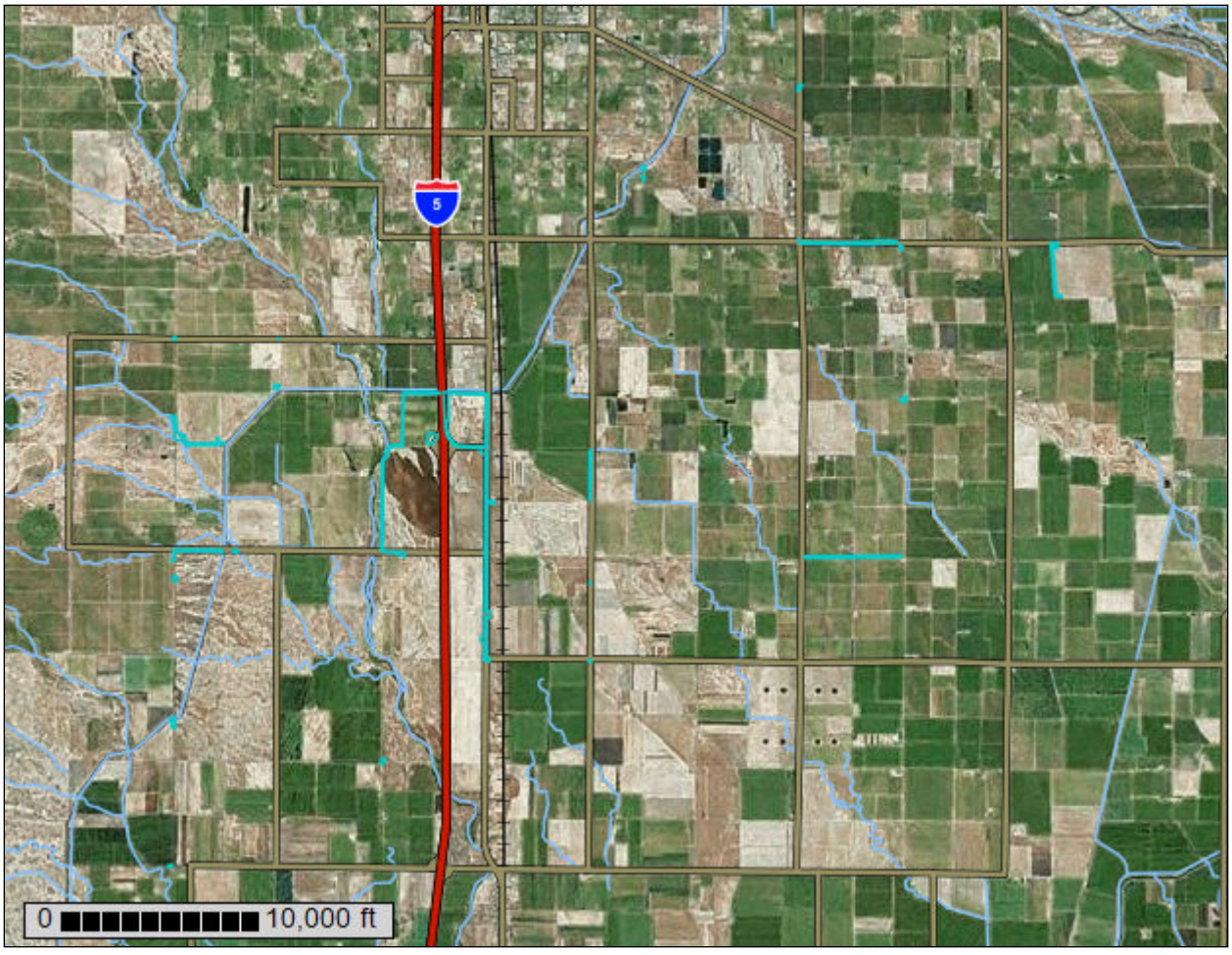
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Glenn County, California

OAWD Annexation Support Project



June 16, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

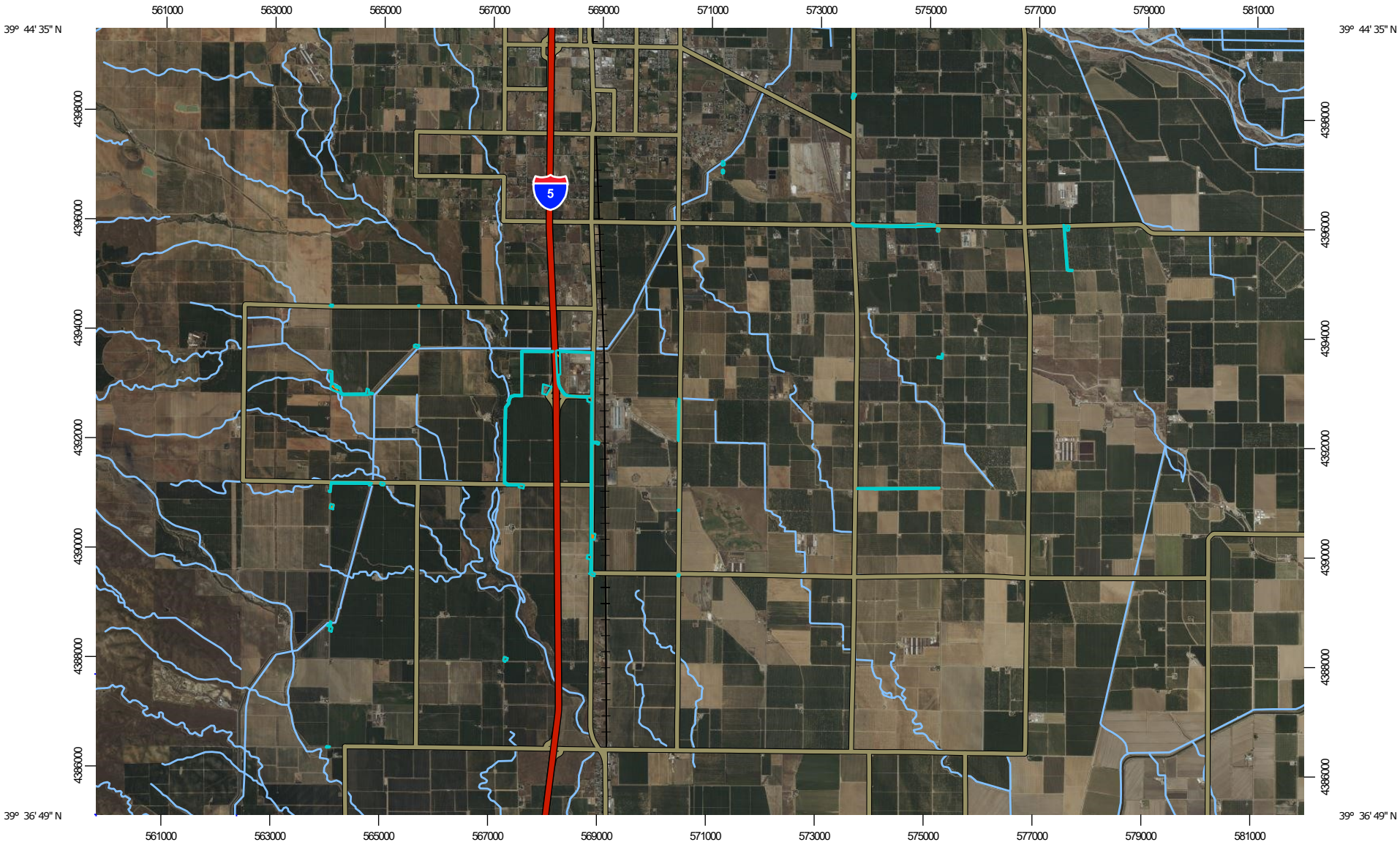
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:101,000 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 1000 2000 4000 6000

Feet
0 4500 9000 18000 27000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Glenn County, California
Survey Area Data: Version 18, Sep 1, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 7, 2022—May 31, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AoA	Arbuckle gravelly loam, 0 to 2 percent slopes, MLRA 17	13.9	8.3%
Ar	Arbuckle gravelly loam, clayey substratum, 0 to 2 percent slope	1.2	0.7%
As	Arbuckle gravelly sandy loam, 0 percent slopes, MLRA 17	0.7	0.4%
Au	Artois clay loam	0.0	0.0%
Av	Artois gravelly loam	2.0	1.2%
CaA	Capay clay, 0 to 4 percent slopes, MLRA 17	0.6	0.3%
CzB	Corning-Redding gravelly loams, 1 to 3 percent slopes	2.0	1.2%
Czk	Cortina gravelly fine sandy loam, shallow	1.4	0.8%
Czr	Cortina very gravelly sandy loam, 0 to 3 percent slopes	23.1	13.9%
Czt	Cortina very gravelly sandy loam, moderately deep	7.7	4.6%
HgA	Hillgate loam, 0 to 2 percent slopes, MLRA 17	4.2	2.5%
Hl	Hillgate clay loam, 0 to 3 percent slopes	1.0	0.6%
HmA	Hillgate gravelly loam, 0 to 2 percent slopes	10.3	6.2%
JaA	Jacinto fine sandy loam, 0 to 2 percent slopes	4.9	2.9%
Kb	Kimball loam, 0 to 2 percent slopes	0.9	0.6%
KmA	Kimball gravelly loam, 0 to 2 percent slopes	0.5	0.3%
Omr	Orland loam, moderately deep over gravel, 0 to 2 percent slopes, MLRA 17	1.2	0.7%
PmA	Pleasanton gravelly loam, 0 to 2 percent slopes, MLRA 14	3.0	1.8%
Rh	Riverwash	0.4	0.2%
Ta	Tehama loam, moderately deep over gravel, 0 to 2 percent slopes	0.6	0.4%
Tb	Tehama loam, deep to gravel, 0 to 3 percent slopes	18.3	11.0%
Tg	Tehama gravelly loam, 0 to 3 percent slopes, MLRA 17	0.0	0.0%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Tm	Tehama silt loam, 0 to 3 percent slopes, MLRA 17	60.5	36.3%
Wg	Wyo loam, deep over gravel	1.6	1.0%
Wh	Wyo gravelly loam, moderately deep over gravel	6.5	3.9%
Totals for Area of Interest		**166.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Glenn County, California

AoA—Arbuckle gravelly loam, 0 to 2 percent slopes, MLRA 17

Map Unit Setting

National map unit symbol: 2t7r8
Elevation: 30 to 1,420 feet
Mean annual precipitation: 20 to 32 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 200 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Arbuckle and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arbuckle

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from metamorphic and sedimentary rock

Typical profile

A1 - 0 to 2 inches: gravelly loam
A2 - 2 to 14 inches: gravelly loam
Bt1 - 14 to 25 inches: gravelly loam
Bt2 - 25 to 59 inches: gravelly sandy clay loam
Bt3 - 59 to 72 inches: very gravelly loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.28 to 1.28 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.3 to 0.5 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: B
Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces
Hydric soil rating: No

Minor Components

Hillgate

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Maywood

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Cortina

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Ar—Arbuckle gravelly loam, clayey substratum, 0 to 2 percent slope

Map Unit Setting

National map unit symbol: hd5z
Elevation: 100 to 1,600 feet
Mean annual precipitation: 20 inches
Mean annual air temperature: 61 degrees F
Frost-free period: 200 to 280 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Arbuckle and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arbuckle

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from conglomerate

Typical profile

H1 - 0 to 13 inches: gravelly loam
H2 - 13 to 60 inches: gravelly loam
H3 - 60 to 65 inches: clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 60 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces
Hydric soil rating: No

Minor Components

Cortina

Percent of map unit: 11 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unnamed

Percent of map unit: 2 percent
Landform: Swales
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Riverwash

Percent of map unit: 2 percent
Landform: Channels
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

As—Arbuckle gravelly sandy loam, 0 percent slopes, MLRA 17

Map Unit Setting

National map unit symbol: 2y0fc
Elevation: 160 to 230 feet
Mean annual precipitation: 22 to 24 inches
Mean annual air temperature: 62 to 62 degrees F
Frost-free period: 300 to 305 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Arbuckle and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arbuckle

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from metamorphic and sedimentary rock

Typical profile

Ap - 0 to 6 inches: gravelly sandy loam
A - 6 to 13 inches: gravelly loam
Bt1 - 13 to 21 inches: gravelly loam
Bt2 - 21 to 32 inches: gravelly loam
Bt3 - 32 to 60 inches: gravelly loam

Properties and qualities

Slope: 0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.2 to 0.5 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: B
Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces
Hydric soil rating: No

Minor Components

Artois

Percent of map unit: 11 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Hillgate

Percent of map unit: 2 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Unnamed

Percent of map unit: 2 percent
Landform: Channels
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Au—Artois clay loam

Map Unit Setting

National map unit symbol: hd62
Elevation: 150 to 500 feet
Mean annual precipitation: 20 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 260 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Artois and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Artois

Setting

Landform: Fan aprons
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 9 inches: clay loam
H2 - 9 to 18 inches: clay loam
H3 - 18 to 60 inches: clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 18 inches to abrupt textural change
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.3 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 10 percent
Landform: Fan aprons
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

Unnamed

Percent of map unit: 5 percent
Landform: Fan aprons
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Av—Artois gravelly loam

Map Unit Setting

National map unit symbol: hd63
Elevation: 150 to 500 feet
Mean annual precipitation: 20 inches

Mean annual air temperature: 63 degrees F
Frost-free period: 260 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Artois and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Artois

Setting

Landform: Fan aprons
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 9 inches: gravelly loam
H2 - 9 to 17 inches: gravelly clay loam
H3 - 17 to 60 inches: clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 17 inches to abrupt textural change
Drainage class: Moderately well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces
Hydric soil rating: No

Minor Components

Arbuckle

Percent of map unit: 10 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Hillgate

Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (two-dimensional): Summit

Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

CaA—Capay clay, 0 to 4 percent slopes, MLRA 17

Map Unit Setting

National map unit symbol: 2xc8p
Elevation: 90 to 630 feet
Mean annual precipitation: 21 to 24 inches
Mean annual air temperature: 62 to 62 degrees F
Frost-free period: 290 to 317 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Capay and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Capay

Setting

Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey alluvium derived from metamorphic and sedimentary rock

Typical profile

Ap - 0 to 9 inches: clay
Bss - 9 to 21 inches: clay
Bkss1 - 21 to 34 inches: clay
Bkss2 - 34 to 45 inches: silty clay
Bkss3 - 45 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 45 to 71 inches
Frequency of flooding: RareNone
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 10 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline (0.3 to 1.0 mmhos/cm)

Sodium adsorption ratio, maximum: 3.0
Available water supply, 0 to 60 inches: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C
Ecological site: R017XY901CA - Clayey Basin Group
Hydric soil rating: No

Minor Components

Clear lake

Percent of map unit: 7 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Myers

Percent of map unit: 6 percent
Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unnamed

Percent of map unit: 1 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Microfeatures of landform position: Swales
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

Unnamed

Percent of map unit: 1 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Microfeatures of landform position: Channels
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

CzB—Corning-Redding gravelly loams, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: hd7c
Elevation: 80 to 1,500 feet
Mean annual precipitation: 14 to 30 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 230 to 320 days
Farmland classification: Not prime farmland

Map Unit Composition

Corning and similar soils: 45 percent
Redding and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Corning

Setting

Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 14 inches: gravelly loam
H2 - 14 to 27 inches: gravelly clay
H3 - 27 to 40 inches: gravelly clay
H4 - 40 to 60 inches: stratified gravelly sandy loam to gravelly clay loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: 12 inches to abrupt textural change
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces
Hydric soil rating: No

Description of Redding

Setting

Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 14 inches: gravelly loam
H2 - 14 to 23 inches: gravelly clay
H3 - 23 to 36 inches: indurated

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches; 20 to 40 inches to duripan
Drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R017XY902CA - Duripan Vernal Pools
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 13 percent
Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Unnamed

Percent of map unit: 2 percent
Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Microfeatures of landform position: Vernal pools
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Czk—Cortina gravelly fine sandy loam, shallow

Map Unit Setting

National map unit symbol: hd7g
Elevation: 30 to 2,400 feet
Mean annual precipitation: 8 to 20 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 240 to 270 days
Farmland classification: Not prime farmland

Map Unit Composition

Cortina and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cortina

Setting

Landform: Flood plains, alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly alluvium

Typical profile

H1 - 0 to 8 inches: gravelly fine sandy loam
H2 - 8 to 15 inches: stratified very gravelly loamy sand to very gravelly loam
H3 - 15 to 60 inches: stratified very gravelly sand to very gravelly loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 15 inches to strongly contrasting textural stratification
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareOccasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 10 percent
Landform: Flood plains, alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unnamed

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Microfeatures of landform position: Channels
Down-slope shape: Linear
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Czr—Cortina very gravelly sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: hd7h
Elevation: 30 to 2,400 feet
Mean annual precipitation: 8 to 20 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 240 to 270 days
Farmland classification: Not prime farmland

Map Unit Composition

Cortina and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cortina

Setting

Landform: Flood plains, alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly alluvium

Typical profile

H1 - 0 to 8 inches: very gravelly sandy loam
H2 - 8 to 40 inches: stratified very gravelly loamy sand to very gravelly loam
H3 - 40 to 60 inches: stratified very gravelly sand to very gravelly loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 39 inches to strongly contrasting textural stratification
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: RareOccasional
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 5 percent
Landform: Flood plains, alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Gravel pits

Percent of map unit: 5 percent
Landform: Flood plains, alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unnamed

Percent of map unit: 5 percent
Landform: Flood plains, alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Czt—Cortina very gravelly sandy loam, moderately deep

Map Unit Setting

National map unit symbol: hd7k
Elevation: 30 to 2,400 feet
Mean annual precipitation: 8 to 40 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Cortina and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cortina

