



KAWEAH DELTA WATER CONSERVATION DISTRICT

## **MATHEWS RECHARGE BASIN**

## **DRAFT INITIAL STUDY/MITIGATED NEGATIVE DECLARATION**

**TULARE COUNTY  
APRIL 2025**

**PREPARED FOR:**

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- Appendix A. CalEEMod Output Files
- Appendix B. Biological Resources Evaluation
- Appendix C. Phase I Cultural Resources Assessment
- Appendix D. Kaweah MLRP Vegetation Outline

## ACRONYMS & ABBREVIATIONS

AB	Assembly Bill
APE	Area of Potential Effect
BMP	Best Management Practices
BPS	Best Performance Standards
CalEEMod	California Emissions Estimator Modeling (software)
CARB	California Air Resources Board
CCAA	California Clean Air Act
CDFW	California Fish and Wildlife
CEQA	California Environmental Quality Act
CH <sub>4</sub>	Methane
CHRIS	California Historical Resources Information System
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	Carbon monoxide
CO <sub>2</sub>	Carbon dioxide
CO <sub>2</sub> e	Carbon dioxide-equivalents
County	Tulare County
District	Kaweah Delta Water Conservation District
DTSC	Department of Toxic Substances Control
EIR	Environmental Impact Report
FMMP	Farmland Mapping and Monitoring Program
GHG	Greenhouse Gas
GWP	Global Warming Potential
IPaC	U.S. Fish and Wildlife Service's Information for Planning and Consultation system
IS	Initial Study
IS/MND	Initial Study/Mitigated Negative Declaration
KDWCD	Kaweah Delta Water Conservation District
MMRP	Mitigation Monitoring and Reporting Program
MND	Mitigated Negative Declaration
MTCO <sub>2</sub> e	Metric Tons of Carbon Dioxide Equivalent
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
ND	Negative Declaration
NO <sub>2</sub>	Nitrogen dioxide
NO <sub>x</sub>	Nitrogen oxides
O <sub>3</sub>	Ozone
Pb	Lead
PM <sub>10</sub>	particulate matter 10 microns in size
PM <sub>2.5</sub>	particulate matter 2.5 microns in size
ppb	parts per billion
ppm	parts per million
Project	Mathews Recharge Basin Project
ROG	Reactive Organic Gases
RWQCB	Regional Water Quality Control Board
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SO <sub>2</sub>	Sulfur dioxide

SSJVIC----- Southern San Joaquin Valley Information Center  
SR----- State Route  
SWPPP----- Storm Water Pollution Prevention Plan  
SWRCB ----- State Water Resources Control Board  
USACE ----- United States Army Corps of Engineers  
USEPA ----- United States Environmental Protection Agency  
USFWS----- United States Fish and Wildlife Service  
µg/m3 ----- micrograms per cubic meter

# CHAPTER 1 INTRODUCTION

Provost & Pritchard Consulting Group (Provost & Pritchard) has prepared this Initial Study/Mitigated Negative Declaration (IS/MND) on behalf of the Kaweah Delta Water Conservation District (District) to address the environmental effects of the Mathews Recharge Basin Project (Project). This document has been prepared in accordance with the California Environmental Quality Act (CEQA), Public Resources Code Section 21000 et seq. The Kaweah Delta Water Conservation 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](#) discusses 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. Where the Project does not have the potential to significantly impact a given impact 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 impact 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 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 California Emissions Estimator Modeling (CalEEMod) Output Files, Biological Resources Evaluation, Phase I Cultural Resources Assessment, and Kaweah MLRP Vegetation Outline are provided as technical **Appendix A, Appendix B, Appendix C, and Appendix D**, respectively, at the end of this document.

## CHAPTER 2 PROJECT DESCRIPTION

### 2.1 PROJECT BACKGROUND

#### 2.1.1 PROJECT TITLE

Mathews Recharge Basin

#### 2.1.2 LEAD AGENCY NAME AND ADDRESS

Kaweah Delta Water Conservation District  
2975 Farmersville Road  
Farmersville, CA 93223

#### 2.1.3 CONTACT PERSON AND PHONE NUMBER

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General Manager  
(559) 747-5601

#### 2.1.4 CEQA CONSULTANT

Provost & Pritchard Consulting Group  
Ryan McKelvey, Environmental Project Manager  
(559) 449-2700

#### 2.1.5 PROJECT LOCATION

The Project is located in Tulare County, California, approximately 192 miles southeast of Sacramento and 65 miles north of Bakersfield (see [Figure 2-1](#) and [Figure 2-2](#)). The Project site is located approximately on Assessor's Parcel Number 078-110-14. The centroid of the Project site is 36° 22' 04.47" N, 119° 18' 01.53" W.

#### 2.1.6 GENERAL PLAN DESIGNATION AND ZONING

Table 2-1: General Plan Designation and Zoning

Project Area	General Plan Designation	Zoning District
ONSITE	Rural Valley Lands Plan – Agriculture	AE-20 (Agriculture, 20-acre minimum) AE-40 (Agriculture, 40-acre minimum)
ADJACENT LANDS	Rural Valley Lands Plan – Agriculture, Residential, Conservation	AE-20, AE-40, R-A (Rural Residential)

## 2.1.7 DESCRIPTION OF THE PROJECT

### 2.1.7.1 PROJECT BACKGROUND AND PURPOSE

The Mathews Ditch Company (MDC) is a private agricultural irrigation company located in Tulare County. MDC holds pre-1914 water rights to the Kaweah River.<sup>1</sup> The quantity of water the MDC sees from the Kaweah River fluctuates based on the hydrological year. The St. John's River is a distributary of the Kaweah River. The St. John's River begins at the McKay's Point dam, located approximately one mile west of the community of Lemon Cove in Tulare County. The MDC uses its surface water rights for private farmland irrigation and groundwater recharge.

The MDC has been preliminarily selected for grant funding through the Multi-benefit Land Repurposing Program (MLRP) with the Department of Conservation (DOC) for the development of a recharge basin, a turnout facility, and conservation space.

### 2.1.7.2 PROJECT DESCRIPTION

The MDC is proposing a recharge project located in Tulare County adjacent to the St. John's River on the north side of the City of Visalia. The Project includes construction of a multi cell recharge basin facility on an approximately 100-acre site with delivery from the St. John's River. The Project would assist the MDC in expanding its groundwater recharge efforts in response to the 2014 Sustainable Groundwater Management Act (SGMA). The Project would include a turnout and pump structure with a capacity for approximately 50 cubic feet per second. The proposed turnout facility would allow MDC to divert surface water from the St. John's River into the proposed basin area to increase groundwater storage. The proposed facility would consist of cast-in-place concrete structure, control gate(s), trash rack, and related appurtenances from the north bank of the St. John's River to divert to the proposed basin cells. The turnout structure would connect to an inlet structure approximately 300 linear feet (LF) from the St. John's River in a proposed distribution channel through reinforced concrete piping, equipped with a metered connection. The diversion structure excavation depth would be up to 15 feet below ground surface. Approximately six (6) inter-basin connection structures would also be constructed to connect the distribution channel to the proposed basin cells. Each connection would be equipped with two structures (delivery channel and basin cell), rip rap, and approximately 90 LF of piping. The Project would also include conservation space area that would be pedestrian accessible. Conservation space would be in the form of terraced grading within the basin cells with flatter side slopes (i.e. 6:1 or flatter) to facilitate plantings for native habitats and provide varying water depths such as areas with 3 feet of water depth, areas with 1.5 feet, and areas with 6-9 inches of water depth. Native habitat plantings would be in accordance with the recommended species outlined in the Kaweah MLRP Vegetation Outline document found in [Appendix D](#). There would also be graded dirt walking paths around and between the basin cells. The proposed facilities would be owned and operated by MDC.

Construction would include equipment mobilization, excavation of earthwork for the recharge basin cells, construction of basin perimeter berms and grading on the outer portion of the berms for the purpose of providing pedestrian-accessible habitat conservation space. The Project site would contain temporary staging areas for construction equipment and material storage during the construction effort. Basin components could include constructing ponds/cells within the basin, as well as performance testing and demobilization. Excavation material would be used on site for berm construction along the perimeter of the basin and between each proposed cell. Any excess material would be exported off site. It is anticipated that contractors would take the export material to their construction projects as needed. New berm

---

<sup>1</sup> An appropriative water right that was acquired before 1914 is called a pre-1914 appropriative water right. Under a pre-1914 right, a water right permit is not needed unless the amount of water used has increase post 1914.



construction would not exceed six feet in height, measured from the exterior toe to the top of new berm. The maximum depth of ground disturbance for the basin would be as much as nine (9) feet.

Through the improvements of this proposed multi-cell recharge basin, it is anticipated to recharge approximately 1,900 acre-feet (AF) in years when water is available. This is derived by an estimated recharge rate of 0.5 AF per acre across approximately 75 acres of wetted area. Assuming surplus water is available for approximately 50 days equates to the approximate 1,900 AF recharged. 50 days is the average annual amount of surplus surface water availability on the Kaweah and St. John's River system.

#### **2.1.7.3 CONSTRUCTION SCHEDULE**

Construction of the Project is anticipated to be completed within six months. Generally, construction would occur between the hours of 7am and 7pm, Monday through Saturday, excluding holidays.

#### **2.1.7.4 EQUIPMENT**

Construction equipment would likely include the following equipment used during construction:

- Excavators,
- Backhoes,
- Graders,
- Skid steers,
- Loaders,
- Hauling trucks,
- Scrapers,
- Compactors
- D9 dozer,
- Large tractor and large discing unit,
- Water trucks supplying water for dust control and conditioning soil for compaction, and
- Large watercannon and hoses

#### **2.1.7.5 OPERATION AND MAINTENANCE**

The operation and maintenance would be consistent with MDC's other similar facilities in that groundwater conditions would be monitored to minimize negative impacts on the surrounding areas (such as nearby wells, crops, and septic systems). Monitoring would take place, at a minimum, twice per year corresponding with season highs in the Spring and seasonal lows in the Fall.

### **2.1.8 OTHER PUBLIC AGENCIES WHOSE APPROVAL MAY BE REQUIRED**

- United States Army Corps of Engineers
- California Department of Fish & Wildlife
- State Water Resources Control Board

### **2.1.9 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 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 will be made.

The Kaweah Delta Water Conservation District (District) has not received any written correspondence from a Tribe pursuant to Public Resources Code Section 21080.3.1 requesting notification of proposed project.

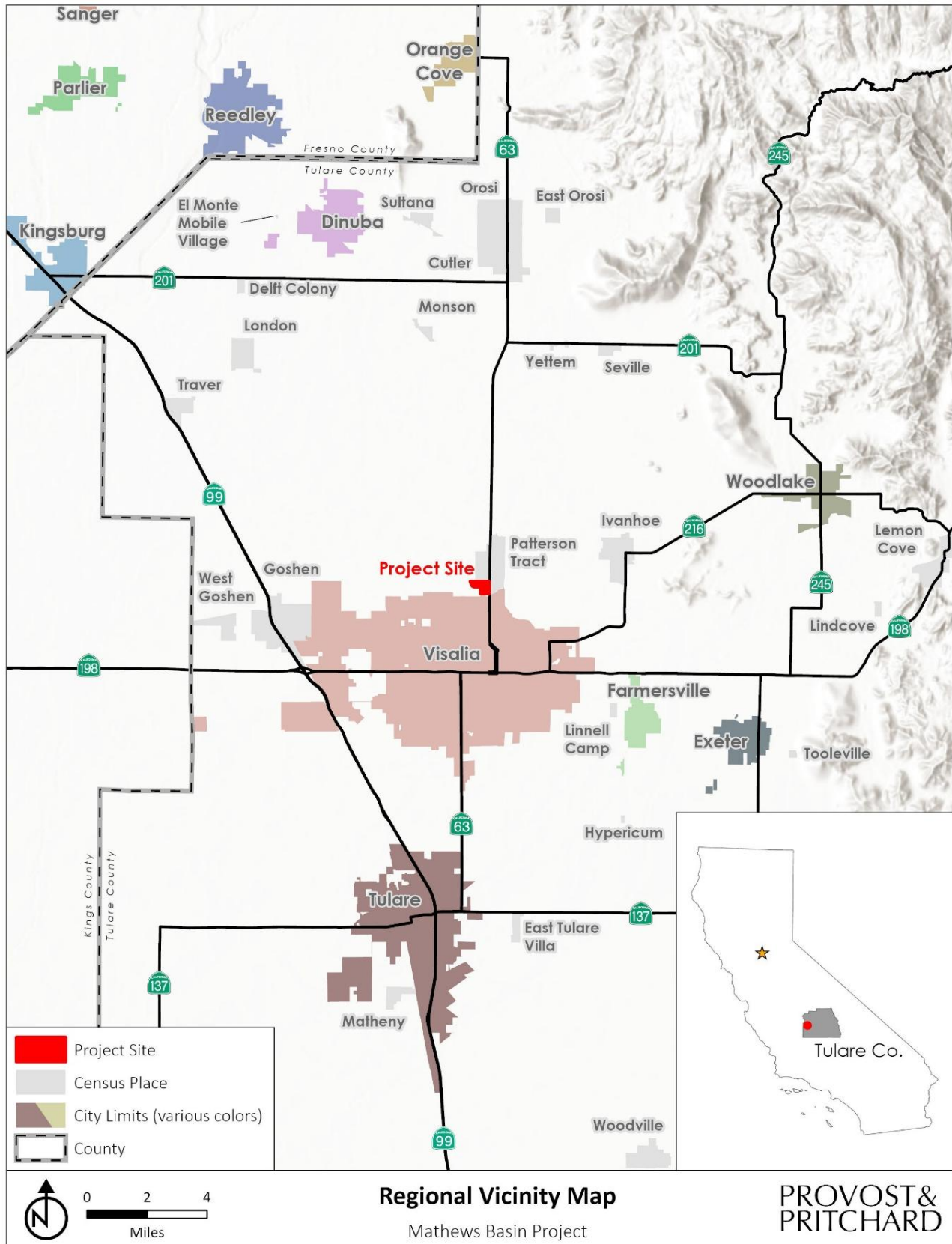


Figure 2-1: Regional Location Map





Figure 2-2: Aerial Site Map



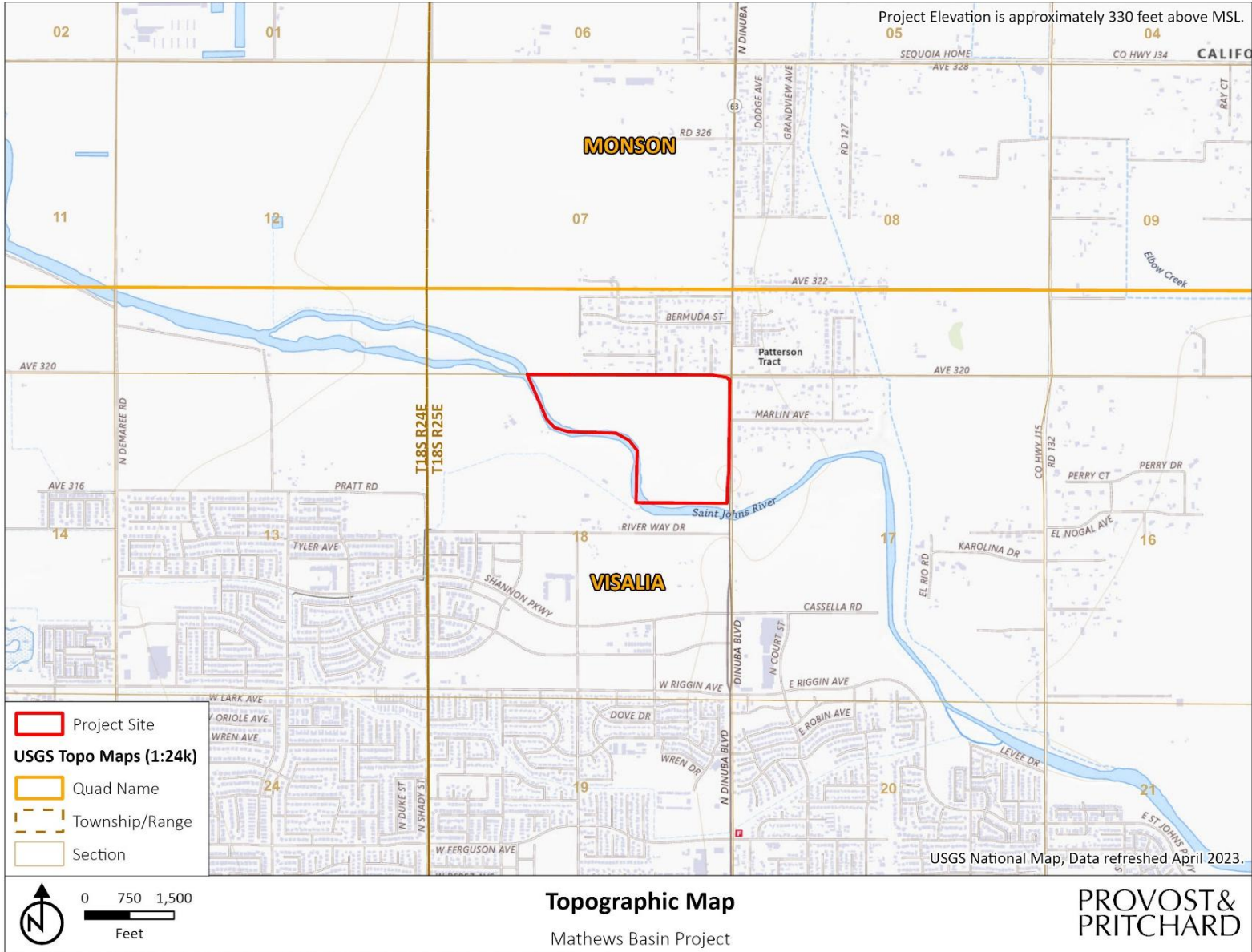


Figure 2-3: Topo Quad Map

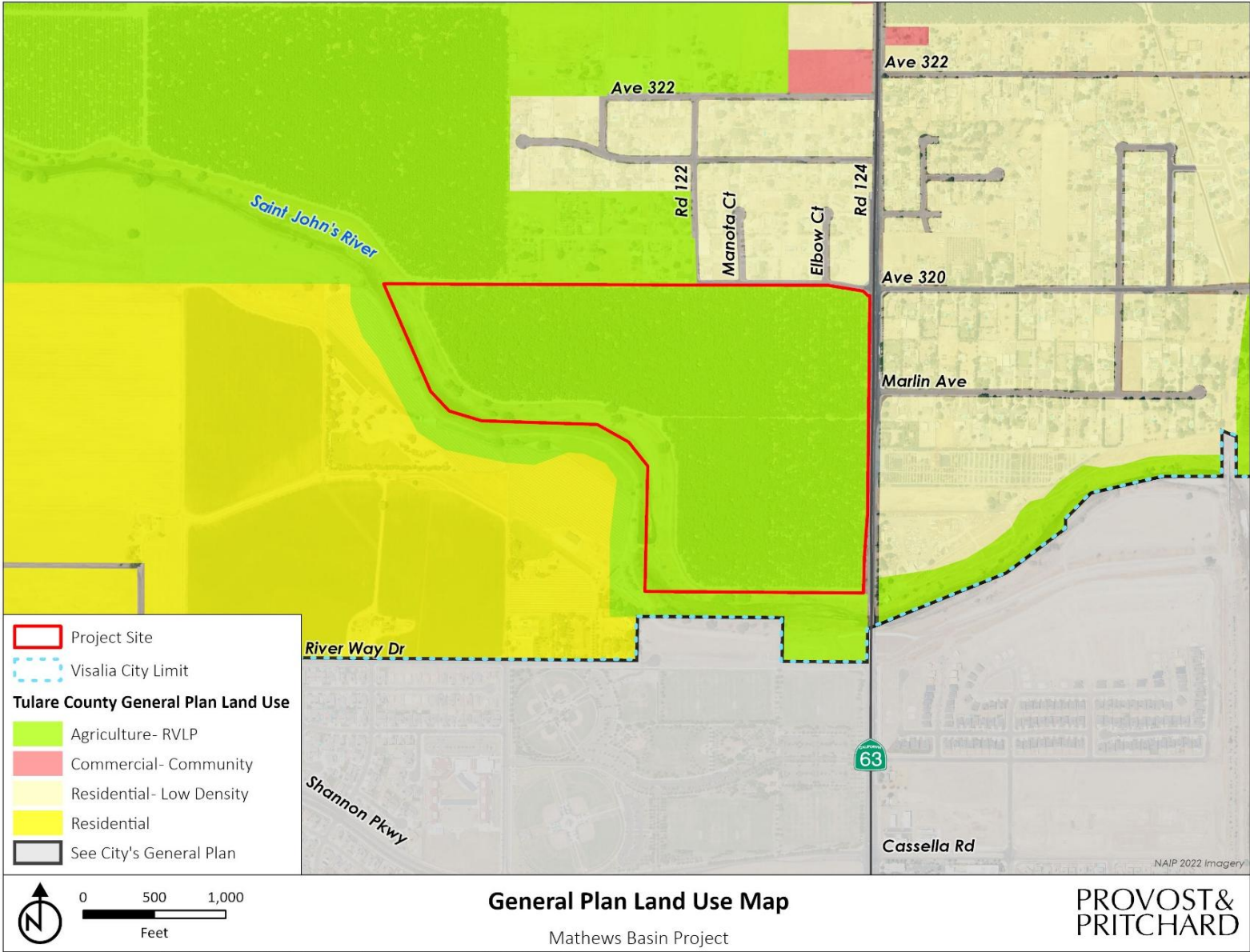


Figure 2-4: General Plan Land Use Designation Map



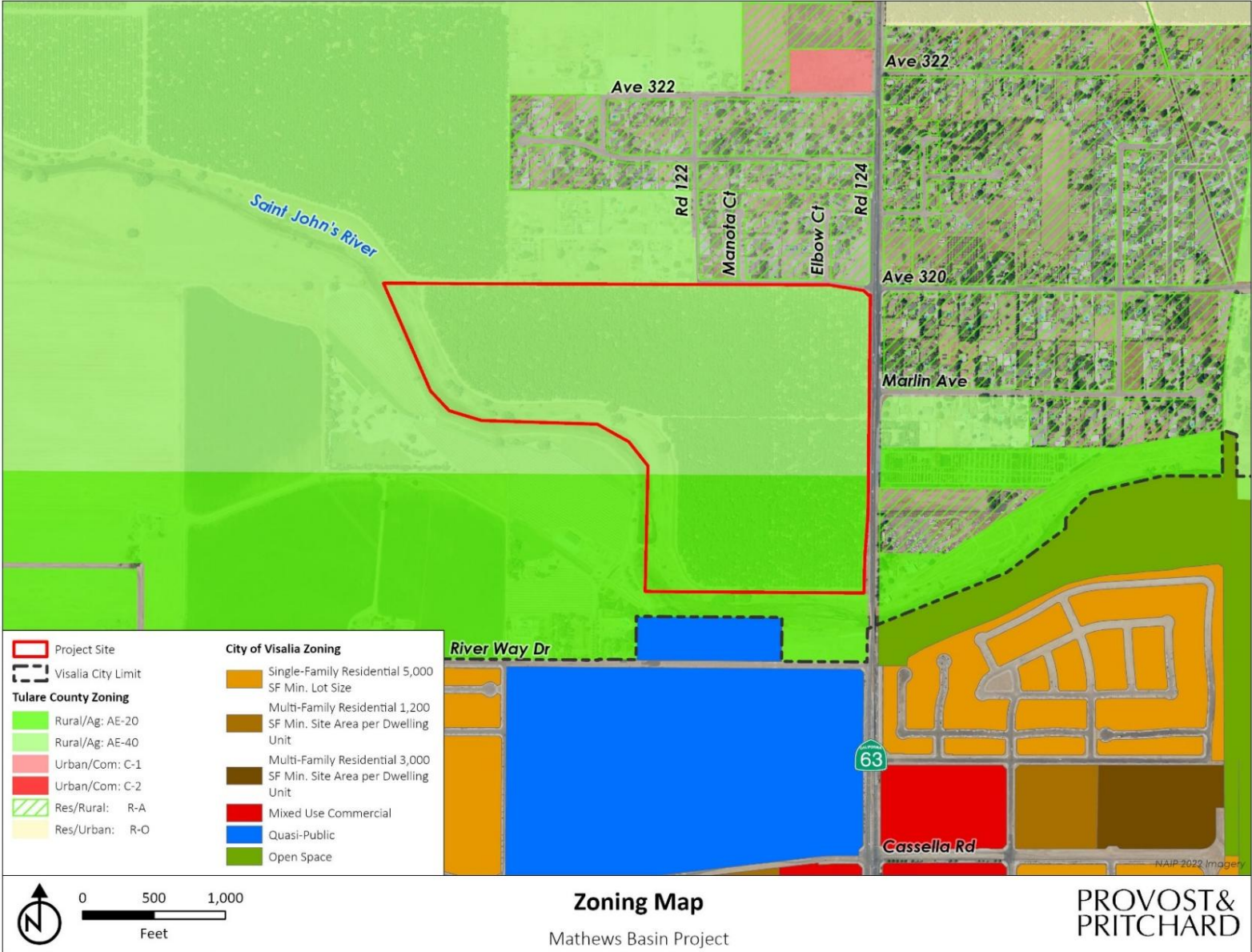


Figure 2-5: Zone District Map

## 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.

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

The analyses of environmental impacts in [Chapter 4 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

04/15/25  
\_\_\_\_\_  
Date

Luis VERDUGO / ENGINEER  
\_\_\_\_\_  
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### 4.1.1 BASELINE CONDITIONS

The Project is located in Tulare County adjacent to the City of Visalia's city limits. The Project site is currently a vacant lot but was previously farmed for walnuts. The site is surrounded to the north and east by single-family residences and to the south and west by the St. John's River. The St. John's River is a tributary of the Kaweah River which drains from the east from the Sierra Nevada mountains. The closest residence to the Project site is approximately 100 feet north across Avenue 320. To the south across the St. John's River and Riverway Drive lies the Riverway Sports Park, a regional park operated and maintained by the City of Visalia. To the west across the St. John's River contains primarily agricultural land with a few scattered single-family residences. The Project site is relatively flat with elevations around 330 feet above mean sea level. The southern portion of the Sierra Nevada mountain range, which is a prominent visual feature within Tulare County, reside approximately 20 miles to the east; however, it can only be clearly seen on a clear day. Views are often obstructed due to smog caused by the inversion layer found in the San Joaquin Valley.

The Project site is not located near a California State Scenic Highway. According to the California State Scenic Highway System, the closest officially designated state scenic highway is State Route (SR) 180 located approximately 25 miles north in Fresno County.<sup>2</sup> SR 198, which is the major thoroughfare through Visalia, is an eligible state scenic highway located approximately 2.6 miles south.<sup>3</sup> According to the Tulare County General Plan, the Project site, nor the Project vicinity, contains any designated scenic vistas.<sup>4</sup>

<sup>2</sup> (California Department of Transportation, 2023)

<sup>3</sup> Ibid.

<sup>4</sup> (Tulare County 2030 General Plan Update, 2010)

## 4.1.2 IMPACT ANALYSIS

### a) Have substantial adverse effect on a scenic vista?

**No Impact.** As mentioned, there are no designated scenic vistas at the Project site, nor are there any within the vicinity of the Project. Furthermore, despite the St. Johns River, the Project region is generally flat and nowhere on the site provides characteristics of a potential scenic vista. Therefore, there would be 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 is not located within, or visible from, a designated state scenic highway. Furthermore, the Project would not remove any trees, rock outcroppings, or 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?

**Less than Significant Impact.** The Project is located in Tulare County and is considered a non-urbanized area. Implementation of the Project would result in a concaved piece of land, surface water diversion equipment attached to the St. Johns River, and a graded path along the proposed basin. These Project features would not substantially degrade the existing visual character, nor would they degrade the quality of a public view.

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

**No Impact.** No artificial lighting is proposed to be on-site. Vehicular traffic to the site after the facility is constructed would be limited to as needed daytime maintenance trips. Therefore, the Project would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area or be inconsistent with existing conditions. There would be no impact.

## 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 4.2.1 BASELINE CONDITIONS

The Project is located in California's San Joaquin Valley in Tulare County. Tulare County is known for its agricultural production as it was the number one agriculture producing county in the United States for 2020.<sup>5</sup> In 2022, Tulare County's agriculture production grossed 8.6 billion dollars, an increase in 6.5% from the previous year.<sup>6</sup> The Project site north of the City of Visalia. The Project site is planned and zoned for agricultural uses and was previously a walnut orchard. The site has been fallowed and removed of any crop remnants, resulting in vacant dirt lot.