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly alluvium

Typical profile

H1 - 0 to 8 inches: very gravelly sandy loam
H2 - 8 to 32 inches: stratified very gravelly loamy sand to very gravelly loam
H3 - 32 to 60 inches: stratified very gravelly sand to very gravelly loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 31 inches to strongly contrasting textural stratification
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.2 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 5 percent
Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Microfeatures of landform position: Channels
Down-slope shape: Linear
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Gravel pits

Percent of map unit: 5 percent
Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unnamed

Percent of map unit: 5 percent
Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

HgA—Hillgate loam, 0 to 2 percent slopes, MLRA 17

Map Unit Setting

National map unit symbol: 2t7q5
Elevation: 20 to 1,180 feet
Mean annual precipitation: 17 to 21 inches
Mean annual air temperature: 61 to 63 degrees F
Frost-free period: 225 to 250 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hillgate, loam, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hillgate, Loam

Setting

Landform: Fan remnants
Landform position (two-dimensional): Summit

Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from metamorphic and sedimentary rock

Typical profile

A1 - 0 to 3 inches: loam
A2 - 3 to 11 inches: loam
A3 - 11 to 19 inches: loam
2Bt1 - 19 to 38 inches: clay
2Bt2 - 38 to 53 inches: clay loam
2Bt3 - 53 to 63 inches: clay loam
2Bt4 - 63 to 73 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 6 to 32 inches to abrupt textural change
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Gypsum, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: C
Ecological site: R017XE061CA - Loamy Fan Remnant 8-10" P.Z.
Hydric soil rating: No

Minor Components

Capay, clay loam

Percent of map unit: 3 percent
Landform: Basin floors
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Altamont, silty clay

Percent of map unit: 2 percent
Landform: Eroded fan remnant sideslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Ayar, clay
Percent of map unit: 2 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: No

Unnamed
Percent of map unit: 1 percent
Landform: Channels
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Riverwash
Percent of map unit: 1 percent
Landform: Channels
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Arand, very gravelly sandy loam
Percent of map unit: 1 percent
Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Hl—Hillgate clay loam, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: hd83
Elevation: 2,000 feet
Mean annual precipitation: 22 inches
Mean annual air temperature: 64 degrees F
Frost-free period: 285 to 310 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Hillgate and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hillgate

Setting

Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 15 inches: clay loam
H2 - 15 to 60 inches: clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: D
Ecological site: R017XY901CA - Clayey Basin Group
Hydric soil rating: No

Minor Components

Arbuckle

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Corning

Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Tehama

Percent of map unit: 3 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear

Across-slope shape: Linear
Hydric soil rating: No

Kimball

Percent of map unit: 2 percent
Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

HmA—Hillgate gravelly loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hd84
Elevation: 2,000 feet
Mean annual precipitation: 22 inches
Mean annual air temperature: 64 degrees F
Frost-free period: 275 to 315 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hillgate and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hillgate

Setting

Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 15 inches: gravelly loam
H2 - 15 to 28 inches: clay
H3 - 28 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 15 inches to abrupt textural change
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: D
Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces
Hydric soil rating: No

Minor Components

Corning

Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Kimball

Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Arbuckle

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

JaA—Jacinto fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hd8l
Elevation: 100 to 250 feet
Mean annual precipitation: 20 to 62 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 265 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Jacinto and similar soils: 85 percent
Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Jacinto

Setting

Landform: Dunes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Wind modified alluvium derived from sedimentary rock

Typical profile

H1 - 0 to 15 inches: fine sandy loam
H2 - 15 to 38 inches: sandy clay loam
H3 - 38 to 60 inches: fine sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 3c
Hydrologic Soil Group: B
Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans
Hydric soil rating: No

Minor Components

Cortina

Percent of map unit: 5 percent
Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Tehama

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Wyo

Percent of map unit: 5 percent
Landform: Alluvial fans

Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Kb—Kimball loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hd8t
Elevation: 30 to 1,000 feet
Mean annual precipitation: 12 to 25 inches
Mean annual air temperature: 59 to 64 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Kimball and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kimball

Setting

Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 16 inches: loam
H2 - 16 to 27 inches: clay
H3 - 27 to 60 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 16 inches to abrupt textural change
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3s

Hydrologic Soil Group: D
Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces
Hydric soil rating: No

Minor Components

Unnamed
Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Moda
Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unnamed
Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (two-dimensional): Summit, toeslope
Landform position (three-dimensional): Tread
Microfeatures of landform position: Swales
Down-slope shape: Linear
Across-slope shape: Linear, concave
Hydric soil rating: Yes

KmA—Kimball gravelly loam, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: hd8w
Elevation: 100 to 1,500 feet
Mean annual precipitation: 18 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 300 to 310 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Kimball and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kimball

Setting

Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

H1 - 0 to 16 inches: gravelly loam
H2 - 16 to 27 inches: gravelly clay
H3 - 27 to 60 inches: gravelly sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 16 inches to abrupt textural change
Drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: D
Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces
Hydric soil rating: No

Minor Components

Unnamed

Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (two-dimensional): Summit, toeslope
Landform position (three-dimensional): Tread
Microfeatures of landform position: Swales
Down-slope shape: Linear
Across-slope shape: Linear, concave
Hydric soil rating: Yes

Unnamed

Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Arbuckle

Percent of map unit: 5 percent

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Omr—Orland loam, moderately deep over gravel, 0 to 2 percent slopes, MLRA 17

Map Unit Setting

National map unit symbol: 2w8c6
Elevation: 130 to 990 feet
Mean annual precipitation: 21 to 23 inches
Mean annual air temperature: 60 to 62 degrees F
Frost-free period: 220 to 260 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Orland and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Orland

Setting

Landform: Flood-plain steps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Overbank alluvium over channel alluvium derived from metamorphic and sedimentary rock

Typical profile

A1 - 0 to 1 inches: loam
A2 - 1 to 11 inches: loam
C1 - 11 to 19 inches: stratified silt loam to fine sand
C2 - 19 to 30 inches: loam
C3 - 30 to 60 inches: very gravelly sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent

Maximum salinity: Nonsaline (0.2 to 0.5 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: No

Minor Components

Cortina

Percent of map unit: 10 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Orland, shallow over gravel

Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

PmA—Pleasanton gravelly loam, 0 to 2 percent slopes, MLRA 14

Map Unit Setting

National map unit symbol: 2x52x
Elevation: 170 to 2,120 feet
Mean annual precipitation: 19 to 28 inches
Mean annual air temperature: 59 to 60 degrees F
Frost-free period: 260 to 300 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Pleasanton and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pleasanton

Setting

Landform: Alluvial fans, terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear

Parent material: Alluvium

Typical profile

H1 - 0 to 18 inches: gravelly loam
H2 - 18 to 44 inches: gravelly clay loam
H3 - 44 to 66 inches: gravelly sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Ecological site: R014XG918CA - Loamy Fan
Hydric soil rating: No

Minor Components

Cropley

Percent of map unit: 10 percent
Landform: Terraces, alluvial fans
Landform position (two-dimensional): Toeslope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R014XD001CA - CLAYEY
Hydric soil rating: No

San ysidro

Percent of map unit: 5 percent
Landform: Valley floors, alluvial fans, terraces
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R014XE029CA - LOAMY CLAYPAN
Hydric soil rating: No

Rh—Riverwash

Map Unit Setting

National map unit symbol: hdfm
Elevation: 700 to 2,900 feet
Mean annual precipitation: 8 to 15 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 110 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Riverwash: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Riverwash

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Gravelly alluvium

Typical profile

H1 - 0 to 6 inches: very gravelly sand
H2 - 6 to 60 inches: stratified very gravelly coarse sand to gravelly sand

Properties and qualities

Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 0 to 24 inches
Frequency of flooding: FrequentNone
Available water supply, 0 to 60 inches: Very low (about 1.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Ecological site: R017XY903CA - Stream Channels and Floodplains
Hydric soil rating: Yes

Minor Components

Unnamed

Percent of map unit: 10 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear

Across-slope shape: Linear
Hydric soil rating: No

Ta—Tehama loam, moderately deep over gravel, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hdhd
Elevation: 80 to 1,800 feet
Mean annual precipitation: 12 to 20 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 200 to 300 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Tehama and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tehama

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from metamorphic and sedimentary rock

Typical profile

H1 - 0 to 9 inches: loam
H2 - 9 to 30 inches: silty clay loam
H3 - 30 to 60 inches: Error

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 30 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C

Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces
Hydric soil rating: No

Minor Components

Cortina
Percent of map unit: 10 percent
Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Arbuckle
Percent of map unit: 5 percent
Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Tb—Tehama loam, deep to gravel, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: hdhf
Elevation: 80 to 1,800 feet
Mean annual precipitation: 12 to 20 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 200 to 300 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Tehama and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tehama

Setting
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from metamorphic and sedimentary rock

Typical profile
H1 - 0 to 9 inches: loam
H2 - 9 to 45 inches: silty clay loam
H3 - 45 to 60 inches: Error

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces
Hydric soil rating: No

Minor Components

Arbuckle

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Plaza

Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Hillgate

Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Tg—Tehama gravelly loam, 0 to 3 percent slopes, MLRA 17

Map Unit Setting

National map unit symbol: 2srjb
Elevation: 100 to 1,970 feet
Mean annual precipitation: 17 to 43 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 250 to 350 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Tehama and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tehama

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fine-loamy alluvium derived from metamorphic and sedimentary rock

Typical profile

Ap - 0 to 9 inches: gravelly loam
Bt - 9 to 27 inches: gravelly clay loam
BCtk - 27 to 60 inches: gravelly clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 1.28 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces
Hydric soil rating: No

Minor Components

Arbuckle
Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Maywood
Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Hillgate
Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Tm—Tehama silt loam, 0 to 3 percent slopes, MLRA 17

Map Unit Setting
National map unit symbol: 2srj8
Elevation: 100 to 1,180 feet
Mean annual precipitation: 17 to 21 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 180 to 260 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Tehama and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tehama

Setting
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear

Parent material: Fine-silty alluvium derived from metamorphic and sedimentary rock

Typical profile

Ap - 0 to 9 inches: silt loam
BAt - 9 to 12 inches: silty clay loam
Bt1 - 12 to 19 inches: silty clay loam
Bt2 - 19 to 27 inches: silty clay loam
BCtk1 - 27 to 38 inches: silty clay loam
BCtk2 - 38 to 50 inches: silty clay loam
BCtk3 - 50 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 3 percent
Available water supply, 0 to 60 inches: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces
Hydric soil rating: No

Minor Components

Hillgate

Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Plaza

Percent of map unit: 5 percent
Landform: Fan remnants
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Arbuckle

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear

Across-slope shape: Linear
Hydric soil rating: No

Wg—Wyo loam, deep over gravel

Map Unit Setting

National map unit symbol: hdj8
Elevation: 130 to 980 feet
Mean annual precipitation: 12 to 25 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 300 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Wyo and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wyo

Setting

Landform: Stream terraces, alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from metavolcanics

Typical profile

H1 - 0 to 11 inches: loam
H2 - 11 to 42 inches: loam
H3 - 42 to 60 inches: very gravelly sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 39 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: B
Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces

Hydric soil rating: No

Minor Components

Orland

Percent of map unit: 10 percent
Landform: Flood-plain steps, flood-plain steps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Cortina

Percent of map unit: 5 percent
Landform: Flood plains, flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Wh—Wyo gravelly loam, moderately deep over gravel

Map Unit Setting

National map unit symbol: hdj9
Elevation: 300 to 2,500 feet
Mean annual precipitation: 22 to 23 inches
Mean annual air temperature: 59 to 63 degrees F
Frost-free period: 200 to 300 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Wyo and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wyo

Setting

Landform: Stream terraces, alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from metavolcanics

Typical profile

H1 - 0 to 11 inches: gravelly loam
H2 - 11 to 30 inches: gravelly loam
H3 - 30 to 60 inches: sand and gravel

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: 30 inches to strongly contrasting textural stratification
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: B
Ecological site: R017XY905CA - Dry Alluvial Fans and Terraces
Hydric soil rating: No

Minor Components

Orland

Percent of map unit: 10 percent
Landform: Flood-plain steps, flood-plain steps
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Cortina

Percent of map unit: 5 percent
Landform: Flood plains, flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

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Appendix E: All APEs NMFS EFH Mapper

ORLAND-ARTOIS WATER DISTRICT

ANNEXATION SUPPORT PROJECT

EFH Mapper Report

EFH Data Notice

Essential Fish Habitat (EFH) is defined by textual descriptions contained in the fishery management plans developed by the regional fishery management councils. In most cases mapping data can not fully represent the complexity of the habitats that make up EFH. This report should be used for general interest queries only and should not be interpreted as a definitive evaluation of EFH at this location. A location-specific evaluation of EFH for any official purposes must be performed by a regional expert. Please refer to the following links for the appropriate regional resources.

West Coast Regional Office
Alaska Regional Office

Query Results

Degrees, Minutes, Seconds: Latitude = 39º 40' 53" N, Longitude = 123º 48' 33" W
Decimal Degrees: Latitude = 39.681, Longitude = -122.191

The query location intersects with spatial data representing EFH and/or HAPCs for the following species/management units.

EFH

No Essential Fish Habitats (EFH) were identified at the report location.

Salmon EFH

Link	HUC Name	Species/Management Unit	Lifestage(s) Found at Location	Management Council	FMP
	Sacramento-Stone Corral	Chinook Salmon	All	Pacific	Pacific Coast Salmon Plan

HAPCs

No Habitat Areas of Particular Concern (HAPC) were identified at the report location.

EFH Areas Protected from Fishing

No EFH Areas Protected from Fishing (EFHA) were identified at the report location.

Spatial data does not currently exist for all the managed species in this area. The following is a list of species or management units for which there is no spatial data. **For links to all EFH text descriptions see the complete data inventory: open data inventory -->
Pacific Coastal Pelagic Species, Jack Mackerel, Pacific (Chub) Mackerel, Pacific Sardine, Northern Anchovy - Central Subpopulation, Northern Anchovy - Northern Subpopulation, **Pacific Highly Migratory Species**, Bigeye Thresher Shark - North Pacific, Bluefin Tuna - Pacific,

Spatial data does not currently exist for all the managed species in this area. The following is a list of species or management units for which there is no spatial data. ****For links to all EFH text descriptions see the complete data inventory: open data inventory -->**
Dolphinfish (Dorado or Mahimahi) - Pacific, Pelagic Thresher Shark - North Pacific, Swordfish - North Pacific

Appendix F: APE Project Impacts and Mitigation Measure Table

ORLAND-ARTOIS WATER DISTRICT

ANNEXATION SUPPORT PROJECT

Summary of Potential Impacts to Biological Resources for Each APE.

Mitigation Measure and Project-Related Impacts	APE Name and Potentially Significant Impacts																		
	Lassen Land	Road F	Patton	Big W	Road 28	Hart 330	Hart 342	Knight 33	99W	Sanford	Hart HQ	33.6N	33.6E	Knight 27 Extension	0.6 Booster pump	0.6 SAR	0.6 Woolf	Lateral 2.6 Booster Pump Station	99W Alternatives
BIO-1: General	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
BIO-2: Special Status Species-Western Spadefoot				X					X										
BIO-3: Burrowing Owl				X					X										
BIO-4: Swainson's Hawk	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
BIO-5: Bald Eagle			X																
BIO-6: Tricolored Blackbird					X														
BIO-7: Nesting Migratory Birds and Raptors	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
BIO-8: Western Pond Turtle	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X
BIO-9: Wildlife Movement Corridors and Native Wildlife Nursery Sites	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Appendix C: Cultural Resources Inventory Survey

CULTURAL RESOURCES INVENTORY SURVEY

Orland-Artois Water District (OAWD)
Annexation and Infrastructure Project
Glenn County, California.

Prepared for

Provost & Pritchard Consulting Group
455 W. Fir Avenue
Clovis, CA 93611

Author

Sean Michael Jensen, M. A.

Keywords *for Information Center Use:*
Cultural Resources Inventory Survey, Glenn County, CEQA/NHPA, USGS Fruto NE, CA, Orland, CA, Stone Valley, CA and Hamilton City, CA 7.5' Quadrangles, No Historic Properties, No Significant Historical Resources, No Unique Archaeological Resources

July 27, 2023

GENESIS SOCIETY

ARCHAEOLOGICAL - HISTORICAL - CULTURAL RESOURCE MANAGEMENT SERVICES

ABSTRACT

This report details the results of a cultural resources inventory survey intended to support a finding by the Bureau of Reclamation (USBR) for the Orland-Artois Water District (OAWD) Annexation and Infrastructure Project. The project is located throughout eastern Glenn County, California.

The proposed Annexation and Infrastructure project will annex a number of properties into the OAWD service area and will further develop infrastructure for water supply for those properties. The project components, which are equivalent to the areas of potential effects (APE), include: seven (7) turnouts (with pumps) from the Tehama Colusa Canal; twenty-four (24) new farm turnout locations; two (2) new pump stations (approximate capacity of 30 cubic-feet-per-second) on existing pipelines; approximately 8-miles of pipeline; and staging areas. All proposed pipelines are located within easements with a typical width of 30-feet in width. In some areas, easements will be 15-feet in width in order to avoid built environment features. The maximum depth of ground disturbance for pipelines and farm turnouts would be nine (9) feet, while the booster pump stations would have a maximum depth of eighteen 18) feet.

Existing records at the Northeastern Information Center document that approximately 10% of the present APE had been subjected to previous archaeological investigation, and that one cultural resource (P-11-670) had been documented within the APE. Field inspection of this resource confirmed that its location was actually west of the present APE, and its plotting by the NEIC was simply the result of map scale. As well, the present effort included an intensive-level pedestrian survey. No prehistoric cultural resources were identified during the pedestrian survey. The Tehama Colusa Canal (TCC) was identified within the APE. While not yet achieving the 50-year old threshold necessary for recordation and evaluation, Reclamation indicated that the TCC would be eligible for inclusion in the NRHP as a contributing element of the CVP, itself an NRHP eligible property. Reclamation further determined that project components interfacing with the TCC would not constitute an adverse effect to an historic property.