**Farmland Mapping and Monitoring Program:** The Farmland Mapping and Monitoring Program (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 DOC's 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 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:

<sup>5</sup> (University of California Agriculture and Natural Resources, 2022)

<sup>6</sup> (Tulare County Agricultural Commissioner/Sealer, 2022)

- *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 non-agricultural 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.*

As demonstrated in **Figure 4-1**, the FMMP for the Project site is designated as Prime Farmland.<sup>7</sup>

## 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?

**Less than Significant Impact.** As mentioned, the Project site is designated as Prime Farmland (see **Figure 4-1**). The Project would include the construction of a multi-celled recharge basin, a surface water turnout, and conservation space in the form of walking path surrounding the proposed basin. The primary goal of the Project is to divert water from the St. Johns River to the proposed basin in order to replenish groundwater supplies. The replenishment of groundwater supplies would ultimately benefit agricultural wells in the vicinity and could potentially assist in the prevention of less than potential for the need to fallow agricultural lands due to inadequate or costly recovery of declining groundwater supply. Groundwater replenishment associated with the Project is also consistent with the overall goals of SGMA, which aims to bring balance to groundwater management. Therefore, impacts would be less than significant.

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<sup>7</sup> (California Department of Conservation, 2020)  
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**b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?**

**Less than Significant Impact.** According to the Tulare County Assessor's Parcel Map, the Project is not subject to a Williamson Act contract. The construction and implementation of the basin would facilitate greater security of groundwater storage for regional growers, promoting the agricultural zoning intentions. The implementation of the Project would promote groundwater security, protecting agricultural resources and would facilitate efficient urban growth. 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 is no timber land in the vicinity or in proximity to the Project site; therefore, there would be no impact.

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

**No Impact.** As discussed above, there are no lands within or near the Project site that contain forest land. Implementation of the Project would not result in the loss of forest land or conversion of forest land to non-forest use.

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

**No Impact.** The Project would not convert any existing farmland to a non-agricultural use. As discussed throughout this section, the Project site is not located on or in the vicinity of forestland and therefore would not convert forest land to non-forest use. There would be no impact.



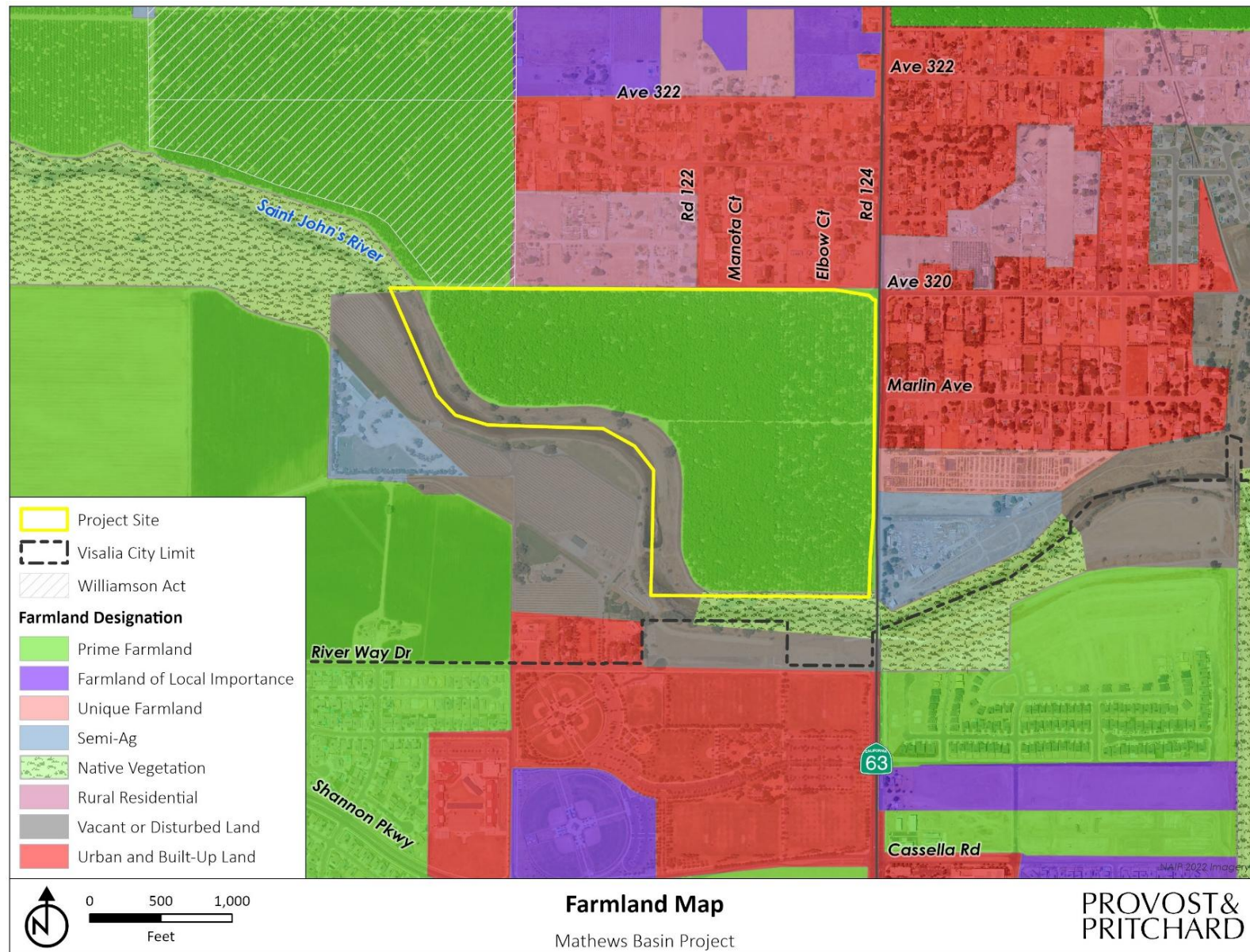


Figure 4-1: Farmland Designation Map

## 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### 4.3.1 BASELINE CONDITIONS

The Project would be located in the County of Tulare, within the boundaries of the San Joaquin Valley Air Pollution Control District (SJVAPCD) and the San Joaquin Valley Air Basin (SJVAB). The SJVAB is positioned within the San Joaquin Valley of California. The San Joaquin Valley is bounded by the Sierra Nevada Mountain Range to the east and the Coastal Mountain Range to the west. Wind within the SJVAB typically channels south-southwest during the summer months, while wind flows to the north-northwest during the winter months. Wind velocity for the region is considered low for an area of such size.<sup>8</sup> Due to a lack of strong wind and the natural confinement of the mountain ranges surrounding the SJVAB, the region experiences some of the worst air quality in the world.