Consultation was undertaken with the Native American Heritage Commission (NAHC) concerning sacred land listings for the property. An information request letter was delivered to the NAHC on April 26, 2022. The NAHC responded on January 15, 2023, indicating that a search of their Sacred Lands File was negative. The NAHC findings will be provided to the Bureau of Reclamation, the agency which will engage in formal consultation in compliance with Section 106 of the National Historic Preservation Act.

The probability of encountering buried archaeological sites within the APE is low. This conclusion is derived in part from the observed soil matrices which comprise the exposed soil cuts associated with construction of the TCC, and to the degree of disturbance, associated with past ground disturbance. Evidence of ground disturbance assisted in determining whether or not subsurface resources were present within the APE. Overall, the soil types present and contemporary disturbance would warrant a finding of low probability for encountering buried archaeological sites.

Based on the absence of significant historical resources/unique archaeological resources/historic properties within the APE, archaeological clearance is recommended for the project/undertaking as presently proposed.

CONTENTS

1. INTRODUCTION

Project Background

This report details the results of a cultural resources inventory survey intended to support a finding by the Bureau of Reclamation (USBR) for the Orland-Artois Water District (OAWD) Annexation and Infrastructure Project. The project is located throughout eastern Glenn County, California.

The proposed Annexation and Infrastructure project will annex a number of properties into the OAWD service area and will further develop infrastructure for water supply for those properties. The project components, which are equivalent to the areas of potential effects (APE), include: seven (7) turnouts (with pumps) from the Tehama Colusa Canal; twenty-four (24) new farm turnout locations; two (2) new pump stations (approximate capacity of 30 cubic-feet-per-second) on existing pipelines; approximately 8-miles of pipeline; and staging areas. All proposed pipelines are located within easements with a typical width of 30-feet in width. In some areas, easements will be 15-feet in width in order to avoid built environment features. The maximum depth of ground disturbance for pipelines and farm turnouts would be nine (9) feet, while the booster pump stations would have a maximum depth of eighteen 18) feet (see attached ***Project Location Maps*** package, and ***APE Maps*** package).

Since the project will involve physical disturbance to ground surface and sub-surface components in conjunction with infrastructure construction associated with water supply service expansion, it has the potential to impact cultural resources that may be located within the area of potential effects (APE). In this case, the APE (depicted on the attached ***APE Maps*** package) would consist of the aforementioned project components wherein construction work will be undertaken. Evaluation of the project's potential to impact cultural resources must be undertaken in conformity with Glenn County rules and regulations, and in compliance with requirements of the California Environmental Quality Act of 1970, Public Resources Code, Section 21000, et seq. (CEQA), and The California CEQA Environmental Quality Act Guidelines, California Administrative Code, Section 15000 et seq. (Guidelines as amended).

Additionally, since the project will involve federal review by the Bureau of Reclamation, the project must also conform with federal guidelines for assessing effects to cultural resources, including in particular Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations (36 CFR Part 800), Section 2(b) of Executive Order 11593, Section 101(b)(4) of the National Environmental Policy Act, the Archaeological Resources Protection Act, and other rules and regulations.

Regulatory Context

The following section provides a summary of the applicable regulations, policies and guidelines relating to the proper management of cultural resources.

Federal

National Historic Preservation Act(54 U.S.C. § 300101 et seq.)

Title 54 U.S.C 304108, also referred to as Section 106 of the National Historic Preservation Act (NHPA), requires that Federal agencies take into consideration possible effects to historic properties during their undertakings. Historic properties are cultural resources that are included or eligible for inclusion, in the National Register of Historic Places. The 36 CFR Part 800 regulations implement Section 106 and outline the procedures necessary for compliance with the NHPA. Compliance with the Section 106 process follows a series of steps that are designed to identify if significant cultural resources are present in the proposed action area of potential effects (APE), and to what level they would be affected by the proposed Federal undertaking. An undertaking is defined as a "…project, activity or program funded in whole or in part, under the direct or indirect jurisdiction of a federal agency." This includes projects that are carried out by, or on behalf of, the agency; those carried out with federal assistance; those requiring a federal permit, license, or approval; and those subject to state or local regulation administered pursuant to a delegation, or approval by, a federal agency [Section 301(7) 16 U.S.C. 470w(7)].

A cultural resource is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. Those cultural resources that are listed on, or are eligible for inclusion in, the National Register of Historic Places (NRHP) are referred to as historic properties. The criteria for NRHP eligibility are outlined at 36 CFR Part 60. Other applicable federal cultural resources laws and regulations that could apply include, but are not limited to, the Native American Graves Protection and Repatriation Act (NAGPA), and the Archaeological Resources Protection Act (ARPA).

Compliance with Section 106 of the NHPA (36 CFR Part 800) follows a series of steps that are designed to identify and consult with interested parties, determine the APE, determine if historic properties are present within the APE, and assess the effects the undertaking will have on historic properties. Section 106 requires consultation with Indian Tribes concerning the identification of sites of religious or cultural significance and with individuals or groups who are entitled, or requested, to be consulting parties. The regulations at 36 CFR Part 800.5 require federal agencies to apply the criteria of adverse effect to the historic properties identified within the APE. The criteria of adverse effect, defined at 36 CFR Part 800.5(a)(1), states that:

> "An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association."

The 36 CFR Part 800 regulations include consultation with the State Historic Preservation Officer (SHPO) to provide an opportunity to comment on, and concur with, the Reclamations' determinations. If the undertaking would result in adverse effects to historic properties, these adverse effects must be resolved in consultation with the SHPO and other parties identified during the Section 106 process before the undertaking can proceed to implementation.

National Register Criteria for Evaluation

The criteria for evaluation of eligibility for listing on the National Register of Historic Places are outlined at 36 CFR Part 60.4. A district, site, building, structure, or object must generally be at least 50 years old to be eligible for consideration as a historic property. That district, site, building, structure, or object must retain integrity of location, design, setting, materials, workmanship, feelings, and association as well as meet one of the following criteria to demonstrate its significance in American history, architecture, archeology, engineering, and culture. A district, site, building, structure, or object must:

> (A) be associated with events that have made a significant contribution to the broad patterns of history; or
>
> (B) be associated with the lives of people significant in our past; or
>
> (C) embody the distinct characteristics of a type, period, or method of construction, or represent the work of a master, or possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> (D) have yielded, or may be likely to yield, information important in prehistory or history.

A site must have integrity and meet one of the four criteria of eligibility to demonstrate its historic associations in order to convey its significance. A property must be associated with one or more events important in the history or prehistory in order to be considered for listing under Criterion A. Additionally, the specific association of the property, itself, must also be considered significant. Criterion B applies to properties associated with individuals whose specific contributions to the history can be identified and documented. Properties significant for their physical design or construction under Criterion C must have features with characteristics that exemplify such elements as architecture, landscape architecture, engineering, and artwork. Criterion D most commonly applies to properties that have the potential to answer, in whole or in part, important research questions about human history that can only be answered by the actual physical materials of cultural resources. A property

eligible under Criterion D must demonstrate the potential to contain information relevant to the prehistory and history of the Sacramento Valley region and/or Glenn County (National Register Bulletin 15).

A district, site, building, structure, or object may also be eligible for consideration as a historic property if that property meets the criteria considerations for properties generally less than 50 years old, in addition to possessing integrity and meeting the criteria for evaluation.

State

The California Register of Historical Resources

In California, the term "historical resource" includes "any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California" (Public Resources Code (PRC) Section 5020.1(j)). In 1992, the California legislature established the California Register of Historical Resources (CRHR) "to be used by state and local agencies, private groups, and citizens to identify the state's historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change" (PRC Section 5024.1(a)). The criteria for listing resources on the CRHR were developed to be in accordance with previously established criteria developed for listing in the NRHP. According to PRC Section 5024.1(c)(1–4), a resource is considered historically significant if it (i) retains "substantial integrity," and (ii) meets at least one of the following criteria:

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

To understand the historic importance of a resource, sufficient time must have passed to obtain a scholarly perspective on the events or individuals associated with the resource. A resource less than 50 years old may be considered for listing in the CRHR if it can be demonstrated that sufficient time has passed to understand its historical importance (see 14 CCR 4852(d)(2)). The CRHR protects cultural resources by requiring evaluations of the significance of prehistoric and historic resources. The criteria for the CRHR are nearly identical to those for the NRHP, and properties listed or formally designated as eligible for listing in the NRHP are automatically listed in the CRHR, as are state landmarks and points of interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

California Environmental Quality Act

As described further, the following CEQA statutes and CEQA Guidelines are of relevance to the analysis of archaeological, historic, and tribal cultural resources:

- PRC Section 21083.2(g) defines "unique archaeological resource."
- PRC Section 21084.1 and CEQA Guidelines Section 15064.5(a) define "historical resources." In addition, CEQA Guidelines Section 15064.5(b) defines the phrase "substantial adverse change in the significance of an historical resource." It also defines the circumstances when a project would materially impair the significance of a historical resource.
- PRC Section 21074(a) defines "tribal cultural resources."
- PRC Section 5097.98 and CEQA Guidelines Section 15064.5(e) set forth standards and steps to be employed following the accidental discovery of human remains in any location other than a dedicated ceremony.

California Health and Safety Code Section 7050.5

California law protects Native American burials, skeletal remains, and associated grave goods, regardless of their antiquity, and provides for the sensitive treatment and disposition of those remains. California Health and Safety Code Section 7050.5 requires that if human remains are discovered in any place other than a dedicated cemetery, no further disturbance or excavation of the site or nearby area reasonably suspected to contain human remains can occur until the County Coroner has examined the remains (Section 7050.5b). PRC Section 5097.98 also outlines the process to be followed in the event that remains are discovered. If the County Coroner determines or has reason to believe the remains are those of a Native American, the coroner must contact the California NAHC within 24 hours (Section 7050.5c). The NAHC will notify the Most Likely Descendant. With the permission of the landowner, the Most Likely Descendant may inspect the site of discovery. The inspection must be completed within 48 hours of notification of the Most Likely Descendant by the NAHC. The Most Likely Descendant may recommend means of treating or disposing of, with appropriate dignity, the human remains and items associated with Native Americans.

PRC Sections 21083.2(b)–(c) and CEQA Guidelines Section 15126.4 provide information regarding the mitigation framework for archaeological and historic resources, including examples of preservation-in-place mitigation measures; preservation-in-place is the preferred manner of mitigating impacts to significant archaeological sites because it maintains the relationship between artifacts and the archaeological context, and may also help avoid conflict with religious or cultural values of groups associated with the archaeological site(s).

Under CEQA, a project may have a significant effect on the environment if it may cause "a substantial adverse change in the significance of an historical resource" (PRC Section 21084.1; CEQA Guidelines Section 15064.5(b)). If a site is either listed or eligible for listing in the CRHR, or if it is included in a local register of historic resources, or identified as significant in a historical resources survey (meeting the requirements of PRC Section

5024.1(q)), it is a "historical resource" and is presumed to be historically or culturally significant for purposes of CEQA (PRC Section 21084.1; CEQA Guidelines Section 15064.5(a)). The lead agency is not precluded from determining that a resource is a historical resource, even if it does not fall within this presumption (PRC Section 21084.1; CEQA Guidelines Section 15064.5(a)).

A "substantial adverse change in the significance of an historical resource" reflecting a significant effect under CEQA means "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired" (CEQA Guidelines Section 15064.5(b)(1); PRC Section 5020.1(q)). In turn, the significance of a historical resource is materially impaired when a project does any of the following:

(1) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register; or
(2) Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to Section 5020.1(k) of the PRC or its identification in an historical resources survey meeting the requirements of Section 5024.1(g) of the PRC, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
(3) Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register as determined by a lead agency for purposes of CEQA [CEQA Guidelines Section 15064.5(b)(2)].

Pursuant to these sections, the CEQA inquiry begins with evaluating whether a project site contains any "historical resources," then evaluates whether that project will cause a substantial adverse change in the significance of a historical resource such that the resource's historical significance is materially impaired.

If it can be demonstrated that a project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that they cannot be left undisturbed, mitigation measures are required (Section 21083.2(a), (b), and (c)).

Section 21083.2(g) defines a unique archaeological resource as an archaeological artifact, object, or site about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

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

Impacts to non-unique archaeological resources are generally not considered a significant environmental impact (PRC Section 21083.2(a); CEQA Guidelines Section 15064.5(c)(4)). However, if a non-unique archaeological resource qualifies as tribal cultural resource (PRC 21074(c); 21083.2(h)), further consideration of significant impacts is required.

CEQA Guidelines Section 15064.5 assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. As described in the following text, these procedures are detailed in PRC Section 5097.98.

Native American Historic Cultural Sites

State law (PRC Section 5097 et seq.) addresses the disposition of Native American burials in archaeological sites and protects such remains from disturbance, vandalism, or inadvertent destruction; establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project; and established the Native American Heritage Commission (NAHC).

In the event that Native American human remains or related cultural material are encountered, Section 15064.5(e) of the CEQA Guidelines (as incorporated from PRC Section 5097.98) and California Health and Safety Code Section 7050.5 define the subsequent protocol. In the event of the accidental discovery or recognition of any human remains, excavation or other disturbances shall be suspended of the site or any nearby area reasonably suspected to overlie adjacent human remains or related material. Protocol requires that a county-approved coroner be contacted in order to determine if the remains are of Native American origin. Should the coroner determine the remains to be Native American, the coroner must contact the NAHC within 24 hours. The most likely descendent may make recommendations to the landowner or the person responsible for the excavation work, for means of treating, with appropriate dignity, the human remains and any associated grave goods as provided in PRC Section 5097.98 (14 CCR 15064.5(e)).

Scope of Work

Compliance with CEQA requires completion of projects in conformity with Section 15064.5 of the amended CEQA Guidelines and other Sections. Compliance with Section 106 of the NHPA requires completion of projects in conformity with the standards, guidelines, and principles in the *Advisory Council's Treatment of Archaeological Properties: A Handbook* (1980), and *Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines* (1983). Based on CEQA and NEPA requirements, the following specific tasks were considered an adequate and appropriate Scope of Work for this project:

- Conduct a records search at the Northeast Information Center of the California Historical Resources Information System and consult with the Native American Heritage Commission and interested Native American representatives (this latter task will be undertaken by the Bureau of Reclamation). The goals of the records search and consultation are to determine (a) the extent and distribution of previous archaeological surveys, (b) the locations of known archaeological sites and any previously recorded archaeological districts, and (c) the relationships between known sites and environmental variables. This step is designed to ensure that, during subsequent field survey work, all significant/eligible cultural resources are discovered, correctly identified, fully documented, and properly interpreted.

- Conduct a pedestrian survey of the APE in order to record and evaluate any previously unidentified cultural resources. Based on map review a complete coverage, intensive survey was considered appropriate, given the presence of moderate archaeological sensitivity within the property. The purpose of the pedestrian survey is to ensure that any previously identified sites are re-located and evaluated in relation to the present project/undertaking. For any previously undocumented sites discovered, the field survey would include formally recording these resources on State of California DPR-523 Forms.

- Upon completion of the records search and pedestrian survey, prepare a Final Report that identifies project effects and recommends appropriate mitigation measures for sites that might be affected by the undertaking and that are considered significant or potentially significant per CEQA, and/or eligible or potentially eligible for inclusion on the National Register of Historic Places.

The remainder of the present document constitutes the Final Report for this project, detailing the results of the records search, consultation and pedestrian survey and providing recommendations for treatment of significant/eligible archaeological and historic sites. All field survey work followed guidelines provided by the State Office of Historic Preservation (Sacramento) and conforms to accepted professional standards.

2. Location, Environmental and Cultural Context

Location

The APE includes: seven (7) turnouts (with pumps) from the Tehama Colusa Canal; twenty-four (24) new farm turnout locations; two (2) new pump stations (approximate capacity of 30 cubic-feet-per-second) on existing pipelines; approximately 8-miles of pipeline; and staging areas. All proposed pipelines are located within easements with a typical width of 30-feet in width. In some areas, easements will be 15-feet in width in order to avoid built environment features. The maximum depth of ground disturbance for pipelines and farm turnouts would be nine (9) feet, while the booster pump stations would have a maximum depth of eighteen 18) feet, located within northeastern Glenn County, California. Lands affected are located within a portion of Section 1 of Township 20 North, Range 4 West; portions of Sections 6, 7, 9, 15, 16, 17, 18, 19, 21, 22, 26, 27, 28, 30, & 33 of Township 21 North, Range 3 West;

portions of Sections 1, 12, 13, 24, & 25 of Township 21 North, Range 4 West; portions of Sections 31 & 33 of Township 22 North, Range 2 West; portions of Sections 4, 6, 7, 8, & 18 of Township 21 North, Range 2 West, as shown on the USGS Fruto NE, Orland, Stone Valley, and Hamilton City, CA, 7.5' Series quadrangles (see attached ***Project Location Maps*** package).

Environment

Geologically, the APE is situated in the Sacramento Valley, a large, northwest-southeast trending trough filled with substantial deposits of both marine and non-marine sediments (Hackel 1966). Bound by the Coast Range to the west, the Klamath and Cascade Ranges to the north, the Sierra Nevada to the east, and the Sacramento-San Joaquin Delta to the south, the Sacramento Valley is underlayed by a variety of geological formations established over the past several million years (Graymer et al. 2002).

Geologic formations within the general project area include the Tehama Formation, which dates to the Pliocene (circa 5-1.8MYA) and the Stony Creek Fan Alluvium, which dates from the late Pleistocene (circa 0.5 MYA) through the Holocene (circa 11,000YBP-Present) (State of California 2014). Soils associated with the general APE vicinity include Wyo-Jacinto, Cortina-Orland and Columbia (United States Department of Agriculture 1968:11).

The project area is in a region of Mediterranean climate, characterized by hot, dry summers and mild, wet winters. The area receives on average approximately 23 inches of precipitation with most precipitation, in the form of rain, coming in winter and peaking in December and January. Summers in the region area are generally clear, hot, and dry, with an average 24-hour temperature of 75ºF in July, with high temperatures typically above 90 ºF. Winters are generally mild and wet with highs averaging in the mid-40s to low-50s. Agricultural and ruderal communities predominantly characterize vegetation in this area.

Agricultural lands and the wildlife they support include aerial insectivores such as barn and cliff swallows, raptors, including the Swainson's hawk, which forage for mice and voles in alfalfa and irrigated pasture, and California ground squirrels. Burrowing owls use old ground squirrel burrows for shelter and as nesting sites and large raptors such as red-tailed hawks feed on the squirrels themselves. Additional vertebrates and invertebrates are common to the region as well, including turtles, lizards, snakes, rabbits, deer, raccoon, coyote, ducks, turkey vulture and various song birds.

Based on previous cultural resources studies undertaken within the general vicinity of the APE, coupled with the absence of prehistoric cultural materials being documented within these previous investigation areas, the APE appeared to be situated within lands of low to moderate archaeological sensitivity with respect to prehistoric sites. The APE appeared to represent low to moderate sensitivity with respect to historic-period sites. While historic-period sites had been identified in the general area, the postulate of moderate sensitivity was based on the considerable disturbance to both the surface and subsurface setting, resulting from construction of substantial infrastructure components (TCC, buried and overhead

utilities) and agricultural activities (deep ripping, orchard planting, wholesale orchard removal, laser leveling) within the APE.

Prehistory

The earliest residents in the Great Central Valley are represented by the Fluted Point and Western Pluvial Lakes Traditions, which date from about 11,500 to 7,500 years ago (Moratto 2004). Within portions of the Central Valley of California, fluted projectile points have been found at Tracy Lake (Heizer 1938) and around the margins of Buena Vista Lake in Kern County. Similar materials have been found to the north, at Samwel Cave near Shasta Lake and near McCloud and Big Springs in Siskiyou County. These early peoples are thought to have subsisted using a combination of generalized hunting and lacustrine exploitation (Moratto 2004).

These early cultural assemblages were followed by an increase in Native population density after about 7,500 years ago. One of the most securely dated of these assemblages in north-central California is from the Squaw Creek Site located north of Redding. Here, a charcoal-based C-14 date suggests extensive Native American presence around 6,500 years ago, or 4,500 B.C. Most of the artifactual material dating to this time period has counterparts further south, around Borax (Clear) Lake to the west, and the Farmington Area in a Valley setting east of Stockton. Important artifact types from this time period include large wide-stemmed projectile points and manos and metates.

In the Northern Sacramento Valley in the general vicinity of the project area, aboriginal populations continued to expand between 6,500 and 4,500 years ago. Early Penutian-speaking arrivals in this area may be represented by the archaeological complex known in the literature as the "Windmiller" or "Early Horizon." These sites date to about 4,000-5,000 years ago, with the connection to Penutian-speaking peoples suggested on the basis of extended burials, large leaf-shaped and stemmed projectile points similar to points of the Stemmed Point Tradition in the Plateau and portions of the Great Basin, large villages established along major waterways, and elaborate material culture with a wide range of ornamental and other non-utilitarian artifact types being present (Ragir 1972). The continuation of this pattern through the "Middle Horizon", or from about 1,000 B.C. to A.D. 300, has also been documented at riverine sites within the Sacramento Valley, including several sites along the Yuba River, within the general project vicinity.

Sometime around AD 200-300, the Valley may have experienced another wave of Penutian immigration. Arriving ultimately from southern Oregon and the Columbia and Modoc Plateau region and proceeding down the major drainage systems (including the Feather, Yuba and American Rivers and of course the Sacramento River), these Penutian-speaking arrivals may have displaced the earlier populations, including remnant Hokan-speaking peoples still resident within the Valley. Presumably introduced by these last Penutian-speaking peoples to arrive were more extensive use of bulbs and other plant foods, animal and fishing products more intensively processed with mortars and pestles, and perhaps the bow and arrow and associated small stemmed- and corner-notched projectile points.

Ethnography

The project area is located within territory which, at the time of Contact with European/American culture (*circa* AD 1850), was claimed by the Nomlaki (Goldschmidt 1978) who claimed lands west of the Sacramento River south to around Princeton, although close to the border shared with the Patwin to the south (Johnson 1978). The Patwin claimed lands from this point southward to below Knights Landing.

Both the Patwin and the Nomlaki were Penutian speakers, (Shipley 1978) for whom the basic social unit was the family, although the village may also have functioned as a social, political and economic unit. Villages were usually located near water sources, with major villages inhabited mainly in the winter as it was necessary to go out into the hills and higher elevation zones to establish temporary camps during food gathering seasons (i.e., spring, summer and fall). Villages typically consisted of a scattering of bark houses, numbering from four or five to several dozen in larger villages, each house containing a single family of from three to seven people.

As with all northern California Indian groups, economic life for these Penutian speaking groups revolved around hunting, fishing and the collecting of plant foods. Deer were an important meat source and were hunted by individuals by stalking or snaring, or by groups in community drives. Salmon runs, and other food resources available along the Sacramento River and some of its major tributaries, also contributed significantly to local economies. While much of the fish protein was consumed immediately, a significant percentage, particularly during the fall salmon run, was prepared for storage and consumed during winter months. Acorns represented one of the most important vegetal foods and were particularly abundant within the Oak Park Woodland which flanked both sides of the Sacramento River.

Relations between Euro-Americans and Native Americans in the northern Sacramento Valley followed the course of interaction documented in most other parts of North America, but with particularly devastating consequences for the Sacramento Valley Indians. John Work's fur trapping expedition through the region in 1832-33 resulted in the introduction of several communicable diseases, the results of which were devastating to Native culture and society (Work 1945; Cook 1955).

Historic Context

The first Euroamerican arrivals into the area include participants in Spanish and Mexican expeditions and early fur trapping ventures, several of which come through and made brief stays within this portion of the Northern Sacramento Valley. However, history in this area of the Valley really begins with the appearance of Euroamerican emigrants such as Granville Swift who accompanied the Kelsey Party in 1843 on their journey to California (McGowan 1961). Swift served in John Sutter's campaign for California independence (the Bear Flag Revolt) and later served as a militia Captain in Fremont's California Battalion. Swift later settled immediately north of Orland, between the core of the City and Stony Creek, and established cattle ranching operations that at one time extended south through

the present project area, down to Woodland and westerly into the foothill regions west of Willows.

Small, independent companies and individual steamboat operators established shipping routes on the upper Sacramento River during the early historic period; at its peak, river navigation on the Sacramento reached Red Bluff. The 1871 completion of the railroad to Red Bluff eliminated the need for many of the riverboat operations, although River steam boats like The Dover and Weitchepec continued service through 1911, with some reports claiming that operations continued to service Red Bluff as late as 1918 and the town of Tehama as late as 1936 (McGowan 1961:395-306).

Named after a town in England, Orland emerged as a true community in the early 1870's with arrival of the Southern Pacific Railroad. As elsewhere in California, many of the communities in the Great Central Valley were purposefully created and funded by the railroads, with one of the objectives being to provide necessary services for the system itself (water, fuel), and another being to benefit from housing construction spurred by the extension of the railroad itself. Orland represents one of those communities whose early growth was directly related to the railroad, and to the benefits to local agriculture and ranching (both sheep and cattle) that accompanied expansion of the market created by the availability of inexpensive, long-haul freight.

Glenn County was organized in 1891 from portions of northern Colusa County, which was one of the original 27 counties in the State; the boundaries of which have changed overtime. The first Americans settled in southern Colusa County in 1846 and the small settlement grew into the town of Colusa in 1850 along the Sacramento River, becoming the county seat in 1854.

The nearby communities of Princeton and Colusa emerged in the 1860's to service the historic transportation industry along the Sacramento River, and local farms which had begun to drain large tracts of land along and west of the Sacramento River during this same period.

The area that would become Glenn County was the most abundant grain growing region in the Sacramento valley into the early 1870s. To increase yields, some farmers in the region, dug gravity fed ditches from the Sacramento River to irrigate their low-lying lands during periods of high water. Shipping points with large grain warehouses along the Sacramento River at Jacinto, Princeton, and Sidds Landing, sprung up as millions of sacks of grain and barley were sent to market.

The growth in agriculture through the late 19th and into the early 20th Centuries fostered the development of local trade, and additional communities emerged in this part of the Valley. But Orland stood out as one of the larger grain shipping points in Northern California, and later became the center of the Orland Federal Irrigation Project (OFIP), a precursor to the Central Valley Project, covering an area of 20,000 acres watered by Stony Creek. OFIP began in the early 1900's, at which time it represented the only irrigation project in California constructed and operated by the U.S. Bureau of Reclamation.

Much later, following implementation of the Central Valley Project (CVP), the Tehama Colusa Canal (TCC) was constructed through the region. While the CVP was initially authorized in 1935, it would be another 15 years before Sacramento Canals Division of the Bureau of Reclamation would be authorized. This latter act allowed for the construction of the Red Bluff Diversion Dam, and two, gravity-fed canals: the Corning Canal and the Tehama-Colusa Canal. The 21-mile long Corning Canal was completed in 1959, while the 110-mile long Tehama Colusa Canal was completed in 1980. Due to ever-increasing federal regulations regarding salmonids, water diversion into the canal system decreased drastically, and in 2013, the Red Bluff Diversion Dam was decommissioned. No longer able to receive water from its original source, surface water sources were tapped to continue providing contractual water delivery commitments.

Additional historic themes for the Orland area include water storage and water diversion projects, and more recent urban expansion. Collectively, these various historic and contemporary activities have impacted the local cultural resource base, although with less severe consequences than historic gold mining did elsewhere in northern California.

3. RECORDS SEARCH and SOURCES CONSULTED

Several types of information were considered relevant to evaluating the types of archaeological sites and site distribution that might be encountered within the project area. The information evaluated prior to conducting the pedestrian survey includes data maintained by the Northeast Information Center, and available published and unpublished documents relevant to regional prehistory, ethnography, and early historic developments.

Northeast Information Center Records

The official Glenn County archaeological records were examined on December 23, 2022 (I.C. File # D22-428). This search documented the following existing conditions for a 0.25-mile radius centered on each APE component:

- According to the Information Center's records, one (1) cultural resource (P-11-670) has been documented within the APE. One (1) additional cultural resource (P-11-675) has been formally documented within the 0.25-mile search radius.

- According to the Information Center, approximately 10% of the APE has been subjected to previous cultural resources survey, as a result of three (3) previous investigations. Four (4) additional investigations have been documented outside of the APE, but within the search radius. These seven (7) investigations are summarized below.

NEIC #	Date	Author(s)
001357	1990	Moratto, Jackson, Pettigrew, Schalk, Chavez, Gibson, Hemphill, Miss, Price, Romano, Roper, Wickstrom, Burney, Lebow, Silvermoon, Crist
001357A	1993	Price, Canaday, Pettigrew, Bryson, Speulda, Atwell, Ostrogorsky
001357B	1993	Romano, Speulda, Onken, Bryson, Mikkelsen, Willig, Crisson, Sekora, Bouey, Katsura, McDougall, Van der Feen, Price, Skinner, Sharp, Benedict, Stenholm
001357C	1994	Moratto, Pettigrew, Price, Ross, Schalk
001357D	1995	Hildebrandt, Mikkelsen, Gilreath, Waechter, Berg, Bouey, Roper, Milliken, Atwell, Bailey, McGuire, Lebow, Katsura, Onken
001357E	1995	Bowyer, Speulda, Sekora, Ross
001357F	1995	Atwell, Hildebrandt, Lebow, Mikkelsen, Moratto, Pettigrew, Ross, Schalk, Sekora, Speulda
001357G	1995	Bryson, Skinner, Pettigrew
001357H	2003	Lloyd, Flint, Price, Baloian, Harro, Fulton, Fulton, Coleman
002593	1999	Francis, Huberland
002593A	2001	Huberland, Westwood
004953	1965	Treganza, Edwards, King
004953A	1967	Edwards
008373	2006	Windmiller
008867	2007	Vaughan, Burge
008868	2007	Burge
010558	2008	Millet

Other Sources Consulted

In addition to examining the archaeological site and survey records of Glenn County maintained at the Northeast Information Center, the following sources were also included in the search conducted at the Information Center, or were evaluated separately:

- The National Register of Historic Places (1986, Supplements to 10/10 and 8/12).
- The California Register of Historical Resources (2010 and 2012).
- The California Inventory of Historic Resources (State of California 1976).
- The California Historical Landmarks (State of California 1996).
- The California Points of Historical Interest (May 1992 and updates).
- The Office of Historic Preservation's Historic Property Data File (2010 and 2012).
- The Office of Historic Preservation's Determination of Eligibility (2010 and 2012).
- 1906 USGS Willows, CA.
- USGS Fruto NE, CA; Orland, CA; Stone Valley, CA; Hamilton City, CA 7.5' quadrangle.
- Willows, CA USGS 15' quadrangle (1951).
- NETR Aerials (1947, 1965, 1969, 1983, 1998, 2005, 2009, 2010, 2012, 2014, 2016, 2018, 2020).
- NETR USGS topographic maps (1904, 1914, 1944, 1952, 1959, 1963, 1967, 1970, 1971, 1978, 1986, 2012, 2015, 2018).

- Published and unpublished documents relevant to environment, ethnography, prehistory and early historic developments in the vicinity, providing a cultural context for assessing site types and distribution patterns for the project area (summarized above).

4. CULTURAL RESOURCES SURVEY and CULTURAL INVENTORY

Survey Strategy and Field Work

All of the APE (depicted on both the attached ***Project Location Maps*** package and the ***APE Maps*** package) was subjected to intensive pedestrian survey by means of walking parallel transects spaced at 5-20-meter intervals, based on sensitivity considerations and ground visibility.

In searching for cultural resources, the surveyor considered the results of background research and was alert for any unusual contours, soil changes, distinctive vegetation patterns, exotic materials, artifacts, feature or feature remnants and other possible markers of cultural sites.

Fieldwork was undertaken on February 8-12, March 10, April 21, 2023, by Principal Investigator, Sean Michael Jensen, M.A. Mr. Jensen is a professional archaeologist, historian and architectural historian, with 37 years of experience in archaeology, architectural history and history, who meets the professional requirements of the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (Federal Register, Vol. 48, No. 190), as demonstrated in his listing on the California Historical Resources Information System list of qualified archaeologists, architectural historians and historians (resume attached). No special problems were encountered and all survey objectives were satisfactorily achieved.

General Field Observations

Fieldwork identified the following general conditions within the project area. All of the present APE has been substantially impacted as a result of construction of the TCC and its associated access roads and features. As well, lands within the eastern portion of the APE have been subjected to agricultural improvements. All of these disturbances are contemporary in nature, having occurred during the 1970s through the present (see photos, below).

Examination of the USGS quadrangles, NETR topographic maps (1904, 1914, 1944, 1952, 1959, 1963, 1967, 1970, 1971, 1978, 1986, 2012, 2015, 2018) and historic aerials (1947, 1965, 1969, 1983, 1998, 2005, 2009, 2010, 2012, 2014, 2016, 2018, 2020), confirmed that no buildings, structures or other historic features have ever been documented within the APE prior to 1970. The TCC makes its first appearance on these source materials in 1983 on the photographic aerial image taken that year, and is completely absent from the 1969 and 1947

aerials. Similarly, the TCC first appears on the 2012 topographic maps, and is conspicuously absent from all earlier editions.

All of the present APE has been subjected to some degree of ground disturbing activities, ranging in intensity from moderate to substantial. Moderate impacts to surface and subsurface soils within the APE coincide with agricultural activities. Additional, and more intensive, disturbances are associated with the contemporary excavation and construction of the TCC. Aside from the TCC project components, nearly all of the APE components are located within areas of current or previous cultivation, either row or orchard crops, which involved previous deep ripping, planting of vegetation, installation of irrigation features, and in some cases, wholesale removal of low-production trees. Additionally, both buried and overhead utilities, including OAWD water storage and distribution components, as well as existing road construction and maintenance activities, have further contributed to ground disturbance within the APE (see attached photos for examples of ground disturbance at various project components).

Prehistoric Resources

No evidence of prehistoric activity or occupation was observed during the present pedestrian survey. The absence of such resources may be explained, at least in part, by the historic through contemporary disturbances to the entire APE.

Historic Resources

As noted in the Northeast Information Center Records section, above, one cultural resource (P-11-670) had been documented within the APE. Identified and recorded by Windmiller in 2006, the resource is described as a water well complex consisting of a windmill, steel water tank and concrete livestock trough. The resource is depicted immediately adjacent to the east side of Road H in Section 17, immediately west of the present APE, and approximately 0.25-miles north of Road 28. Field inspection of this resource confirmed that its location was actually west of the present APE, and its plotting by the NEIC was simply the result of map scale. Consequently, it was confirmed via topographic maps, aerial images and ground truthing that this resource is located wholly outside of the present APE.

While no cultural resources, meeting the initial threshold of exceeding 50 years in age, were identified within the APE, one resource, the TCC, was identified within the APE. Within the APE, the TCC is approximately 60 feet in width. The proposed project components contacting the TCC will involve small steel pipes which will allow for drawing water from the canal. As the overall TCC exceeds 110 miles in length, the addition of six (6) turnouts (which are notably indistinguishable from existing turnouts) are consistent with numerous existing pipes that exit/enter the TCC, and does not change the function, use or visible appearance of the TCC.

Reclamation has indicated that the TCC was constructed between 1965 and 1980 as part of the Sacramento River Division Canals Unit of Reclamation's Central Valley Project (CVP) to convey irrigation water south from the Red Bluff Diversion Dam through Tehama, Glenn,

and Colusa Counties. The TCC is approximately 110 miles long and terminates in Yolo County approximately 2 miles south of Dunnigan, California. Recording and evaluating the entirety of the TCC is outside the scope of this project.