The Project site and lands in the Project's vicinity consist of the St. John's River, farmland, and rural residential homes.

#### 4.3.1.1 REGULATORY ATTAINMENT DESIGNATIONS

Under the California Clean Air Act (CCAA), the California Air Resources Board (CARB) is required to designate areas of the State as attainment, nonattainment, or unclassified with respect to applicable standards. An "attainment" designation for an area signifies that pollutant concentrations did not violate the applicable standard in that area. A "nonattainment" designation indicates that a pollutant concentration violated the applicable standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. Depending on the frequency and severity of pollutants exceeding applicable standards, the nonattainment designation can be further classified as serious nonattainment, severe nonattainment, or extreme nonattainment, with extreme nonattainment being the most severe of the classifications. An "unclassified" designation signifies that the data does not support either an attainment or nonattainment designation. The CCAA divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

The United States Environmental Protection Agency (USEPA) designates areas for ozone, CO, and NO<sub>2</sub> as "does not meet the primary standards," "cannot be classified," or "better than national standards." For

<sup>8</sup> (San Joaquin Valley Air Pollution Control District, 2022)  
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SO<sub>2</sub>, areas are designated as “does not meet the primary standards,” “does not meet the secondary standards,” “cannot be classified,” or “better than national standards.” However, the CARB terminology of attainment, nonattainment, and unclassified is more frequently used. The USEPA uses the same sub-categories for nonattainment status: serious, severe, and extreme. In 1991, USEPA assigned new nonattainment designations to areas that had previously been classified as Group I, II, or III for PM<sub>10</sub> based on the likelihood that they would violate national PM<sub>10</sub> standards. All other areas are designated as “unclassified.”

The SJVAB is currently designated as a nonattainment area with respect to the State PM<sub>10</sub> standard, ozone, and PM<sub>2.5</sub> standards. The SJVAB is designated nonattainment for the National Ambient Air Quality Standard (NAAQS) eight-hour ozone and PM<sub>2.5</sub> standards. On September 25, 2008, the USEPA re-designated the San Joaquin Valley to attainment status for the PM<sub>10</sub> NAAQS and approved the PM<sub>10</sub> Maintenance Plan.<sup>9</sup>

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<sup>9</sup> (San Joaquin Valley Air Pollution Control District, 2022)  
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**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 <sub>3</sub> )	1-hour	0.09 ppm	Nonattainment/ Severe	—	No Federal Standard
	8-hour	0.070 ppm	Nonattainment	0.075 ppm	Nonattainment (Extreme)**
PARTICULATE MATTER (PM <sub>10</sub> )	AAM	20 µg/m <sup>3</sup>	Nonattainment	—	Attainment
	24-hour	50 µg/m <sup>3</sup>		150 µg/m <sup>3</sup>	
FINE PARTICULATE MATTER (PM <sub>2.5</sub> )	AAM	9 µg/m <sup>3</sup>	Nonattainment	9 µg/m <sup>3</sup>	Nonattainment
	24-hour	No Standard		35 µg/m <sup>3</sup>	
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 <sub>2</sub> )	AAM	0.030 ppm	Attainment	53 ppb	Attainment/ Unclassified
	1-hour	0.18 ppm		100 ppb	
SULFUR DIOXIDE (SO <sub>2</sub> )	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 <sup>3</sup>	Attainment	—	No Designation/ Classification
	Calendar Quarter	—		--	
	Rolling 3-Month Average	—		0.15 µg/m <sup>3</sup>	
SULFATES (SO <sub>4</sub> )	24-hour	25 µg/m <sup>3</sup>	Attainment	No Federal Standards	
HYDROGEN SULKDWUDE (H <sub>2</sub> S)	1-hour	0.03 ppm (42 µg/m <sup>3</sup> )	Unclassified		
VINYL CHLORIDE (C <sub>2</sub> H <sub>3</sub> CL)	24-hour	0.01 ppm (26 µg/m <sup>3</sup> )	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 07-02-2024.

\*\*\*Secondary Standard

Source: <http://www.valleyair.org/aqinfo/attainment.htm>. Accessed 2024.

#### 4.3.1.2 CONSTRUCTION-GENERATED EMISSIONS

Construction of the Project is assumed to be completed over approximately six months. Emissions associated with the Project were calculated using CalEEMod Air Quality Model, Version 2022.1.1.25. The emissions modeling includes emissions generated by off-road equipment, haul trucks, and worker commute trips. Emissions were quantified based on anticipated construction schedules and the default parameters contained in the model. Localized air quality impacts associated with the Project would be minor and were qualitatively assessed. Modeling assumptions and output files are included in **Appendix A**.

### 4.3.1.3 THRESHOLDS OF SIGNIFICANCE

Air pollutant emissions have regional effects and localized effects. This analysis assesses the regional effects of the Project's criteria pollutant emissions in comparison to SJVAPCD thresholds of significance for short-term construction activities and long-term operation of the Project. Localized emissions from Project construction and operation are also assessed using concentration-based thresholds that determine if the Project would result in a localized exceedance of any ambient air quality standards or would make a cumulatively considerable contribution to an existing exceedance.

The primary pollutants of concern during Project construction and operation are ROG (reactive organic gases), Nitrogen Oxides (NO<sub>x</sub>), PM<sub>10</sub>, and PM<sub>2.5</sub>. The SJVAPCD Guide for Assessing and Mitigating Air Quality Impacts adopted in 2015 contains thresholds for ROG and NO<sub>x</sub>; Sulfur Oxides (SO<sub>x</sub>), CO, PM<sub>10</sub>, and PM<sub>2.5</sub>.

Ozone is a secondary pollutant that can be formed miles away from the source of emissions through reactions of ROG and NO<sub>x</sub> emissions in the presence of sunlight. Therefore, ROG and NO<sub>x</sub> are termed ozone precursors. The SJVAB often exceeds the state and national ozone standards. Therefore, if the Project emits a substantial quantity of ozone precursors, the Project may contribute to an exceedance of the ozone standard. The SJVAB also exceeds air quality standards for PM<sub>10</sub>, and PM<sub>2.5</sub>; therefore, substantial Project emissions may contribute to an exceedance for these pollutants.

The SJVAPCD adopted significance thresholds for construction-related and operational ROG, NO<sub>x</sub>, PM, CO, and SO<sub>x</sub>, these thresholds are included in [Table 4-5](#).

**Table 4-5: Project-Level Air Quality CEQA Thresholds of Significance**

Pollutant	Significance Threshold	
	Construction Emissions (tons/year)	Operational Emissions (tons/year)
ROG	10	10
NO <sub>x</sub>	10	10
CO	100	100
SO <sub>x</sub>	27	27
PM <sub>10</sub>	15	15
PM <sub>2.5</sub>	15	15
Source: SJVAPCD. 2015. Guidance for Assessing and Mitigating Air Quality Impacts. Website: <a href="https://www.valleyair.org/transportation/GAMAQI-2015/FINAL-DRAFT-GAMAQI.PDF">https://www.valleyair.org/transportation/GAMAQI-2015/FINAL-DRAFT-GAMAQI.PDF</a> . Accessed July 2, 2024.		

### 4.3.2 IMPACT ANALYSIS

#### 4.3.2.1 SHORT-TERM CONSTRUCTION-GENERATED EMISSIONS

Estimated construction-generated emissions are summarized in [Table 4-6](#) and [Table 4-7](#), also in [Appendix A](#). Operational emissions of the proposed Project would be considered negligible due to the type of use proposed on-site.

**Table 4-6: Unmitigated Short-Term Construction Generated Emissions of Criteria Air Pollutants**

Source	Annual Emissions (Tons per Year)					
	ROG	NO <sub>x</sub>	CO	SO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>MAXIMUM ANNUAL PROJECT CONSTRUCTION EMISSIONS</b>	0.395	4.648	3.428	0.014	0.6	0.23
<b>SJVAPCD THRESHOLD</b>	10	10	100	27	15	15
<b>THRESHOLD EXCEEDED?</b>	No	No	No	No	No	No

**Table 4-7: Maximum Daily Construction Related Emissions of Criteria Air Pollutants**

Source	Daily Emissions Maximum (in pounds)					
	ROG	NO <sub>x</sub>	CO	SO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
<b>CONSTRUCTION – SUMMER</b>	3.41	31.7	31.3	0.06	9.17	5.23
<b>CONSTRUCTION – WINTER</b>	3.29	29.8	29.3	0.06	4.99	2.60
<b>SJVAPCD THRESHOLD</b>	100	100	100	100	100	100
<b>THRESHOLD EXCEEDED?</b>	No	No	No	No	No	No

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

**No Impact.** The Project would not conflict with or obstruct implementation of the applicable air quality plan. The Project would align with the standards and guidelines set by the SJVAPCD. Therefore, 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.** The Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is in non-attainment. As shown in [Table 4-6](#) and [Table 4-7](#), the Project would not exceed an emissions threshold which has been set by the SJVAPCD for construction related emissions. The Project would result in negligible quantities of operational emissions. Therefore, impacts would be less than significant.

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

**Less than Significant Impact.** As discussed above, the Project would not result in significant long-term operational emissions. Construction related emissions, shown in [Table 4-6](#) and [Table 4-7](#), would be temporary in nature and would cease upon completion of Project construction.

Short-term construction activities, however, could result in temporary increases in pollutant concentrations that could impact nearby sensitive receptors. Sensitive Receptors are groups that would be more affected by air, noise, light pollution, pesticides, and other toxic chemicals than others. This includes infants, children under 16, elderly over 65, athletes, and people with cardiovascular and respiratory diseases. High concentrations of these groups would include daycares, residential areas, hospitals, elder care facilities, schools, and parks. While the Project would be located in an area near sensitive receptors, such as the residential homes primarily to the north and east, the Project would not exceed the daily emission thresholds set by the SJVAPCD. Nonetheless, due to the closest residence being within 100 feet of the Project, the HARP2 air dispersion model was run for the Project site to show the health risk the Project would have on sensitive receptors in the area. The model run, which can be viewed in [Appendix A](#), indicates that the Project would result in a cancer risk of 4.53 in one million, which is less than the SJVAPCD's threshold of 20 in one million. The Project would also present a chronic hazard index of 0.009 and an acute hazard index of 0, which would be less than the SJVAPCD's threshold of one for both chronic and acute. Therefore, impacts would be less than significant.

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.** During construction activities, construction equipment exhaust would temporarily emit odors. Construction could have an effect on some residences that would be located within the vicinity of the Project. Construction of the Project would be temporary, and odors would not remain after Project completion. Therefore, impacts would be less than significant.