5. ELIGIBILITY RECOMMENDATIONS

Sites identified within the project area have been evaluated for significance in relation to CEQA significance criteria and eligibility per the National Register of Historic Places. Important cultural resources, per CEQA, are determined in relation to criteria specified in Section 15064.5 of the amended CEQA Guidelines. These criteria suggest that an "important archaeological resource" is one which retains essential integrity of design, materials, workmanship, location and associative context, and which:

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

Important cultural resources, per the National Register of Historic Places, are those prehistoric and historic sites, districts, buildings, structures, and objects, as well as properties with traditional religious or cultural importance to Native Americans, which are listed, or are eligible for listing, on the National Register of Historic Places (NRHP) ("historic properties"), according to the criteria outlined in 36 CFR 60.4. An historic property must possess essential integrity of location, design, workmanship, feeling, and association, and meet at least one of the following criteria:

a) Associated with events which have made significant contributions to the broad patterns of the history of the United States.
b) Associated with the lives of people significant in United States history.
c) Embody the distinctive characteristics of a type, period, or method of construction; or represent the work of a master, or possess high artistic value, or represent a significant and distinguishable entity whose components may lack individual distinction.
d) Has yielded, or is likely to yield, information important in prehistory or history.

With the Amended CEQA Guidelines, CEQA and the NRHP criteria are now quite similar in their consideration of the qualities and attributes of archaeological sites that might render them significant or eligible. As such, Reclamation issued the following language for evaluating the TCC's eligibility.

> For the purposes of the current undertaking, Reclamation is treating the TCC as eligible for the National Register of Historic Places (National Register) under Criterion A as a contributing element of the CVP. The CVP—treated as a historic property by Reclamation—is an extensive network of dams, reservoirs, power plants, and water conveyance systems that cover approximately 400 miles, from northern California near Redding south to near Bakersfield. The TCC is considered significant under the theme of development, construction, and operation of the CVP as a water conveyance component of the CVP that has contributed to northern California's economic and agricultural development and growth.

6. PROJECT EFFECTS

A project may have a significant impact or adverse effect on significant historical resources/unique archaeological resources/historic properties if the project will or could result in the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance or values of the historic resource would be materially impaired. Actions that would materially impair a cultural resource or historic property are actions that would alter or diminish those attributes of a site that qualify the site for inclusion in State site registers or the National Register of Historic Places.

> Reclamation applied the criteria of adverse effect and determined that measures to install the new pipeline within the existing canal bank will not alter any of the characteristics that would make the TCC eligible for National Register listing. Access to the project will occur via existing roads without improvement, and all proposed construction activities are limited to an area previously disturbed and constructed for the TCC. The proposed modifications and upgrades are consistent with existing pipelines along the TCC, resulting in no other changes to the TCC or the larger CVP. Reclamation finds no adverse effect to historic properties for this undertaking pursuant to 36 CFR § 800.5(b).

Based on the specific findings detailed above under ***Cultural Resources Survey and Cultural Inventory***, aside from the TCC, no significant historical resources/unique archaeological resources/historic properties are present within the project area and no historic properties/significant historical resources/unique archaeological resources will be adversely affected by the undertaking, as presently proposed.

7. NATIVE AMERICAN CONSULTATION

Consultation was undertaken with the Native American Heritage Commission (NAHC) concerning sacred land listings for the property. An information request letter was delivered to the NAHC on December 19, 2022. The NAHC responded on January 15, 2023, indicating that a search of their Sacred Lands File was negative. The consultation list from the NAHC included the following:

- Glenda Nelson, Estom Yumeka Maidu Tribe of the Enterprise Rancheria.
- Ronald Kirk, Grindstone Indian Rancheria of Wintun-Wailaki.
- Andrew Alejandre, Paskenta Band of Nomlaki Indians.
- Dennis Ramirez, Mechoopda Indian Tribe.
- Benjamin Clark and Guy Taylor, Mooretown Rancheria of Maidu Indians.
- Daniel Gomez and Clifford Mota, Cachil DeHe Band of Indians of the Colusa Indian Community.
- Beniakem Cromwell, Robinson Rancheria of Pomo Indians.

The NAHC findings will be provided to the Bureau of Reclamation, the agency which will engage in formal consultation in compliance with Section 106 of the National Historic Preservation Act.

8. PROJECT SUMMARY

This report details the results of a cultural resources inventory survey intended to support a finding by the Bureau of Reclamation (USBR) for the Orland-Artois Water District (OAWD) Annexation and Infrastructure Project. The project is located throughout eastern Glenn County, California.

The proposed Annexation and Infrastructure project will annex a number of properties into the OAWD service area and will further develop infrastructure for water supply for those properties. The project components, which are equivalent to the areas of potential effects (APE), include: seven (7) turnouts (with pumps) from the Tehama Colusa Canal; twenty-four (24) new farm turnout locations; two (2) new pump stations (approximate capacity of 30 cubic-feet-per-second) on existing pipelines; approximately 8-miles of pipeline; and staging areas. All proposed pipelines are located within easements with a typical width of 30-feet in width. In some areas, easements will be 15-feet in width in order to avoid built environment features. The maximum depth of ground disturbance for pipelines and farm turnouts would be nine (9) feet, while the booster pump stations would have a maximum depth of eighteen 18) feet.

Existing records at the Northeastern Information Center document that approximately 10% of the present APE had been subjected to previous archaeological investigation, and that one cultural resource (P-11-670) had been documented within the APE. Field inspection of this resource confirmed that its location was actually west of the present APE, and its plotting by the NEIC was simply the result of map scale. As well, the present effort included an intensive-level pedestrian survey. No prehistoric cultural resources were identified during the pedestrian survey. The Tehama Colusa Canal (TCC) was identified within the APE. While not yet achieving the 50-year old threshold necessary for recordation and evaluation, Reclamation indicated that the TCC would be eligible for inclusion in the NRHP as a contributing element of the CVP, itself an NRHP eligible property. Reclamation further determined that project components interfacing with the TCC would not constitute an adverse effect to an historic property.

Consultation was undertaken with the Native American Heritage Commission (NAHC) concerning sacred land listings for the property. An information request letter was delivered to the NAHC on April 26, 2022. The NAHC responded on January 15, 2023, indicating that a search of their Sacred Lands File was negative. The NAHC findings will be provided to the Bureau of Reclamation, the agency which will engage in formal consultation in compliance with Section 106 of the National Historic Preservation Act.

The probability of encountering buried archaeological sites within the APE is low. This conclusion is derived in part from the observed soil matrices which comprise the exposed soil cuts associated with construction of the TCC, and to the degree of disturbance, associated with past ground disturbance. Evidence of ground disturbance assisted in determining whether or not subsurface resources were present within the APE. Overall, the soil types present and contemporary disturbance would warrant a finding of low probability for encountering buried archaeological sites.

Based on the absence of significant historical resources/unique archaeological resources/historic properties within the APE, archaeological clearance is recommended for the project/undertaking as presently proposed, although the following general provisions are considered appropriate:

1. ***Consultation in the event of inadvertent discovery of human remains***: In the event that human remains are inadvertently encountered during any project-associated ground-disturbing activity or at any time subsequently, State law shall be followed, which includes but is not limited to immediately contacting the County Coroner's office upon any discovery of human remains.

2. ***Consultation in the event of inadvertent discovery of cultural material***: The present evaluation and recommendations are based on the findings of an inventory-level surface survey only. There is always the possibility that important unidentified cultural materials could be encountered on or below the surface during the course of future repair activities. This possibility is particularly relevant considering the constraints generally to archaeological field survey, and particularly where past ground disturbance activities (e.g., flooding, canal trenching, orchard development, etc.) have partially obscured historic ground surface visibility, as in the present case. In the event of an inadvertent discovery of previously unidentified cultural material, archaeological consultation should be sought immediately.

3. ***Consultation in the event of inadvertent discovery of cultural material on Reclamation lands***: In the event that previously unidentified cultural resources are discovered as a result of this undertaking, the nearby construction activities would cease and Reclamation Cultural Resource Staff would be notified and consulted on how to proceed. Reclamation would follow the procedures for post-review discoveries on Federal lands as described in the regulations at 36 CFR § 800.13. Work may not continue in the area of the discovery until Reclamation issues a notice to proceed.

4. ***Consultation in the event of inadvertent discovery of human remains on Reclamation lands***: In the event that human remains are identified during the course of the proposed project, all construction activities would cease and a Reclamation Archaeologist would be consulted on how to proceed. Note that all Native American human remains identified on lands owned by the Federal government are subject to the Native American Graves Protection and Repatriation Act (NAGPRA) (25 USC 3001). Under the Native American Graves Protection and Repatriation Act (NAGPRA) (25 USC 3001) and implementing regulations 43 CFR Part 10, Reclamation is responsible for the protection of Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony that are discovered on Reclamation lands. All human remains and potential human remains must be treated with respect and dignity at all times. In the event that suspected human remains are discovered during proposed project activity on Reclamation land, all activities in the immediate area will cease, and appropriate precautions will be taken to protect the remains and any associated cultural items from further disturbance. Reclamation will follow the procedures outlined in 43 CFR § 10.4 Inadvertent Discoveries. The Reclamation Region 10 Regional Environmental Officer will be immediately notified by telephone and will take responsibly for the discovery by contacting the appropriate law enforcement and Reclamation officials. Within three (3) working days of confirmation of the discovery [see 43 CFR Part 10.4(d)(1)(iii)], the Regional Cultural Resource Officer will ensure that Indian tribes likely to be affiliated with the discovered human remains (e.g., lineal descendant, culturally affiliated Indian tribe, Indian tribe with other cultural relationship, and Indian tribe that aboriginally occupied area) are notified by telephone or in person, with written confirmation. Treatment and handling of the remains will be determined through consultation between Reclamation and consulting tribes. Project implementation in the vicinity of the discovery would not resume until Reclamation complies with the 43 CFR § 10 regulations and provides notification to proceed.

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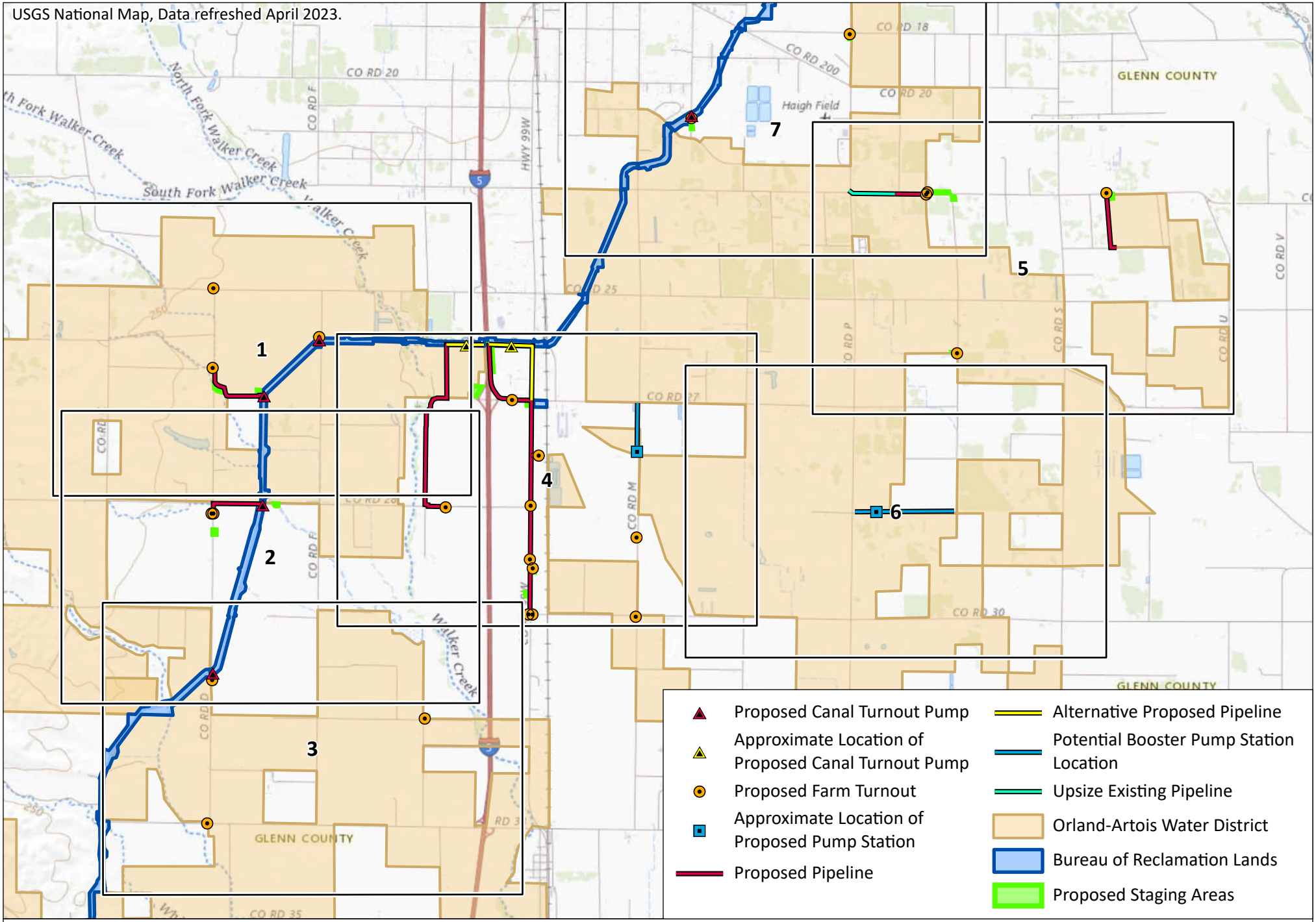
CULTURAL RESOURCES INVENTORY SURVEY

Orland-Artois Water District (OAWD)
Annexation and Infrastructure Project
Glenn County, California.

ATTACHMENTS

- Project Location Maps Package
- APE Maps Package
- Photographs of Select APE Components
- Records Search from Northeast Information Center
- Information request letter to the Native American Heritage Commission (NAHC)
- Response from the NAHC



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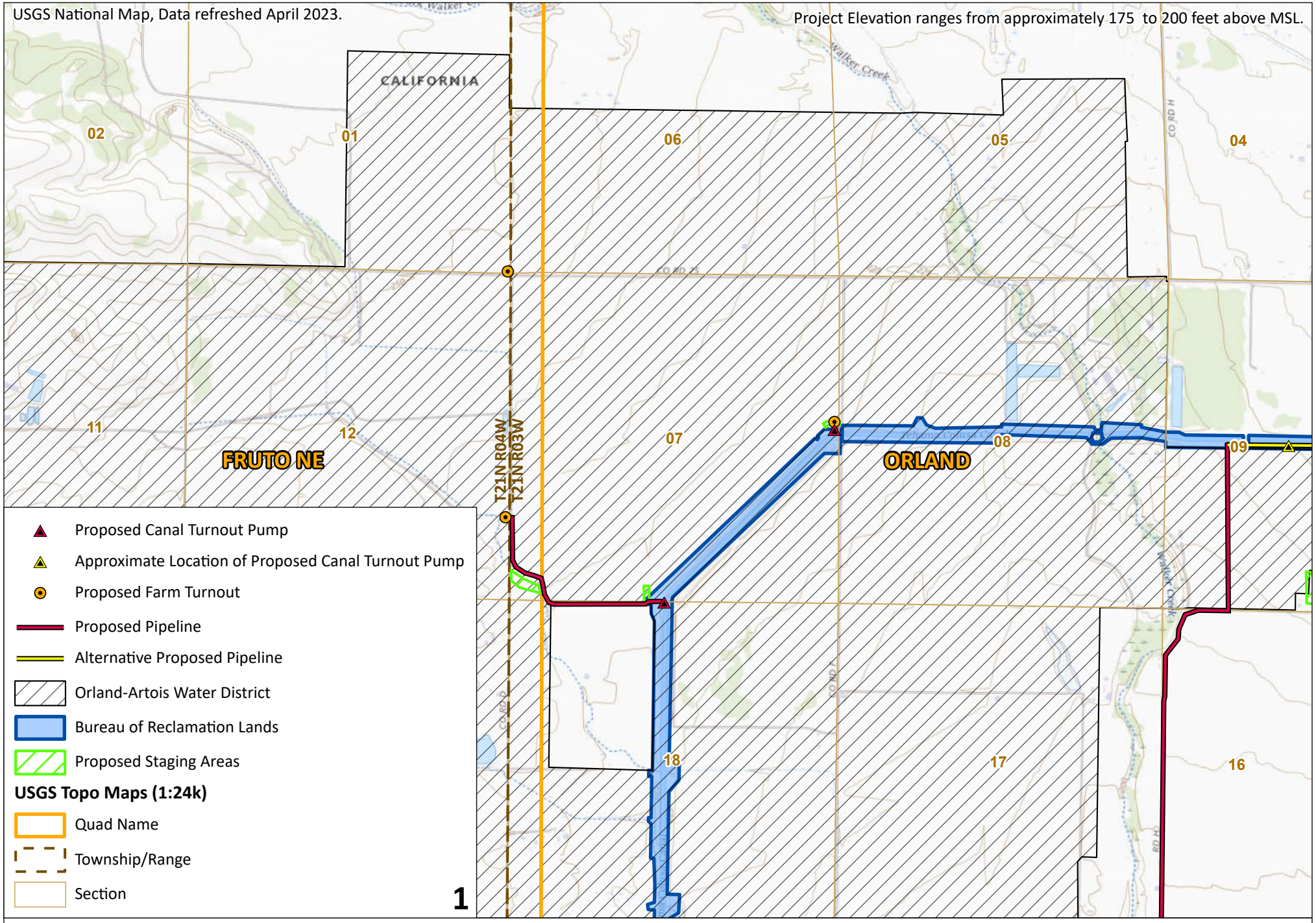