## 4.4 BIOLOGICAL RESOURCES

Table 4-8: 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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 4.4.1 BASELINE CONDITIONS

#### 4.4.1.1 GENERAL

The Project site is located in the San Joaquin Valley, in the north portion of the City of Visalia in Tulare County, California. The Project site includes approximately 113 acres, comprised of a ruderal lot which was previously a walnut orchard, a portion of the St. John's River and its associated riparian zone, and a berm separating the River from the ruderal lot. Surrounding lands to the north, south, and east are primarily residential, and a paved road runs adjacent to the east boundary. To the south and west sides of the site across the St. John's River is a farm facility with horse pastures, a large materials and equipment yard, and a small grape orchard. The topography of the site is relatively flat with elevations around 330 feet above mean sea level.

Like most of California, the Project site experiences a Mediterranean climate. Warm, dry summers are followed by cool, moist winters. Over the course of the year, the temperature typically varies from 38°F to 96°F and is rarely below 30°F or above 103°F. The hottest month of the year in Visalia is July, with an average high of 96°F and low of 65°F. The coldest month of the year in Visalia is December, with an average low of 39°F and high of 57°F.<sup>10</sup> On average, the City of Visalia receives approximately 10 inches annual precipitation in the form of rain, falling mainly from December to March.<sup>11</sup>

#### 4.4.1.2 SOILS

Three soil mapping units representing two soil types were identified within the Project site and are listed in **Table 4-9** (see Appendix D of **Appendix B** for the full Web Soil Survey Report). The soils are displayed with their core properties in the table below, according to the Major Land Resource Area of California. The Flamen and Grangeville soils are prime farmland if irrigated. Riverwash is a subcategory of barren land often found in floodplains and the bed of streams with little to no vegetation and a substrate of mainly sand.

**Table 4-9: List of Soils Located on the Project Site and Their Basic Properties**

Soil	Soil Map Unit	Percent of Site	Hydric Soil Category	Drainage	Permeability	Runoff
<i>Flamen</i>	Loam, 0 to 2 percent slopes	39.5%	Predominantly Nonhydric	Moderately well drained	Moderately low to moderately high	Low
<i>Grangeville</i>	Sandy loam, drained, 0 to 2 percent slopes	47.1%	Predominantly hydric	Somewhat poorly drained	High	Negligible
<i>Riverwash</i>	-	13.4%	Predominantly hydric	-	-	-

Hydric soil ratings are derived from specific soil properties as well as climate, parent material, vegetation, landform type, and biological activity of a certain location. Soils that are considered predominantly hydric make up 60.5% of the Project site and correspond with the River, the portion of the Project site dedicated to agriculture, and the berm that separates the two. The Flamen soil is considered predominantly nonhydric and was only found to be associated with the agricultural portion of the Project site.

#### 4.4.1.3 BIOTIC HABITATS

Three biotic habitats were observed within the site and included ruderal, riverine/riparian, and oak grassland (see **Figure 4-2**). These habitats and their constituent plant and animal species are described in more detail in the following sections.

##### 4.4.1.3.1 RUDERAL

The Project site was primarily made up of a large ruderal field that had at one time supported an orchard of walnut trees. This habitat was bordered on the east side by SR 63, a busy, main roadway that runs north/south through the center of the City. The majority of this habitat was vegetated with great brome (*Bromus diandrus*) and wall barley (*Hordeum murinum*). However, there were some bare dirt access roads running through the field. In addition, large pits had been excavated within portions of the field and the excavated soil had been piled in mounds adjacent to each pit. Other vegetation species observed within this habitat included flatspine bur ragweed (*Ambrosia acanthicarpa*), Menzie's fiddleneck (*Amsinckia menziesii*), asthmaweed (*Conyza bonariensis*), poison hemlock (*Conium maculatum*), mustard sp., prickly

<sup>10</sup> (Weather Spark, 2025)

<sup>11</sup> (Time and Date, 2024)

lettuce (*Lactuca serriola*), Canada horseweed (*Conyza canadensis*), black nightshade (*Solanum nigrum*), dwarf nettle (*Urtica urens*), two English walnut trees (*Juglans regia*), and milk thistle (*Silybum marianum*).

The survey of the ruderal habitat resulted in the observation of wildlife species including mourning dove (*Zenaida macroura*), California ground squirrel (*Otospermophilus beecheyi*), cliff swallow (*Petrochelidon pyrrhonota*), and lesser goldfinch (*Spinus psaltria*). A berm had been constructed along the east side of the field and numerous small mammal burrows were observed within this berm. Only California ground squirrels were seen using these burrows.

The ruderal habitat was highly disturbed and located next to a main roadway for the City. This habitat was actively being excavated at the time of the survey.

#### 4.4.1.3.2 OAK GRASSLAND

A large berm within the oak grassland habitat separated the ruderal habitat from the riverine/riparian habitat associated with the Saint John's River. The oak grassland habitat was vegetated with non-native grasses, including johnsongrass (*Sorghum halepense*), great brome, and wall barley, tree tobacco (*Nicotianus glauca*), sacred datura (*Datura wrightii*), curly dock (*Rumex crispus*), blessed milkthistle (*Silybum marianum*) and Jersey cudweed (*Pseudognaphalium luteoalbum*), and valley oak trees (*Quercus lobata*) were sparsely growing. An unmaintained access road was observed along the crest of the berm, and tents, camp stoves, and chairs were present.

California scrub jay (*Aphelocoma californica*) and California ground squirrel were observed, and an unidentified woodpecker was heard in this habitat.

The oak grassland within the Project site is moderately disturbed but can provide valuable habitat to a variety of wildlife, year-round. A dead tree was standing along the slope of the berm, which could be used by foraging birds and raptors for perching and hunting prey.

#### 4.4.1.3.3 RIVERINE/RIPARIAN

The riverine/riparian habitat included an approximately 0.9-mile-long portion of the Saint John's River, which contained water at the time of the survey. The River exhibited a bed, banks, and an ordinary high-water mark (OHWM). Vegetation species associated with the River included tall flatsedge (*Cyperus eragrostis*), bearded rabbitsfoot grass (*Polypogon viridis*), barnyardgrass (*Echinochloa crus-galli*), water pepper (*Polygonum hydropiper*), and seep monkeyflower (*Mimulus guttatus*), dwarf nettle (*Urtica urens*), johnsongrass, blessed milkthistle, and curly dock.

Wildlife observed within this habitat included mallard ducks (*Anas platyrhynchos*), cliff swallow, lesser goldfinch, and red shouldered hawk (*Buteo lineatus*), and raccoon (*Procyon lotor*) tracks were identified along the banks of the River.

Within the River were partially vegetated islands which could serve as basking sites during low-flow periods for various amphibians and reptiles. The riverine/riparian habitat within the site could offer high-quality habitat to a variety of amphibian, reptile, and avian species. A vehicular bridge crossed over the River outside of the Project site and cliff swallow nests and nesting activity was observed.



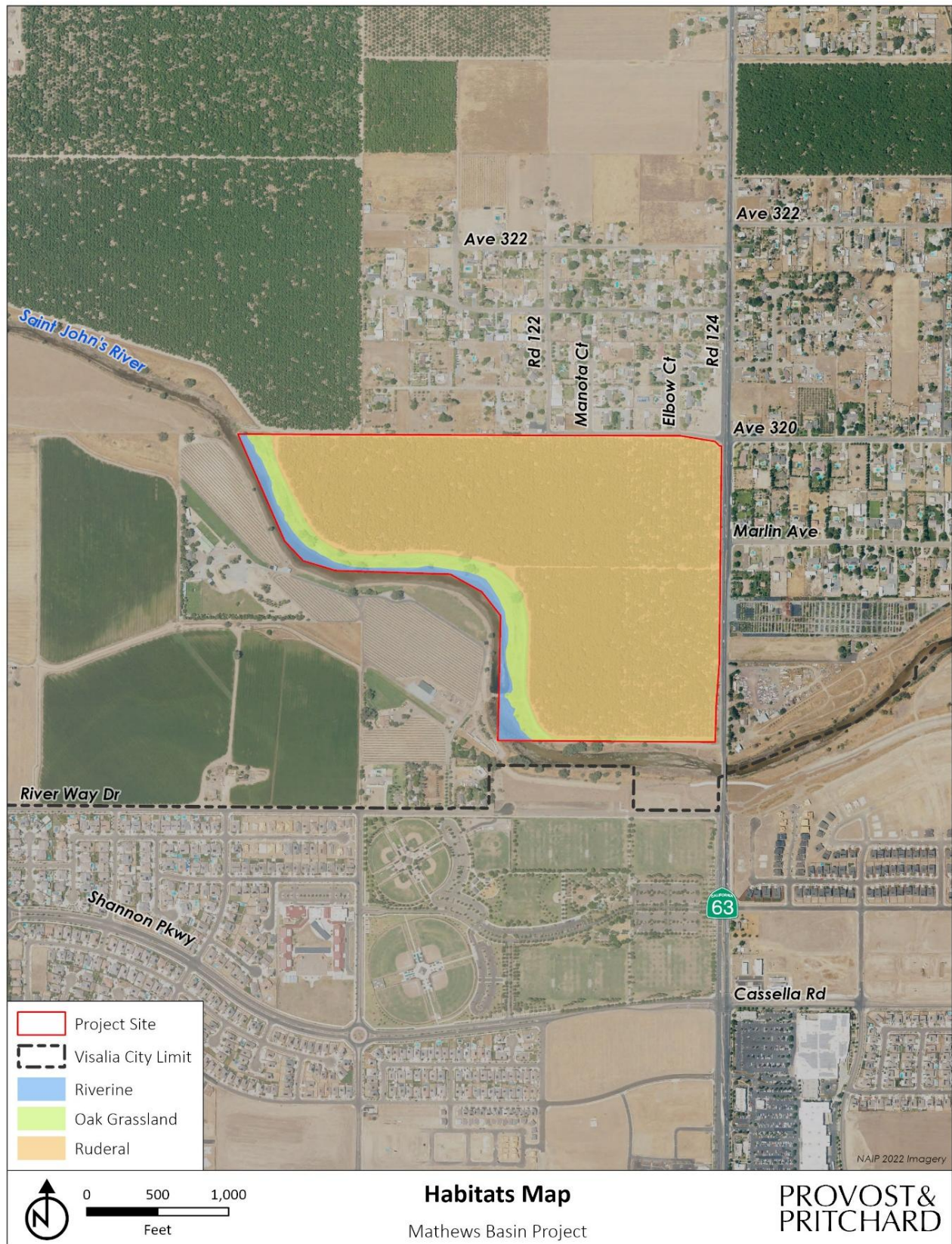


Figure 4-2: Habitats Map

#### **4.4.1.4 NATURAL COMMUNITIES OF SPECIAL CONCERN AND RIPARIAN HABITAT**

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 CNDDDB.

According to CNDDDB, there are no recorded observations of natural communities of special concern mapped within, or adjacent to, the site and they were not observed during the field survey. Natural communities of special concern, including Valley Sacaton Grassland, Northern Hardpan Vernal Pool, Northern Claypan Vernal Pool, and Great Valley Valley Oak Riparian Forest, were recorded in the region, but all occurrences have been mapped greater than five miles from the Project site.

Riparian habitat is composed of plant communities that occur along the banks, and sometimes past the banks, of most waterways and is important for numerous wildlife species. CDFW has jurisdiction over most riparian habitats in California. Riparian habitat was observed within the site and was composed of the River and riverine/riparian habitat.

#### **4.4.1.5 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 was absent from the site and vicinity.

#### **4.4.1.6 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 riverine/riparian habitat within the Project site likely function as wildlife movement corridor. Aquatic species may use the River to travel, and wildlife tracks, including raccoon, were observed during the field survey.

Native wildlife nursery sites are areas where a species or group of similar species raise their young in a concentrated place. No potential native wildlife nursery sites were observed within the site. However, a dense concentration of active cliff swallow (*Petrochelidon pyrrhonota*) nests was observed during the field survey. These nests were observed approximately 250 feet southeast of the Project site under a vehicular bridge crossing the River. This bridge would be considered a wildlife nursery area for not only cliff swallows but can also be a roosting site for some bat species that can be found in this region.

#### **4.4.1.7 SPECIAL STATUS PLANT AND ANIMAL**

A query of the CNDDDB for occurrences of special status plant and animal species was conducted for the Round Mountain United States Geological System 7.5-minute quadrangle that contains the APE, and for the eight surrounding quadrangles: *Academy*, *Clovis*, *Friant*, *Humphreys Station*, *Malaga*, *Piedra*, *Sanger*, and *Wahtoke*. A query of the IPaC was also completed for the APE. These species, and their potential to occur within the APE, are listed in [Table 4-10](#) and [Table 4-11](#), below. Other special status species that did not show up in the CNDDDB query, but have the potential to occur in the vicinity, are also included in [Table 4-11](#). Species lists obtained from CNDDDB and IPaC are available in Appendix B and Appendix C of [Appendix B](#).



**Table 4-10: List of Special Status Plants with Potential to Occur on the APE and/or in the Vicinity**

<b>Species</b>	<b>Status*</b>	<b>Habitat</b>	<b>Occurrence within the Project Site</b>
<b>Alkali-sink goldfields</b> ( <i>Lasthenia chrysantha</i> )	CNPS 1B	Found in vernal pool and wet saline flat habitats in the San Joaquin Valley region at elevations below 700 feet. Blooms February – April.	<b>Absent.</b> Habitats required by this species were absent from the site.
<b>Brittlescale</b> ( <i>Atriplex depressa</i> )	CNPS 1B	Found in the Central Valley in alkaline or clay soils, typically in meadows or annual grasslands at elevations below 1,100 feet. Sometimes associated with vernal pools. Blooms June – October.	<b>Absent.</b> Soils required for this species were absent from the site.
<b>California alkali grass</b> ( <i>Puccinellia simplex</i> )	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 3,000 feet. Blooms March – May.	<b>Absent.</b> Habitats required by this species were not observed on site.
<b>California jewelflower</b> ( <i>Caulanthus californicus</i> )	FE, CE, CNPS 1B	Found in the San Joaquin Valley and western Transverse Ranges in sandy soils. Occurs on flats and slopes, generally in non-alkaline grassland at elevations between 200 and 6,100 feet. Blooms February – May.	<b>Unlikely.</b> The site does offer grassland habitat and loamy sandy soils which have the potential to support this species. However, the survey was completed at the end of the blooming period and this species was not observed. Further, recent reports of this species have cited that historical populations in Tulare County have been extirpated (U.S. Fish and Wildlife Service, 2013).
<b>California satintail</b> ( <i>Imperata brevifolia</i> )	CNPS 2B	Often found in wet springs, meadows, streambanks, and floodplains, and can also be found in coastal scrub, riparian scrub, Mojavean desert scrub, chaparral, and alkali seeps at elevations below 1,600 feet. Blooms September – May.	<b>Unlikely.</b> The site included streambanks, which are suitable for this species, within the riverine/riparian habitat. However, the last occurrence of this species was recorded as a best guess in the vicinity of the City of Visalia in 1895. Further, there were no observations of similar looking species during the field survey. Due to the extent of agricultural disturbance and development within and around the site since then, it is unlikely that the species would be observed within the site.
<b>Coulter's goldfields</b> ( <i>Lasthenia glabrata</i> ssp. <i>coulteri</i> )	CNPS 1B	Found on alkaline and saline soils in vernal pools and playas in grassland at elevations below 4,500 feet. Blooms April – May.	<b>Absent.</b> Soils required by this species were absent from the Project site.
<b>Earlimart orache</b> ( <i>Atriplex cordulata</i> var. <i>erecticaulis</i> )	CNPS 1B	Found in the San Joaquin Valley in saline and alkaline soils, typically within valley grasslands at elevations below 400 feet. Blooms August – September.	<b>Absent.</b> Soils required by this species were absent from the Project site.
<b>Heartscale</b> ( <i>Atriplex cordulata</i> var. <i>cordulata</i> )	CNPS 1B	Found in the Central Valley in saline or alkaline soils within shadscale scrub, valley grassland, and wetland-riparian communities at elevations below 250 feet. Blooms June – July.	<b>Absent.</b> Soils required by this species were absent from the Project site.

Species	Status*	Habitat	Occurrence within the Project Site
<b>Hoover's spurge</b> ( <i>Euphorbia hooveri</i> )	FT, CNPS 1B	Found in vernal pools within valley grassland, freshwater wetland, and riparian communities at elevations below 800 feet. Blooms July – September.	<b>Absent.</b> Habitats required by this species were absent from the Project site.
<b>Lassics lupine</b> ( <i>Lupinus constancei</i> )	FE	Only found near the summits of remote mountains in northern California called the Lassics in Humboldt and Trinity Counties, which have unique serpentine-influenced soils. Occurs at elevations between 5,200 and 5,700 feet. Blooms May-June.	<b>Absent.</b> The site is well outside of the current range and typical elevational range of this species.
<b>Lesser saltscare</b> ( <i>Atriplex minuscula</i> )	CNPS 1B	Found in the San Joaquin Valley in sandy, alkaline soils in alkali scrub, valley and foothill grassland, and alkali sink communities at elevations below 750 feet. Blooms April – October.	<b>Absent.</b> Soils required by this species were absent from the Project site.
<b>Recurved larkspur</b> ( <i>Delphinium recurvatum</i> )	CNPS 1B	Occurs in chenopod scrub, cismontane woodland, and grassland habitats on poorly drained, fine, alkaline soils; often in valley saltbush or valley chenopod scrub communities at elevations between 100 and 2,600 feet. Blooms March – June.	<b>Absent.</b> Soils required by this species were absent from the Project site.
<b>San Joaquin adobe sunburst</b> ( <i>Pseudobahia peirsonii</i> )	FT, CE, CNPS 1B	Found in the San Joaquin Valley and the Sierra Nevada foothills in bare, dark clay soils in valley and foothill grassland and cismontane woodland communities at elevations between 300 and 3,000 feet. Blooms March – May.	<b>Absent.</b> Soils required by this species were absent from the Project site.
<b>San Joaquin Valley Orcutt grass</b> ( <i>Orcuttia inaequalis</i> )	FT, CE, CNPS 1B	Found in the eastern San Joaquin Valley and the Sierra Nevada foothills in vernal pools within valley grassland, freshwater wetland, and wetland-riparian communities at elevations below 2,600 feet. Blooms April – September.	<b>Absent.</b> Habitats required by this species were absent from the Project site.
<b>Sanford's arrowhead</b> ( <i>Sagittaria sanfordii</i> )	CNPS 1B	This species is an aquatic plant and is found in the San Joaquin Valley and other parts of California in freshwater marshes, ponds, canals, and ditches at elevations below 1,000 feet. Blooms May – October.	<b>Possible.</b> The riverine/riparian habitat included a portion of the Saint John's River, which could provide the required freshwater habitat. There are no recorded observations within the Saint John's River, but an observation of this species occurred in 2018 approximately 5 miles north of the site within an irrigation ditch.
<b>Spiny-sealed button-celery</b> ( <i>Eryngium spinosepalum</i> )	CNPS 1B	Found in the Sierra Nevada foothills and the San Joaquin Valley in vernal pools, swales, and roadside ditches. Often associated with clay soils in vernal pools within grassland communities. Occurs at elevations between 50 and 4,200 feet. Blooms April – July.	<b>Absent.</b> Habitats required by this species were absent from the Project site.

Species	Status*	Habitat	Occurrence within the Project Site
<b>Subtle orache</b> ( <i>Atriplex subtilis</i> )	CNPS 1B	Found in the San Joaquin Valley in saline depressions in alkaline soils within valley and foothill grassland communities at elevations below 300 feet. Blooms June – October.	<b>Absent.</b> Soils required by this species were absent from the Project site.
<b>Vernal pool smallscale</b> ( <i>Atriplex persistens</i> )	CNPS 1B	Occurs in the Central Valley in alkaline vernal pools at elevations below 400 feet. Blooms June – September.	<b>Absent.</b> Habitats required by this species were absent from the Project site.
<b>Winter's sunflower</b> ( <i>Helianthus winteri</i> )	CNPS 1B	Found in the Sierra Nevada foothills on steep, south-facing grassy slopes, rock outcrops, and road-cuts at elevations ranging from 600 to 1,500 feet. Blooms year-round.	<b>Absent.</b> The Project site is outside of the range and typical elevational range for this species.

**Table 4-11: List of Special Status Animals with Potential to Occur on the APE and/or in the Vicinity**

Species	Status*	Habitat	Occurrence within the Project Site
<b>American badger</b> ( <i>Taxidea taxus</i> )	CSSC	Prefers drier open stages of shrub, forest, and herbaceous habitats with friable soils to burrow, but can be found within numerous habitats throughout California, including the margins of agricultural lands. Needs a sufficient prey base of burrowing rodents.	<b>Possible.</b> The site is surrounded by frequently cultivated agricultural lands and busy residential areas, however the ruderal habitat and oak woodland habitat within the site could provide a suitable prey base as well as small mammal burrows for this species. In addition, the riverine/riparian habitat could be used as a wildlife movement corridor, as it would connect the Sierra Nevada foothills directly with the Project site. The nearest recorded observation of this species was approximately 5 miles southeast of the site in 1994.
<b>Burrowing owl</b> ( <i>Athene cunicularia</i> )	CSSC	Resides in open, dry grasslands, deserts, scrublands, and other areas with low growing vegetation. Nests and roosts underground in existing burrows created by mammals, most often by ground squirrels, and human-made structures.	<b>Possible.</b> Nesting habitat is present within the ground squirrel burrows in the ruderal habitat of the site. The most recent occurrence according to CNDDB was recorded approximately 4.5 miles north of the site in 2017.
<b>California condor</b> ( <i>Gymnogyps californianus</i> )	FE, CE, CFP	Typically nests in cavities in canyon or cliff faces but has also been recorded nesting in giant sequoias in Tulare County. Requires vast expanses of open savannah, grassland, and/or foothill chaparral in mountain ranges of moderate altitude. Forages for carrion up to 100 miles from their roost/nest sites.	<b>Absent.</b> Suitable foraging and nesting habitats were absent from the site.
<b>California tiger salamander – central California DPS</b> ( <i>Ambystoma californiense</i> )	FT, CT	Requires vernal pools or seasonal ponds for breeding and small mammal burrows for aestivation. Generally found in grassland and oak savannah plant communities in central California from sea level to 1,500 feet in elevation. Can migrate up to 1.3 miles to breed.	<b>Unlikely.</b> The site does not offer suitable breeding pools or aquatic habitat to support this species. Small mammal burrows were observed in the upland oak grassland habitat, but there are no past observations of this species within 1.3 miles of the site. The closest observation of this species to the site is approximately 4.5 miles north, so migration to the site is unlikely.