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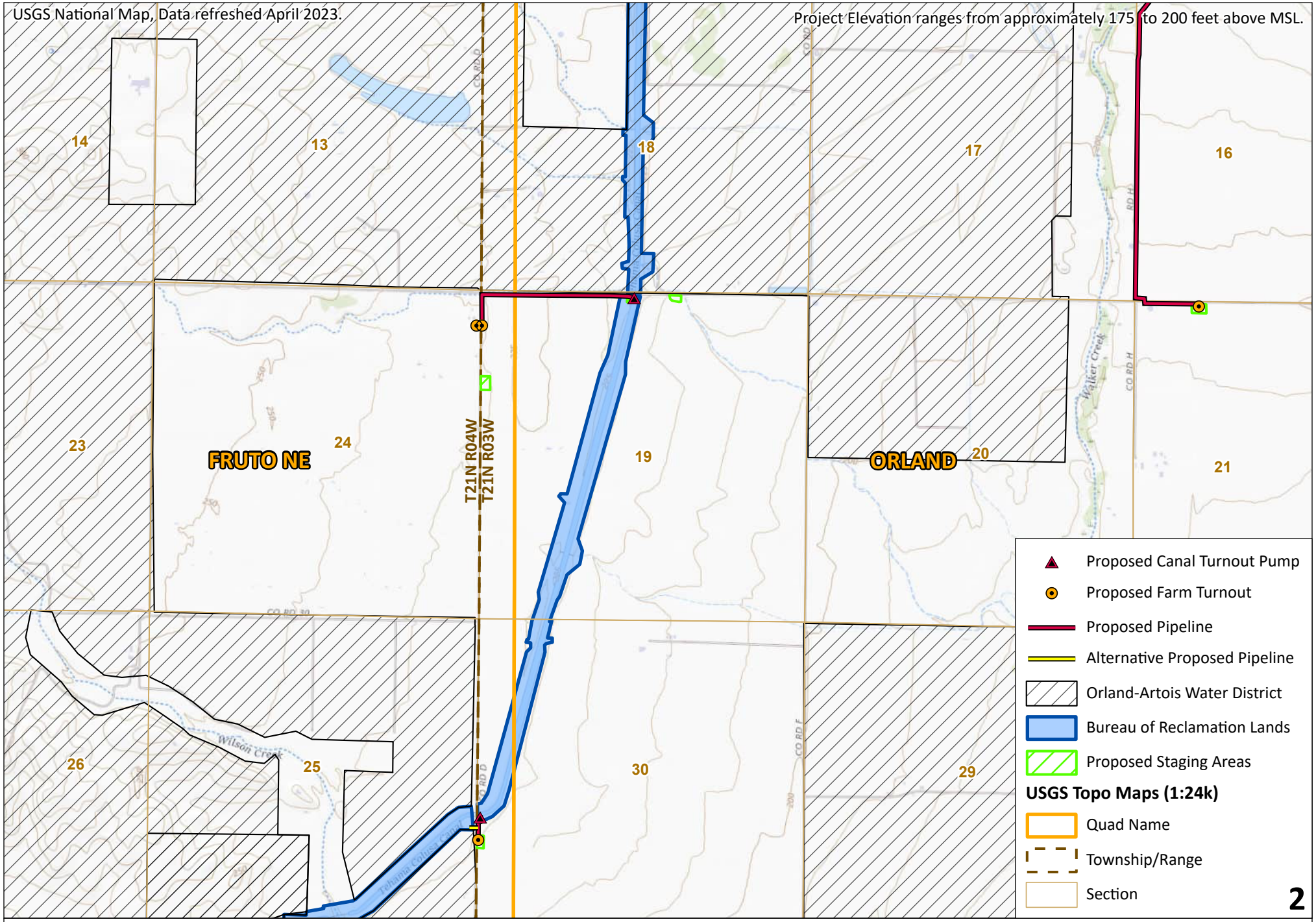

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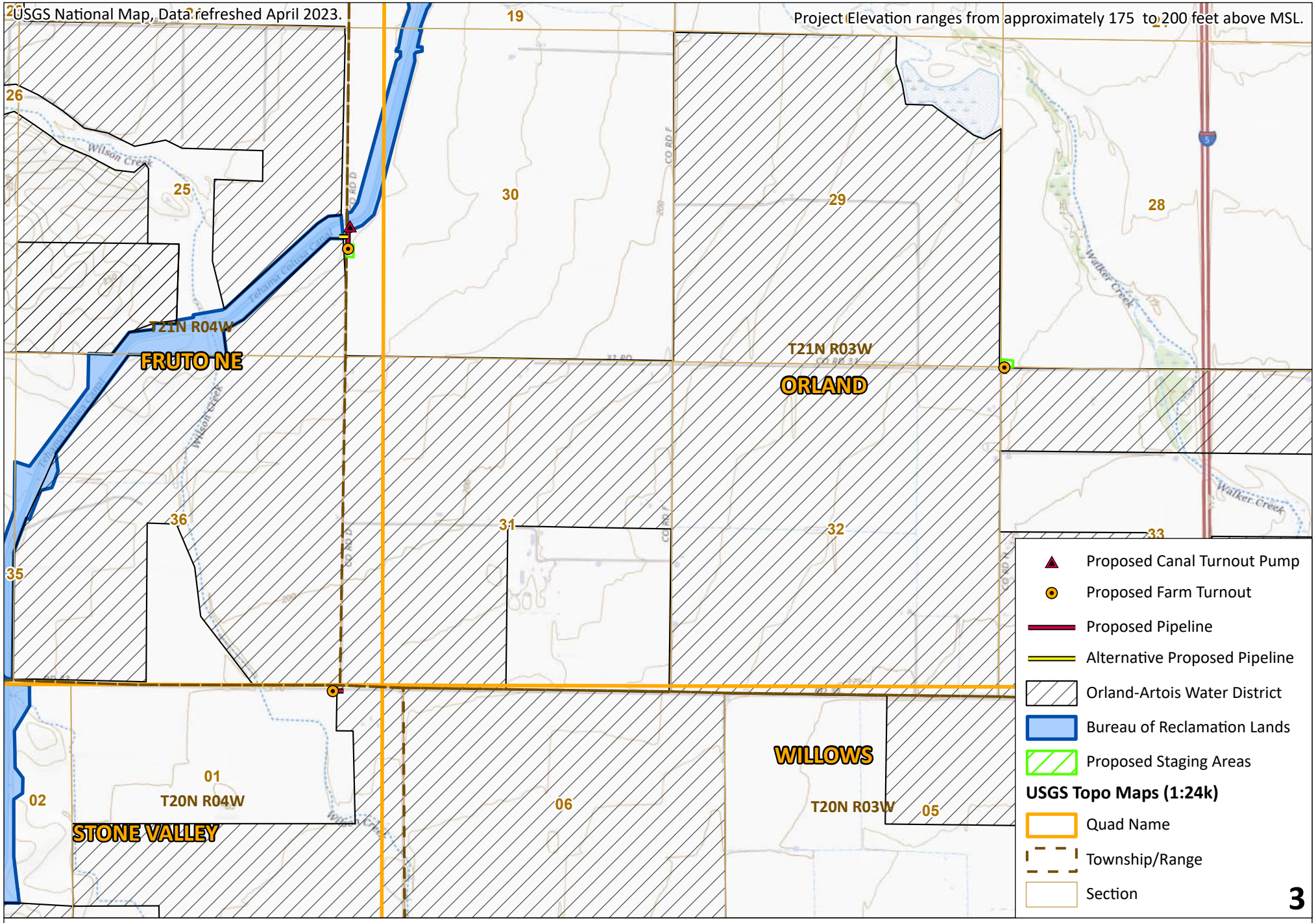

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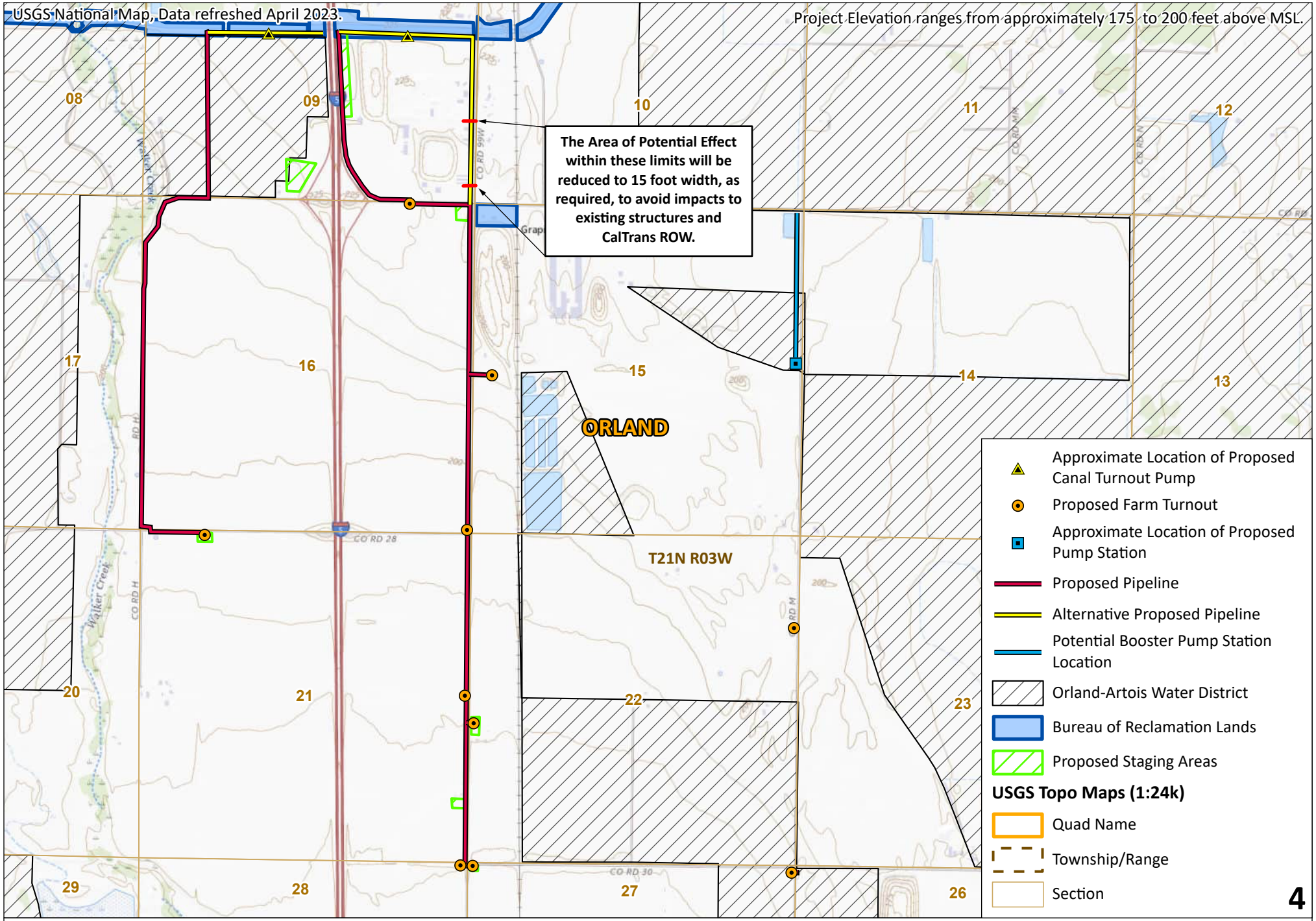

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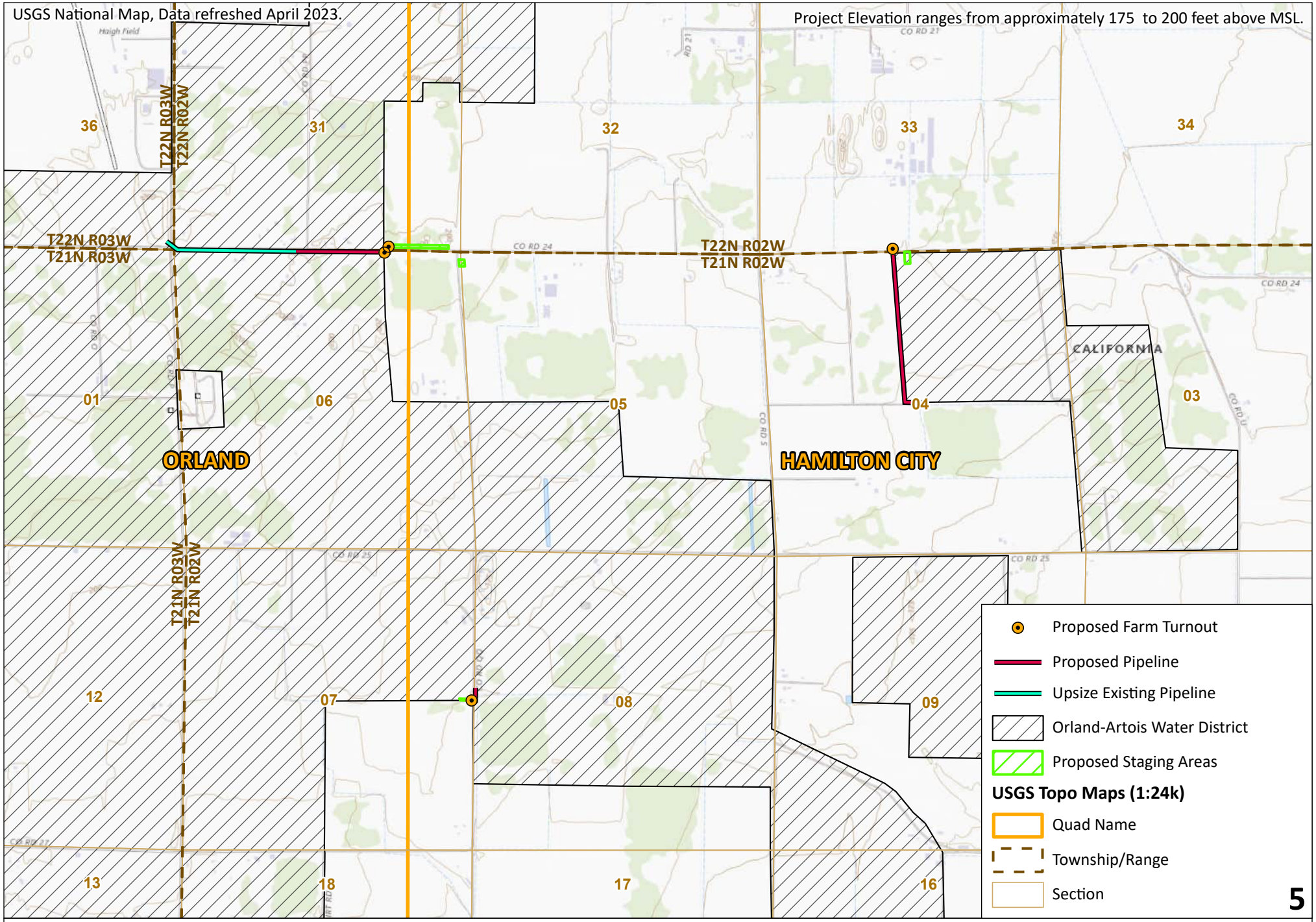

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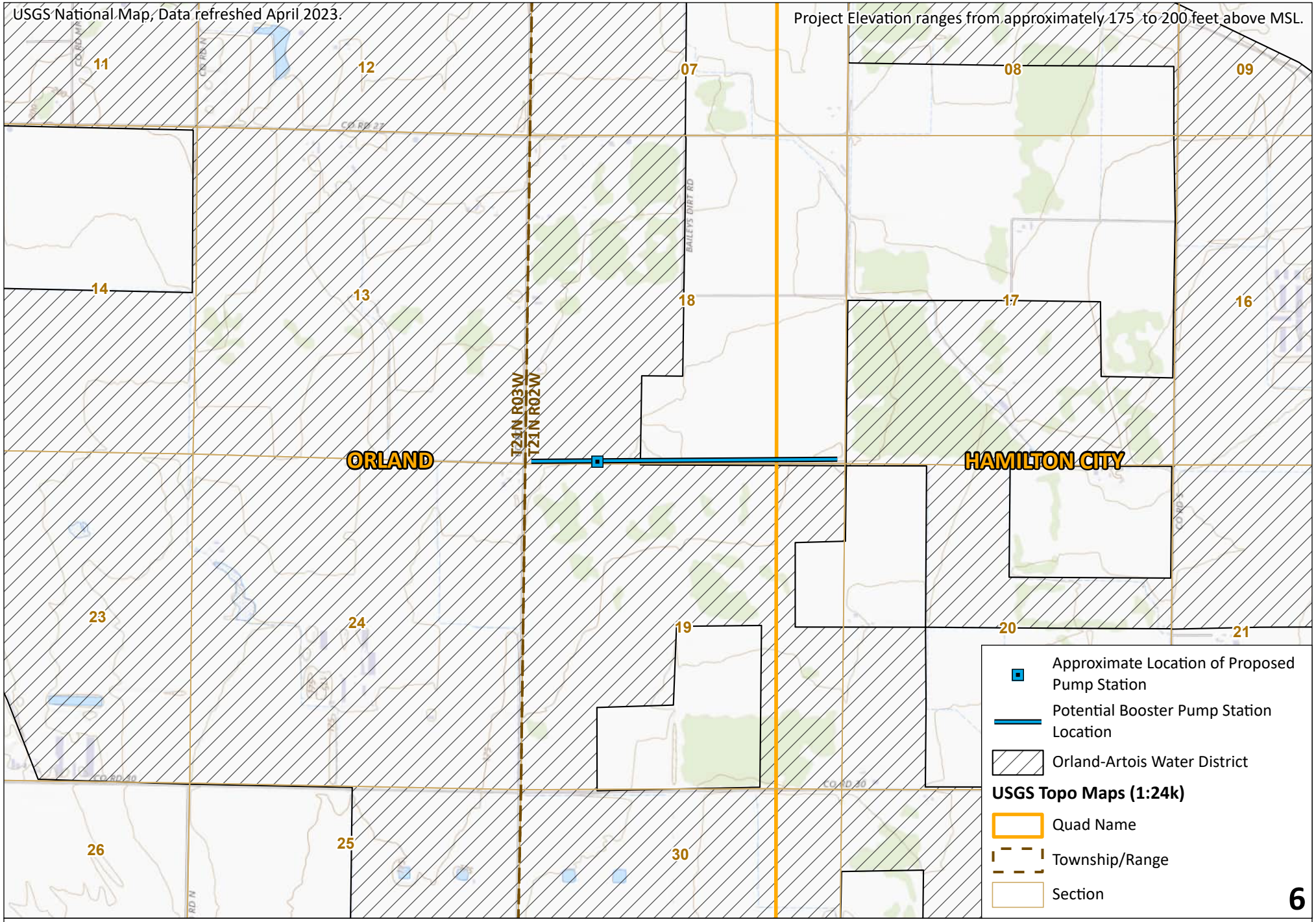