Species	Status*	Habitat	Occurrence within the Project Site
<b>Crotch's bumble bee</b> <i>(Bombus crotchii)</i>	CCE	Occurs throughout coastal California, as well as east to the Sierra Nevada-Cascade crest, and south into Mexico. Food plant genera include snapdragons, scorpionweeds, primroses, poppies, and buckwheats.	<b>Absent.</b> Food plants required by this species were absent from the site. Therefore, it is unlikely they would nest within any of the small mammal burrows observed in the site.
<b>Loggerhead shrike</b> <i>(Lanius ludovicianus)</i>	CSSC	Frequents open habitats with sparse shrubs and trees, other suitable perches, bare ground, and low herbaceous cover. In the Central Valley, this species nests in riparian areas, desert scrub, and agricultural hedgerows.	<b>Possible.</b> The habitats within the Project site provide ample resources which could support this species. The riverine/riparian habitat included large valley oak trees for nesting and snags for perching. The oak woodland and ruderal habitats provided both bare ground and low herbaceous cover for foraging. This species was recorded approximately 7 miles northwest in 1992 along Cottonwood Creek in similar habitat.
<b>Monarch butterfly</b> <i>(Danaus plexippus)</i>	FC	Roosts in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby. Larval host plants consist of milkweeds. Winter roost sites extend along the Pacific Coast from northern Mendocino to Baja California, Mexico.	<b>Absent.</b> Suitable wind-protected tree groves and larval host plants were absent from the Project site. This species may pass through the site in route to more suitable habitats.
<b>Northern California legless lizard</b> <i>(Anniella pulchra)</i>	CSSC	Moisture is essential for this species and it is found in moist warm loose soil with plant cover. Occurs in sparsely vegetated areas in beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks. Suitable habitat often includes leaf litter under trees and bushes in sunny areas and dunes stabilized with bush lupine and mock heather. Occurs in scattered locations in the San Joaquin Valley, along the southern Sierra Nevada mountains, and on the desert side of Tehachapi Mountains and part of the San Gabriel Mountains.	<b>Possible.</b> The ruderal portion of the site experiences frequent disturbance due to agricultural activities and the entire site is surrounded by commercial and residential development, however the oak woodland habitat contains sandy, loamy soils and loose leaf litter which could be suitable for this species when the soils are moist. The species was last observed in 2015 within the protected Kaweah Oaks Preserve approximately 7.5 miles southeast of the site where there is little to no disturbance.
<b>Northern leopard frog</b> <i>(Lithobates pipiens)</i>	CSSC	Inhabits grassland, wet meadows, potholes, forests, woodland, brushlands, springs, canals, bogs, marshes, and reservoirs in scattered locations in California. Generally, prefers permanent water with abundant riparian vegetation.	<b>Absent.</b> The site offers an intermittent water source via the Saint John's River, and the submerged riparian vegetation on the fringes of the River could provide suitable habitat for this species when water is present. However, due to habitat loss and degradation, the species has declined significantly in its western range. In California, the species only exists in scattered populations (McKercher & Gregoire, 2024). The last recorded observation of this species was approximately 7 miles north of the site in 1961. Based on the disturbance and extent of development within and around the site and no known

Species	Status*	Habitat	Occurrence within the Project Site
			introductions of this species in the area, the species can be considered absent in the Project site.
Northwestern pond turtle ( <i>Actinemys marmorata</i> )	FPT, 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.	<b>Possible.</b> The Saint John's River within the site could provide suitable aquatic habitat and vegetation for this species as well as a wildlife movement corridor. The oak woodland habitat within the site would also be suitable for nesting. Potential basking sites were also observed within the riverine/riparian habitat.
Pallid bat ( <i>Antrozous pallidus</i> )	CSSC	Found in grasslands, chaparral, and woodlands, where it feeds on ground- and vegetation-dwelling arthropods, and occasionally takes insects in flight. Prefers to roost in rock crevices, but may also use tree cavities, caves, bridges, and other human-made structures.	<b>Unlikely.</b> The site and surrounding areas include oak woodland habitat adjacent to the Saint John's River and agricultural/farmland areas which could provide foraging opportunities. A vehicular bridge is located approximately 250 south of the site which could provide suitable roosting habitat, but there are no resources for roosting within the site. At most, the species could be seen foraging within the site.
San Joaquin kit fox ( <i>Vulpes macrotis mutica</i> )	FE, CT	Opportunistically forages in a variety of habitats. Dens in burrows within alkali sink, valley grassland, and woodland habitats in valleys and adjacent foothills and in human-made structures in cities, rangeland, and agricultural areas.	<b>Possible.</b> The ruderal habitat of the site offers burrowing potential, and the site itself is located within an agricultural/residential region in which this species is known to occur. The most recent observation of this species was five miles west of the site in 2003.
Swainson's hawk ( <i>Buteo swainsoni</i> )	CT	Nests in large trees in open areas adjacent to grasslands, grain or alfalfa fields, or livestock pastures suitable for supporting rodent populations.	<b>Possible.</b> The site included suitable grassland habitat with scattered trees and snags for perching and nesting, and ruderal habitat which appeared to support a large rodent population. Several recorded observations have occurred within a 10-mile radius in similar habitats.
Tipton kangaroo rat ( <i>Dipodomys nitratooides nitratooides</i> )	FE, CE	Inhabits saltbush scrub and sink scrub communities in the Tulare Lake Basin of the southern San Joaquin Valley. This species needs soft friable soils to burrow.	<b>Absent.</b> Habitats required by this species were absent from the site.
Tricolored blackbird ( <i>Agelaius tricolor</i> )	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 foraging in dairy farm feed fields.	<b>Unlikely.</b> Suitable nesting habitat was absent from the site. This species could forage within the oak grassland of the site.
Valley elderberry longhorn beetle ( <i>Desmocerus californicus dimorphus</i> )	FT	Lives in mature elderberry shrubs in the Central Valley and adjacent foothills from Tehama County south through Merced and Mariposa Counties with two scattered populations in Madera and Fresno Counties. Adults are active from March to June.	<b>Absent.</b> Elderberry shrubs were absent from the site and immediate vicinity and the site is well south of the two scattered populations in Madera and Fresno Counties.



Species	Status*	Habitat	Occurrence within the Project Site
Vernal pool fairy shrimp ( <i>Branchinecta lynchi</i> )	FT	Occupies vernal and seasonal pools, with clear to tea-colored water, in grass or mud-bottomed swales, and basalt depression pools.	<b>Absent.</b> Habitats required by this species were absent from the site.
Vernal pool tadpole shrimp ( <i>Lepidurus packardii</i> )	FE	Occurs in vernal pools, clear to tea-colored water, in grass or mud-bottomed swales, and basalt depression pools.	<b>Absent.</b> Habitats required by this species were absent from the site.
Western mastiff bat ( <i>Eumops perotis californicus</i> )	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.	<b>Unlikely.</b> While the oak grassland habitat within the site and agricultural/farmland areas surrounding the site could provide prey for feeding, there are no resources to support roosting within the site. The most recent observation of this species was approximately 5 miles south of the site in 2002 adjacent to Packwood Creek.
Western spadefoot ( <i>Spea hammondi</i> )	FPT, CSSC	The majority of the time this species is terrestrial and occurs in small mammal burrows and soil cracks, sometimes in the bottom of dried pools. 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 or seasonal pools, that hold water for a minimum of three weeks, are necessary for breeding.	<b>Possible.</b> The riverine/riparian habitat could provide the aquatic habitat needed for breeding. In addition, the oak grassland habitat directly adjacent to the River offered existing small mammal burrows within which this species could inhabit outside of the breeding season. The nearest recorded observation of this species was approximately 5 miles north of the site in 2012 within a vernal pool complex.
Western yellow-billed cuckoo ( <i>Coccyzus americanus occidentalis</i> )	FT, CE	Suitable nesting habitat in California includes dense riparian willow-cottonwood and mesquite habitats along a perennial river. Once common in the California Central Valley, as well as coastal valleys and riparian habitats east of the Sierra Nevada, habitat loss now constrains the California breeding population to small numbers of birds.	<b>Absent.</b> Nesting habitats required by this species were absent from the site.

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

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

**STATUS CODES**

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

**CNPS LISTING**

1B	Plants rare, threatened, or endangered in California and elsewhere.	2B	Plants rare, threatened, or endangered in California, but more common elsewhere.
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#### 4.4.2 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 19 regionally occurring special status plant species, 18 are considered absent from or unlikely to occur within the site due to past or ongoing disturbance and/or the absence of suitable habitat. These species include: alkali-sink goldfields, brittlescale, California alkali grass, California jewelflower, California satintail, Coulter's goldfields, Earlimart orache, heartscale, Hoover's spurge, Lassics lupine, lesser saltscale, recurved larkspur, San Joaquin adobe sunburst, San Joaquin Valley Orcutt grass, spiny-sealed button-celery, subtle orache, vernal pool smallscale, and winter's sunflower.

Since it is unlikely that these species would occur onsite, implementation of the project should have no impact on these 18 special status species through construction mortality, disturbance, or loss of habitat. Mitigation measures are not warranted.

Of the 22 regionally occurring special status animal species, 13 are considered absent from or unlikely to occur within the site due to past or ongoing disturbance and/or the absence of suitable habitat. These species include: California condor, California tiger salamander, Crotch's bumble bee, monarch butterfly, northern leopard frog, pallid bat, Tipton kangaroo rat, tricolored blackbird, Valley elderberry longhorn beetle, vernal pool fairy shrimp, vernal pool tadpole shrimp, western mastiff bat, western yellow-billed cuckoo.

Since it is unlikely that these species would occur onsite, implementation of the project should have no impact on these 13 special status species through construction mortality, disturbance, or loss of habitat. Mitigation measures are not warranted.

##### 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 would be a violation of state and federal laws or considered a potentially significant impact under CEQA. Implementation of the mitigation measures **BIO-1** and **BIO-2** will help reduce potential impacts to these resources to a less than significant level under CEQA and will help with complying with state and federal laws protecting these resources. These mitigation measures are identified in **Section 4.4.3** below.

##### Project-Related Impacts to Special Status Plant Species

Sanford's arrowhead was the only special status plant species that was identified to potentially occur within or adjacent to the site. Projects that adversely affect special status plants or result in the mortality of special status plants would be considered a significant impact under CEQA.

Implementation of mitigation measures **BIO-3** through **BIO-5** will reduce potential impacts to special status plants to a less than significant level under CEQA. These mitigation measures are identified in **Section 4.4.3** below.

##### Project-Related Mortality and/or Disturbance to American Badger

The Project site contained oak grassland habitat and riverine/riparian habitat that could potentially be used by American badger. Multiple small mammal burrows were observed within the oak grassland

habitat adjacent to the River. American badgers denning within the Project site during construction have the potential to be injured or killed by Project-related activities. Projects that result in the mortality of individuals would be considered a potentially significant impact under CEQA.

Implementation of mitigation measures **BIO-6** through **BIO-9** will reduce potential impacts to American badgers to a less than significant level under CEQA. These mitigation measures are identified in [Section 4.4.3](#) below.

#### **Project-Related Mortality and/or Disturbance to San Joaquin Kit Fox**

The Project site contains ruderal and oak grassland habitat with existing small mammal burrows, which could be suitable denning and foraging habitat for San Joaquin kit fox (SJKF). SJKF denning within the Project site during construction have the potential to be injured or killed by Project-related activities. Projects that result in the mortality of individuals would be considered a violation of state and federal laws and considered a potentially significant impact under CEQA.

Implementation of mitigation measures **BIO-10** through **BIO-12** will reduce potential impacts to SJKF to a less than significant level under CEQA and will ensure compliance with state and federal laws protecting this species. These mitigation measures are identified in [Section 4.4.3](#) below.