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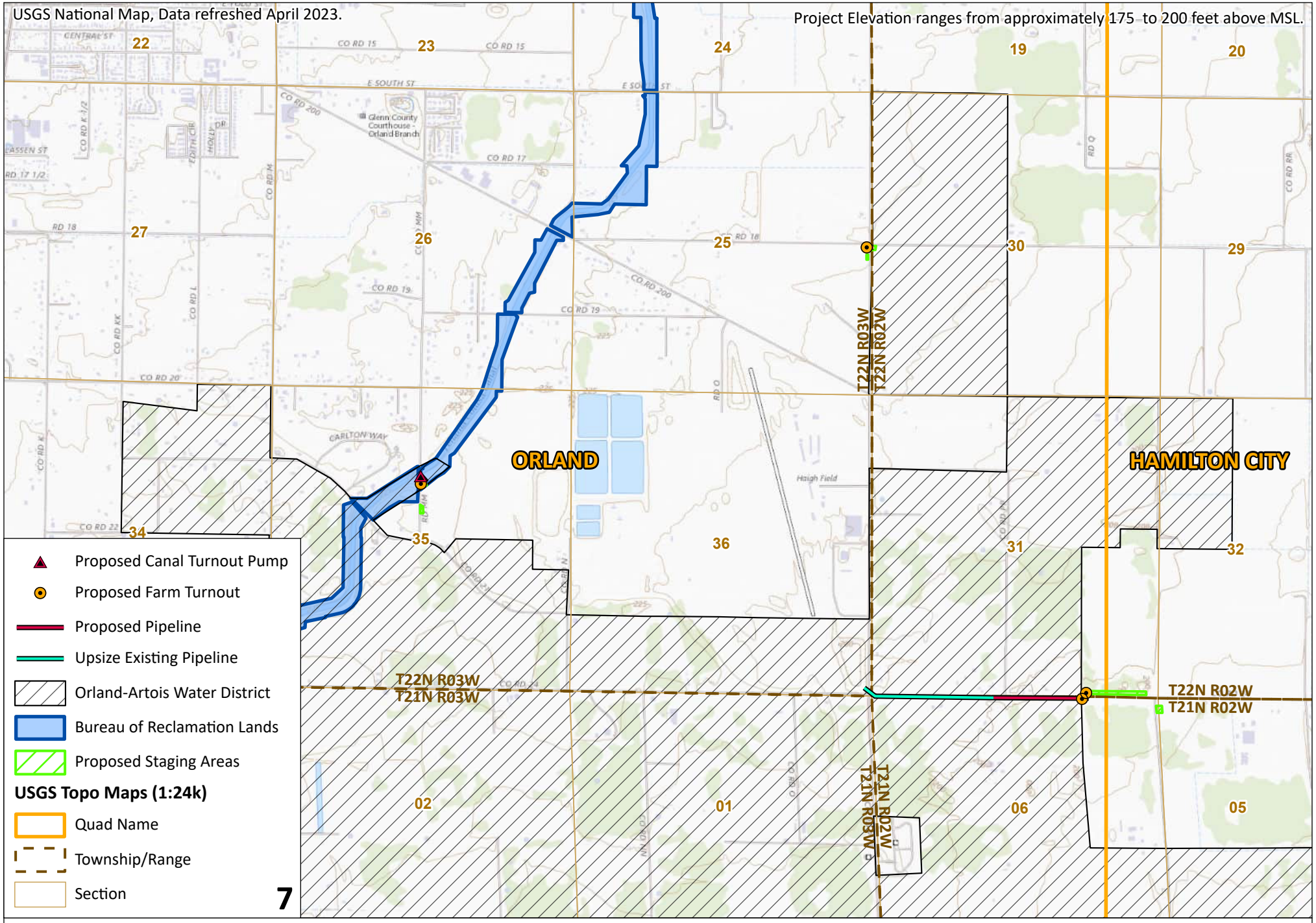

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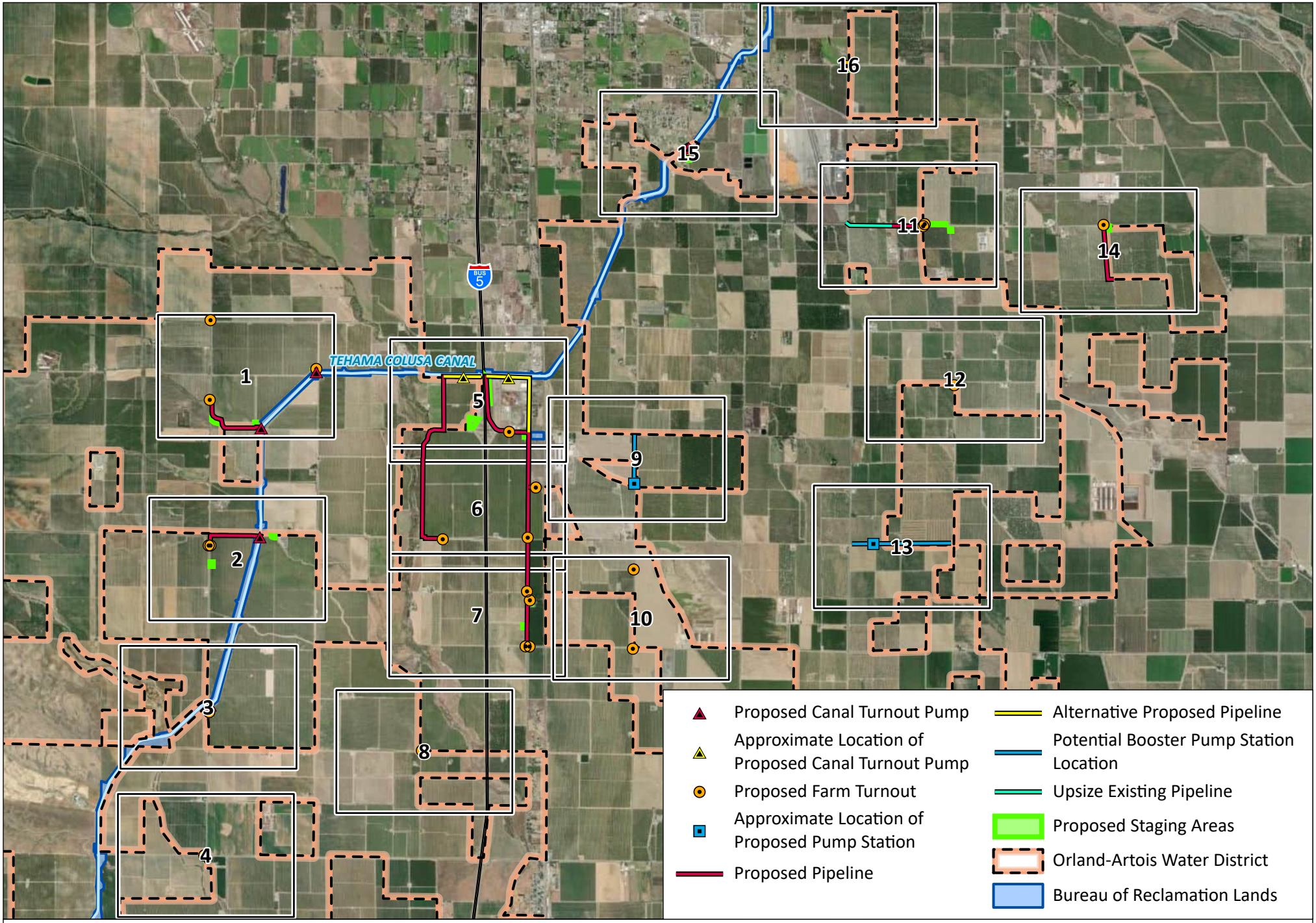

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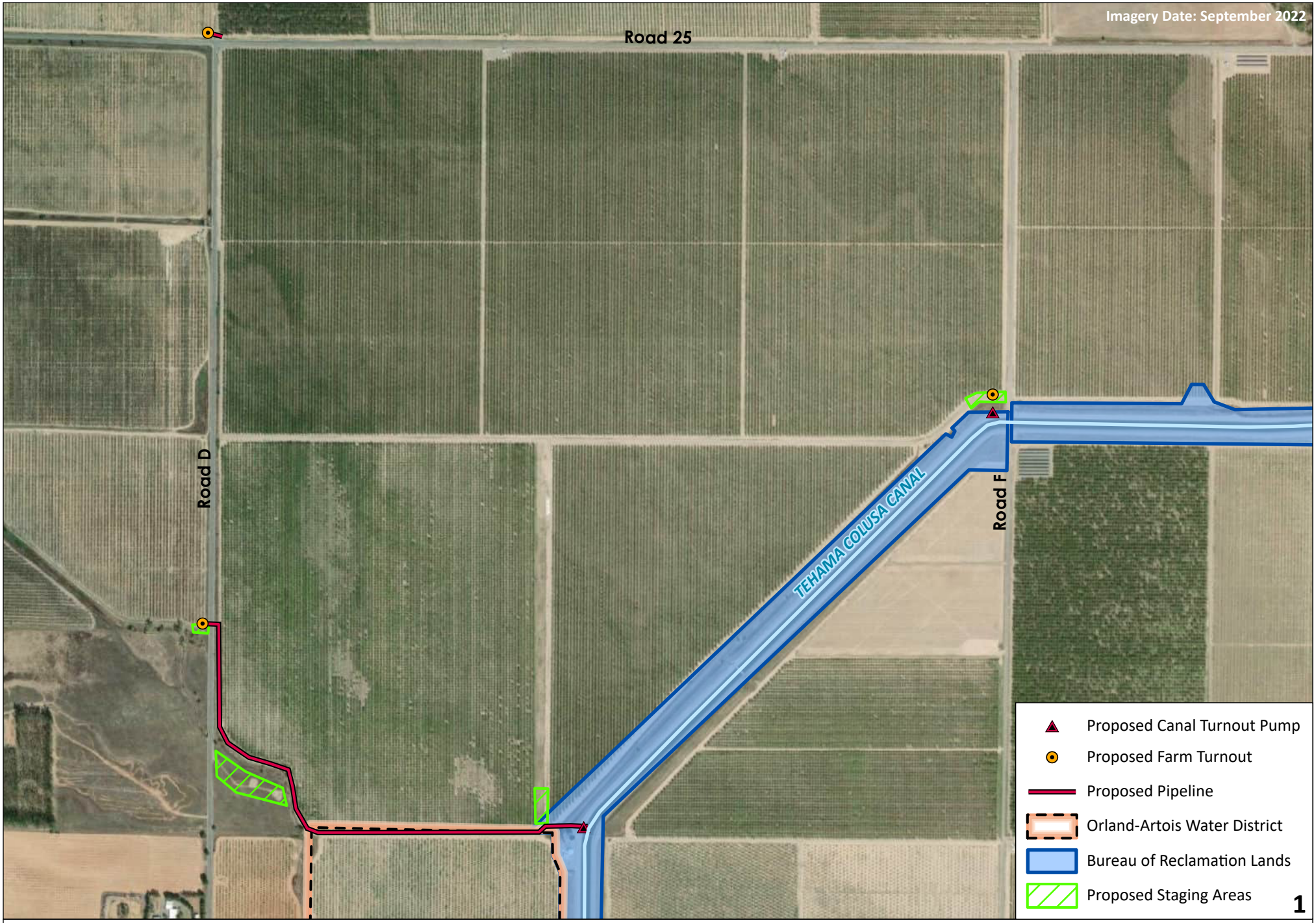

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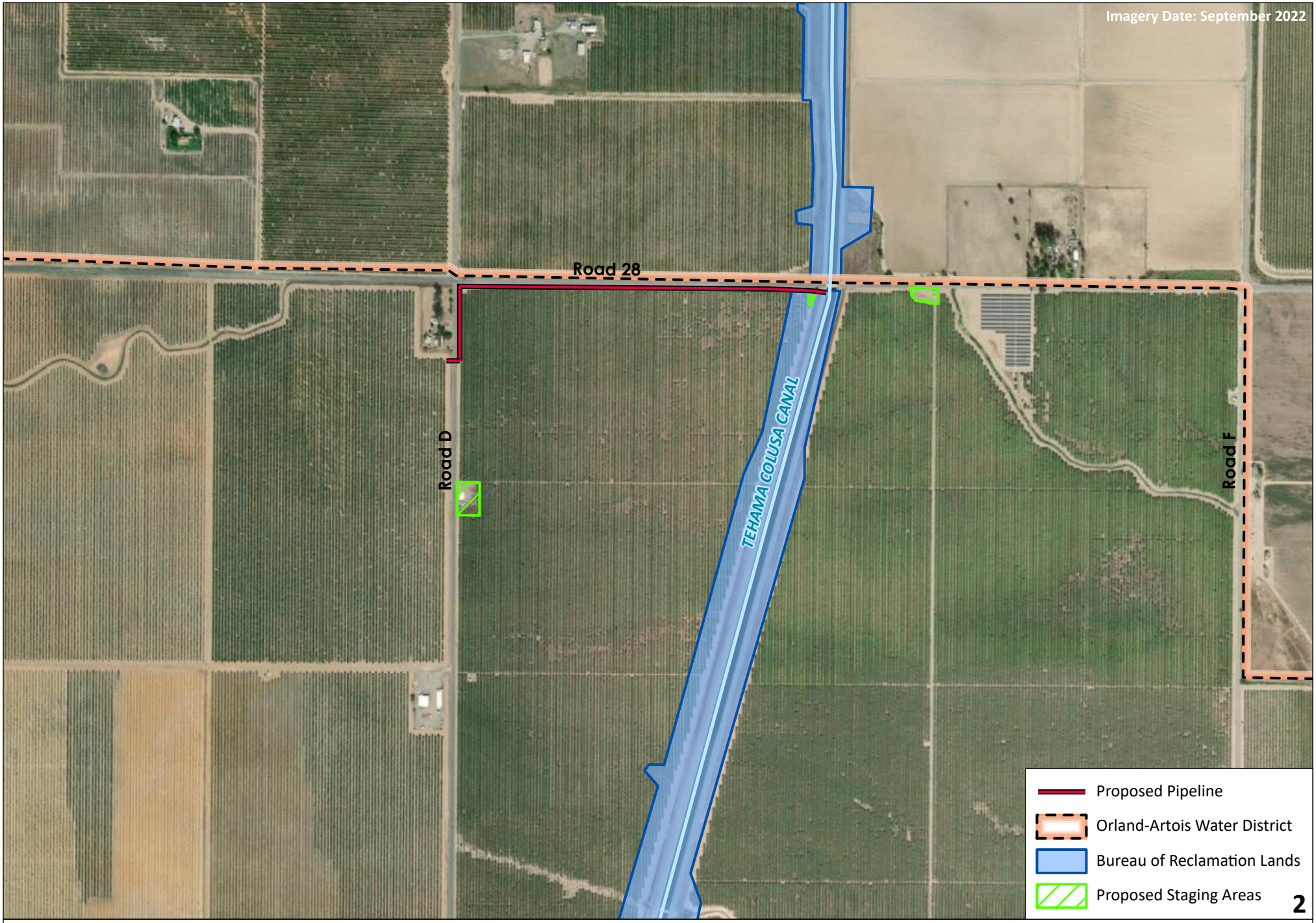

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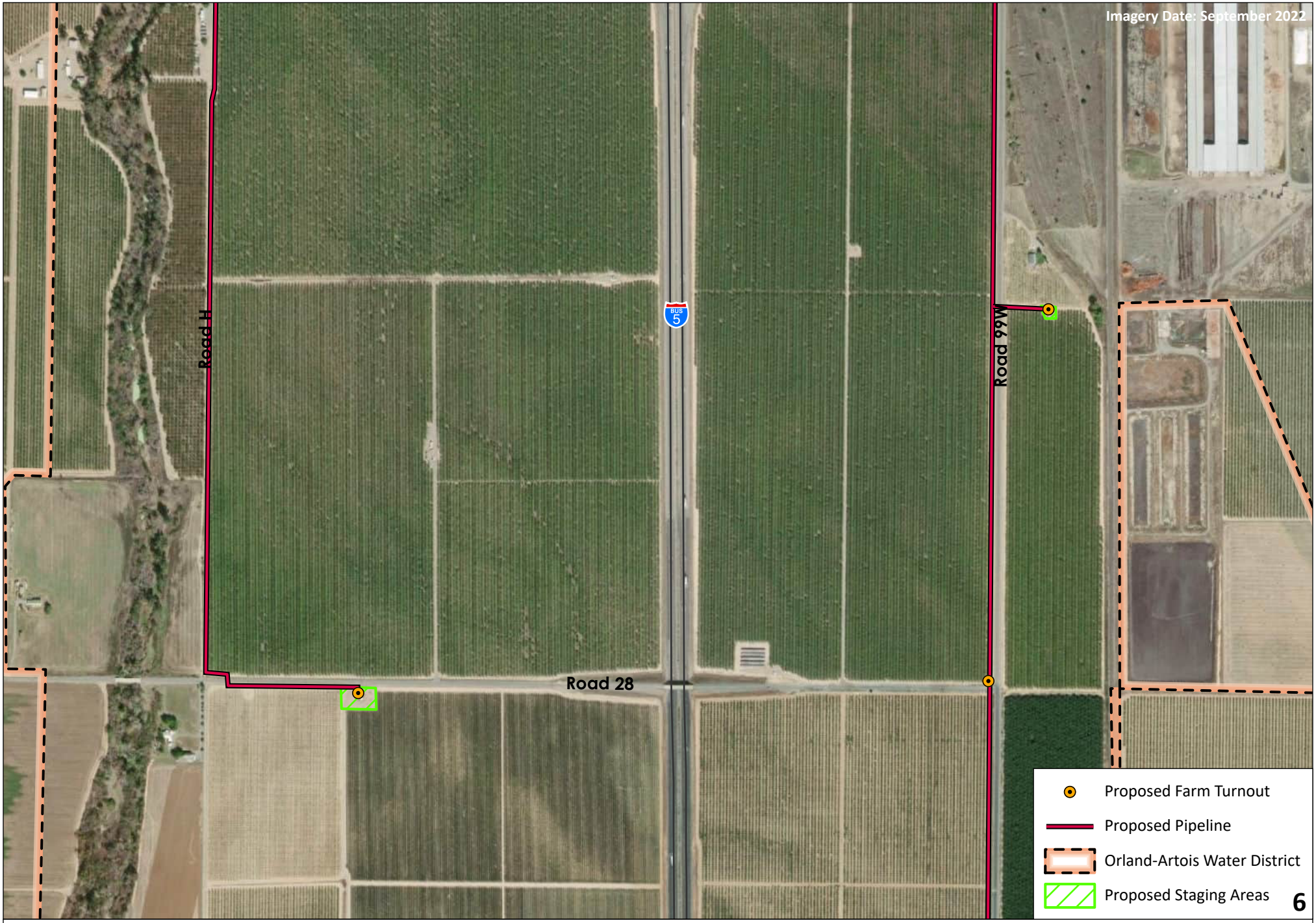

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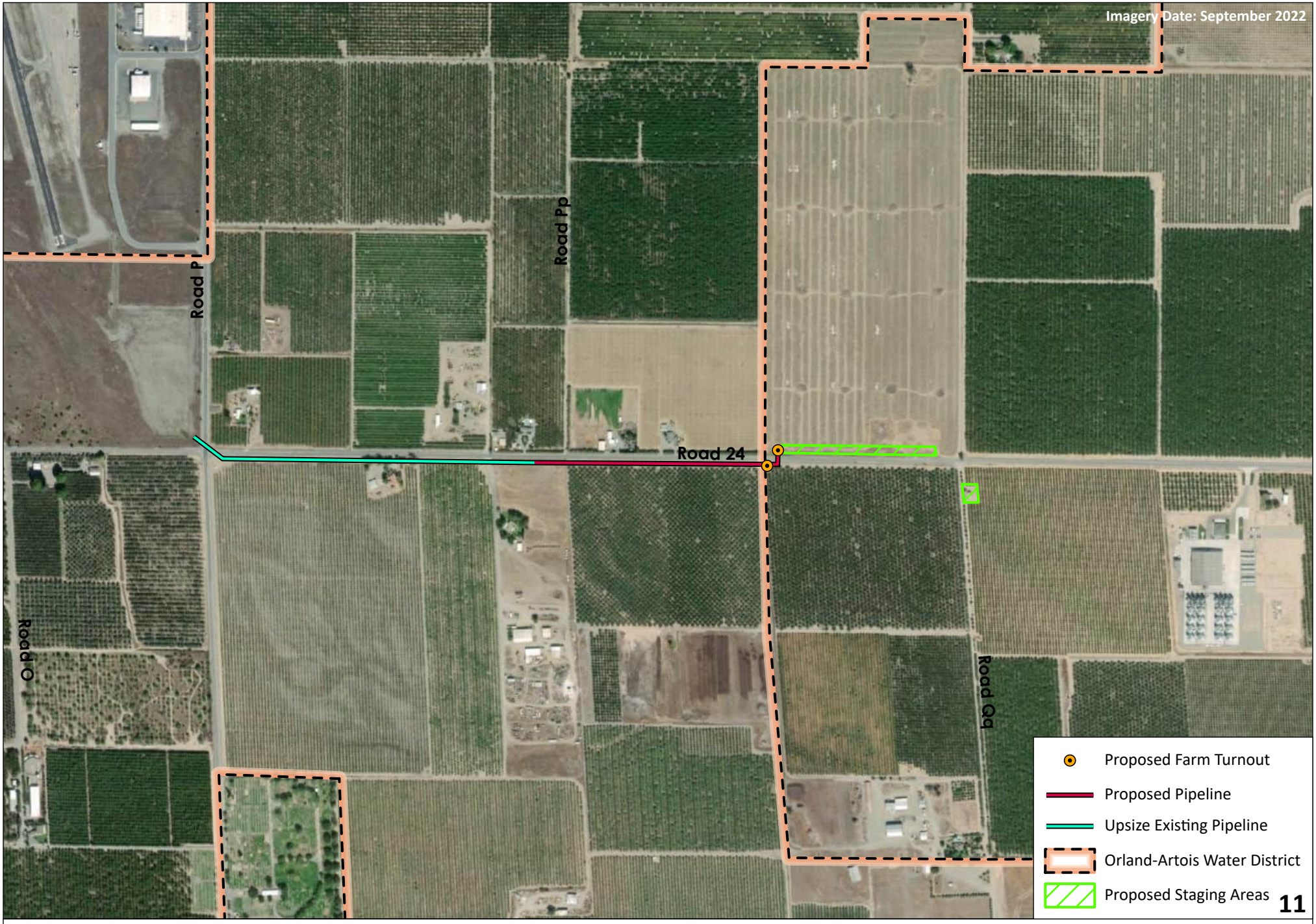

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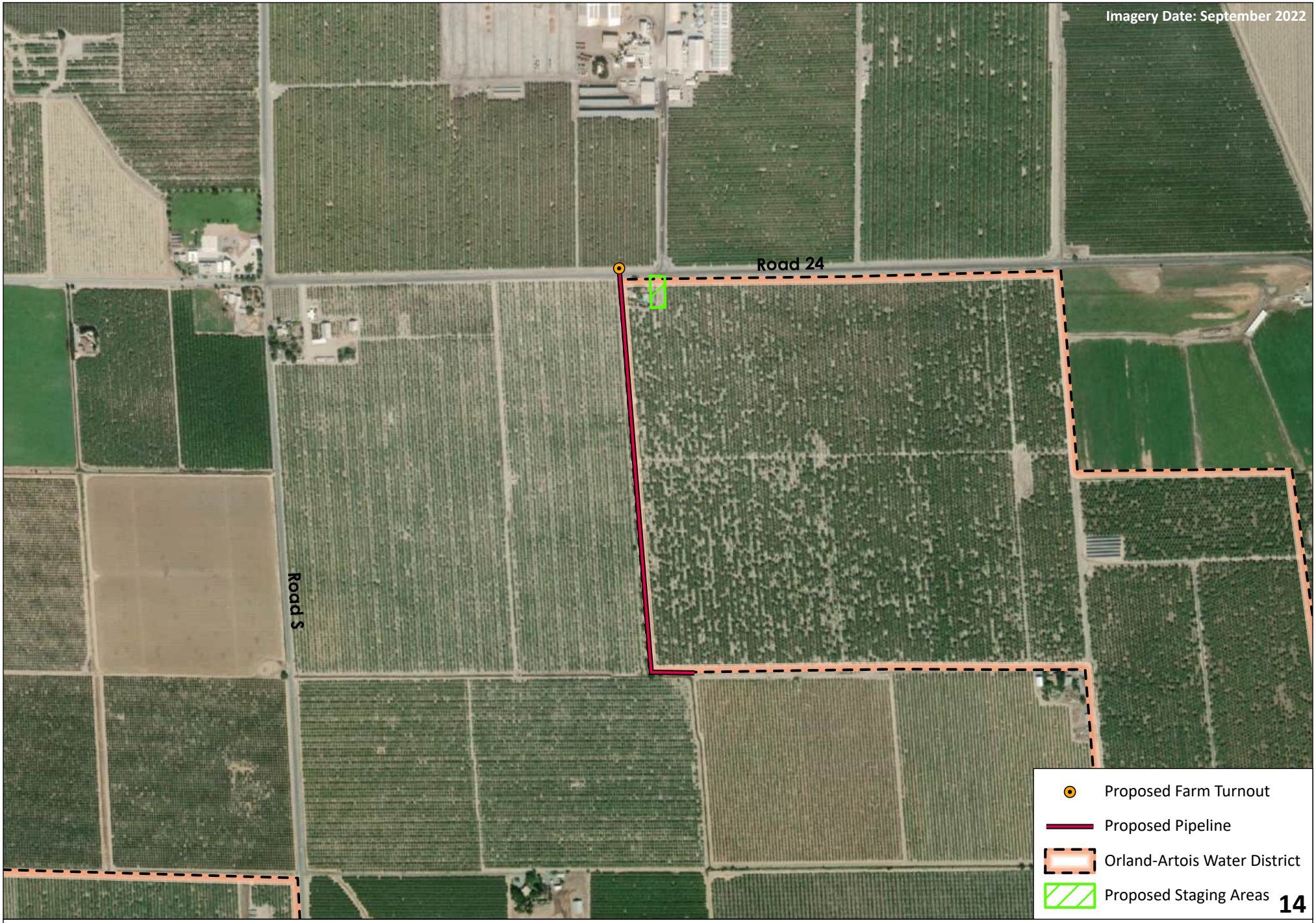

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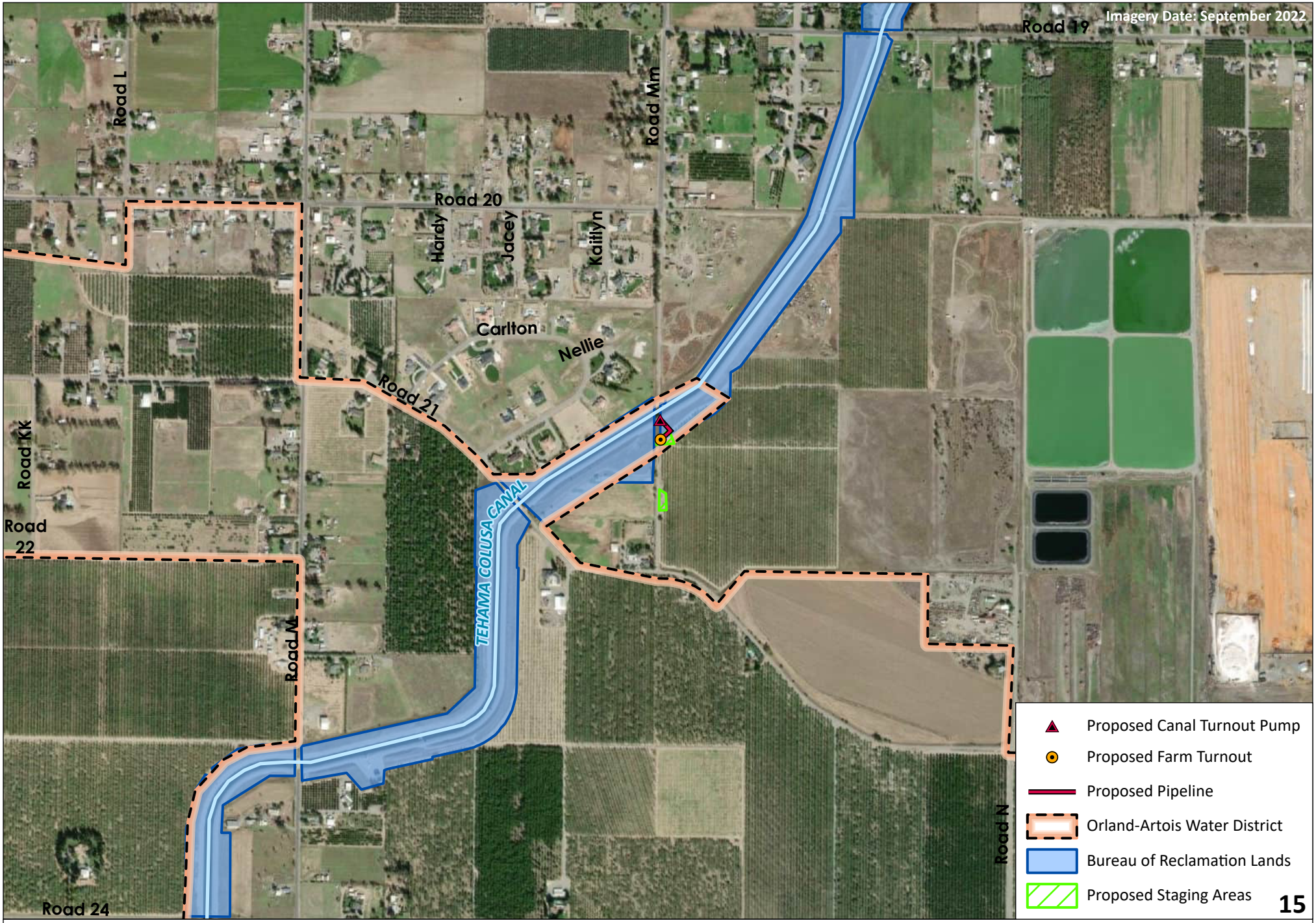

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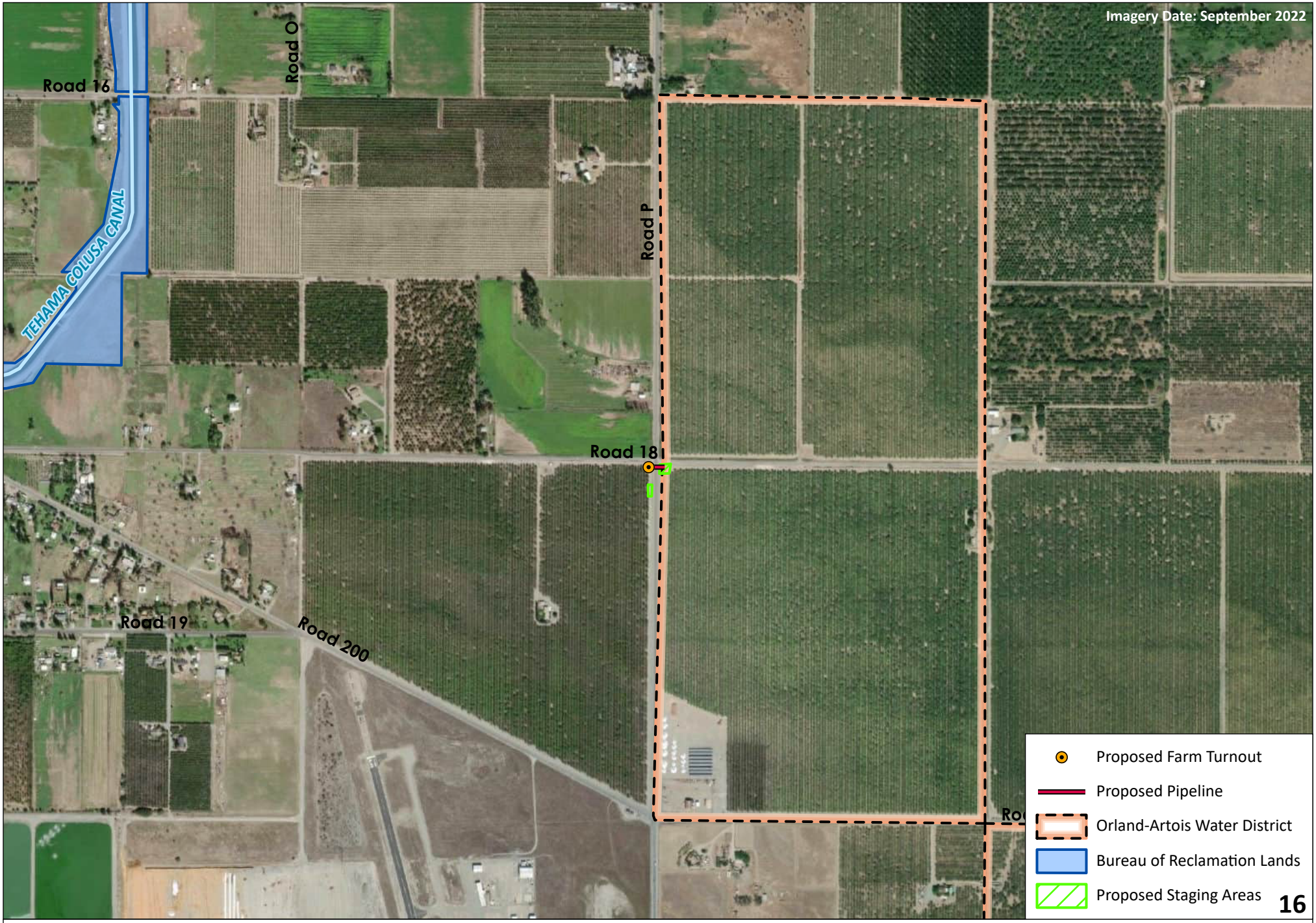

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SAMPLE PHOTOGRAPHS

Map 1, Contemporary OAWD Infrastructure

Map 2, Proposed Pipeline, Orchard

Map 1, Staging Area

Map 3, Typical TCC Turnout Setting

Map 5, Staging Area

Map 6, Resource P-11-670 adjacent to west side of APE

Map 10, Intensive Disturbance to Proposed Pipeline Corridor

Map 8, Typical Pipeline Connection