#### **Project-Related Mortality and/or Nest Abandonment of Migratory Birds, Raptors, and Special Status Birds, Including Loggerhead Shrike and Swainson's Hawk**

The site contains suitable nesting and foraging habitat for a variety of protected bird species, such as migratory birds, raptors, and special status birds, including loggerhead shrike, burrowing owl, and Swainson's hawk. It is anticipated that during the nesting bird season, protected birds could forage and nest on the ground or in trees within the site. Protected birds nesting within or adjacent to the site during construction have the potential to be injured or killed by Project-related activities. In addition to the direct "take" of protected birds within the site or adjacent areas, these birds nesting in these areas could be disturbed by Project-related activities resulting in nest abandonment. Projects that adversely affect the nesting success of protected birds or result in the mortality of these birds would be a violation of state and federal laws and considered a significant impact under CEQA.

Implementation of the mitigation measures **BIO-13** through **BIO-15** will reduce potential impacts to protected nesting birds to a less than significant level under CEQA and will help the Project comply with state and federal laws protecting these bird species. These mitigation measures are identified in [Section 4.4.3](#) below.

#### **Project-Related Mortality and/or Disturbance to Burrowing Owl**

The site contained suitable nesting, roosting, and foraging habitat for burrowing owl (BUOW). Small mammal burrows were observed within the ruderal habitat, which could be used by BUOW for nesting or roosting. Construction activities that adversely affect the nesting success of burrowing owls or result in the mortality of individuals constitute a violation of state and federal laws and would be considered a significant impact under CEQA.

Implementation of the mitigation measures **BIO-16** through **BIO-18** will reduce potential impacts to nesting or roosting BUOW to a less than significant level under CEQA and help the Project comply with state and federal laws protecting this avian species. These mitigation measures are identified in [Section 4.4.3](#) below.

#### **Project-Related Mortality and/or Disturbance to Northern California Legless Lizard**

The Project site contains oak grassland and riverine/riparian habitats with loose, sandy soil and leaf litter, which would support Northern California legless lizard foraging activities. Northern California legless

lizards occurring within these areas of the Project site during construction have the potential to be injured or killed by Project-related activities. Projects that adversely affect the success of Northern California legless lizards or result in the mortality of individuals would be considered a potentially significant impact under CEQA.

Implementation of mitigation measure **BIO-19** will reduce potential impacts to Northern California legless lizards to a less than significant level under CEQA. Said mitigation measure is identified in **Section 4.4.3** below.

#### **Project-Related Impacts to Northwestern Pond Turtle**

The riverine/riparian habitat within the site contained suitable habitat features for northwestern pond turtle (NPT) dispersal and basking, and the oak woodland habitat within the site would be suitable for nesting. NPT occurring within the Project site during construction have the potential to be injured or killed by Project-related activities. Projects that adversely affect the success of NPT or result in the mortality of individuals would be considered a potentially significant impact under CEQA.

Implementation of mitigation measures **BIO-20** and **BIO-21** will reduce potential impacts to NPT to a less than significant level under CEQA.

#### **Project-Related Mortality and/or Disturbance to Western Spadefoot**

The riverine/riparian habitat could provide the aquatic habitat needed for breeding, and the existing small mammal burrows in the oak grassland habitat could be suitable for aestivation. Western spadefoot occurring within the Project site during construction have the potential to be injured or killed by Project-related activities. Projects that adversely affect the success of western spadefoot or result in the mortality of individuals would be considered a potentially significant impact under CEQA.

Implementation of mitigation measures **BIO-22** and **BIO-23** will reduce potential impacts to western spadefoot to a less than significant level under CEQA.

As mentioned in **Section 2.1.7.2 Project Description**, the Project would also include conservation space area that would be pedestrian accessible. Conservation space would be in the form of terraced grading within the basin cells with flatter side slopes (i.e. 6:1 or flatter) to facilitate plantings for native habitats and provide varying water depths such as areas with 3 feet of water depth, areas with 1.5 feet, and areas with 6-9 inches of water depth. The Vegetation Outline (

Appendix D) would be followed in order to ensure native habitat is planted. This would ultimately result in an overall benefit to the site in regard to biological resources.

- 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?**

**Less than Significant Impact.** There are no CNDDB-designated “natural communities of special concern” recorded within the site or surrounding lands. Any riparian habitat removed temporarily as part of Project activities would be restored, and permanent impacts to riparian habitat and vegetation would be

mitigated through compliance with compensatory mitigation requirements of regulating agencies. Additional mitigation is not warranted and impacts would be less than significant.

- 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?

**Less than Significant Impact with Mitigation Incorporated.** The Project involves the construction of a new turnout within the River. The River exhibited a bed, banks and OHWM, placing it under the jurisdiction of several state and federal agencies. An aquatic resources delineation was performed to map the extents of the jurisdictional waters within the Project site. Project-related impacts to this waterway would be considered a potentially significant impact under CEQA. Impacts to WOTUS and waters of the state are also subject to the permit requirements of Section 404 and Section 401 of the CWA and impacts to rivers and streams are subject to the permit requirements of Section 1602 of the California Fish and Game Code. The placement of fill within any wetlands or other jurisdictional aquatic features will likely require a Section 404 permit from the USACE, a Section 401 Water Quality Certification from the RWQCB, and a Lake or Streambed Alteration Agreement from CDFW.

Implementation of the mitigation measure **BIO-24** will reduce potential impacts to waters to a less than significant level under CEQA and will help the Project comply with state and federal laws protecting this habitat.

- 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.** The bridge adjacent to the site was observed to be a native wildlife nursery for cliff swallows and could be used by other cliff-dwelling or colonially nesting birds or maternity roosting bats. This bridge is located outside of the site and would not be impacted by Project-related activities. Further, Project-related disturbances would likely be similar to daily vehicle traffic disturbances on the bridge, so mitigation for native wildlife nursery sites is not warranted.

Most of the site does not contain features that would function as wildlife movement corridors, but the riverine/riparian and oak woodland habitats within and adjacent to the Project site could provide cover and a means for travel for wildlife species. Impacts to wildlife movement corridors as a result of Project activities would be considered a potentially significant impact under CEQA. Mitigation measures **BIO-25** and **BIO-26** will reduce impacts to nocturnal wildlife movement 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?

**No Impact.** The Project appears to be consistent with the goals and policies of the Tulare County General Plan. There are no known Habitat Conservation Plans (HCPs) or Natural Communities Conservation Plan (NCCPs) in the Project vicinity. There would be no impact and mitigation measures are not warranted.

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



**No Impact.** The Project is not located within the boundaries of an adopted HCP, NCCP, or other approved local, regional, or State habitat conservation plan. There would be no impact and mitigation measures are not warranted.

#### 4.4.3 MITIGATION

##### General Project-Related Impacts

- BIO-1**      **(WEAP Training):** Prior to initiating construction activities (including staging and mobilization), all personnel associated with project construction will attend a mandatory Worker Environmental Awareness Program (WEAP) training, conducted by a qualified biologist, to aid workers in identifying special status resources that may occur within the Project site. The specifics of this program will include identification of the sensitive species and suitable habitats with the potential to occur on the site, 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 that potentially occur 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 and sensitive habitats such as wetlands with potential to occur onsite, 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**      **(BMPs):** The Project proponent will ensure that all workers employ the following best management practices (BMPs) in order to avoid and minimize potential impacts to special status species:
- Vehicles will observe a 15-mph speed limit while on unpaved access routes.
  - 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 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.
  - The presence of any special status species will be reported to the project’s qualified biologist, who will submit the occurrence to the CNDDDB. If necessary, the biologist will report the occurrence to CDFW and/or USFWS.

##### Project-Related Impacts to Special Status Plant Species

- BIO-3**      **(Focused Survey):** A qualified botanist/biologist (someone who is able to identify Sanford’s arrowhead) will conduct focused botanical surveys of aquatic areas during the appropriate blooming season for Sanford’s arrowhead (May-October), according to CDFW’s Protocols for Surveying and Evaluating Impacts to Special Status Native Plant

Populations and Sensitive Natural Communities (2018) for areas where ground disturbance will occur and prior to the start of construction.

- BIO-4**      **(Avoidance):** If special status plants are identified during a survey, an avoidance buffer will be determined by the qualified botanist/biologist based on the proximity to construction activities and, if necessary, use of exclusion fencing, will be placed around the area to avoid disturbance to the plants and its root system.
- BIO-5**      **(Formal Consultation):** If rare plant individuals or populations or sensitive natural communities are detected within work areas during the focused botanical survey(s), and the plants cannot be avoided, the Project proponent will determine next steps for relocation.

#### Project-Related Mortality and/or Disturbance to American Badger

- BIO-6**      **(Pre-construction Take Avoidance Survey):** A qualified biologist (someone familiar with the identification and sign of this species) will conduct a pre-construction survey of the Project site within seven (7) days prior to vegetation clearing or ground disturbing activities. The goal of this survey is to search for potentially active badger dens.
- BIO-7**      **(Remote Cameras):** If potential dens for American badger are detected during the pre-construction survey, each potential den will be monitored with remote cameras for a period of three consecutive nights. If there is no activity at the den location recorded for three consecutive nights, the den can be deemed “inactive” or “unoccupied” and closed or excavated.
- BIO-8**      **(Den Avoidance):** If an American badger is denning on or within 50 feet of the Project site, the Project proponent shall avoid the den by a minimum 50-foot buffer.
- BIO-9**      **(Timed Den Excavation):** If an American badger is denning on or within 50 feet of the Project site and it cannot be avoided, the badger may be evicted, and the den excavated outside of the natal season (generally March 15 – June 15) or if it is determined that there are no cubs in the den. Prior to the planned eviction and den excavation, a remote camera will be placed at the den entrance for a minimum of three consecutive nights to record the general time when the badger leaves the den. If it is outside of the natal season or it is determined by a qualified biologist that there are no cubs present in the den the badger will be evicted from the den and the den excavated by hand, with the assistance of machinery, after it has left the den for that night. Should any cubs be discovered during the excavation the work will stop and the crew will leave the site or borrow area immediately so the female can rescue her cubs and relocate them.

#### Project-Related Mortality and/or Disturbance to San Joaquin Kit Fox

- BIO-10**      **(Pre-Construction Survey):** Within seven (7) days prior to the start of construction, a pre-construction survey for SJKF will be conducted on and within 200 feet of proposed work areas.
- BIO-11**      **(Establish Buffers):** On discovery of any SJKF dens near the Project site a qualified biologist will determine appropriate construction setback distances (buffer zones) based on applicable CDFW and/or USFWS guidelines (see below). If needed, construction buffers will be identified with flagging, fencing, or other easily visible means. They will be

maintained until the biologist has determined that the den will no longer be impacted by construction.

1. At least 100 feet around den(s);
2. At least 200 feet around natal dens (which SJKF young are reared); and
3. At least 500 feet around any natal dens with pups (except for any portions of the buffer zone that is already fully developed).

**BIO-12**      ***(Avoidance and Minimization):*** The Project will observe all avoidance and minimization measures during construction and on-going operational activities as required by the qualified biologist and the USFWS's Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance (2011), including, but not limited to: maintaining buffer zones, construction speed limits, covering of pipes, installation of escape structures, restriction of herbicide and rodenticide use, proper disposal of food items and trash, prohibition of pets and firearms, and completion of an employee education program (see **BIO-1**).

#### Project-Related Mortality and/or Nest Abandonment of Migratory Birds, Raptors, and Special Status Birds, including loggerhead shrike and Swainson's Hawk

**BIO-13**      ***(Avoidance):*** The Project's construction activities will occur, if feasible, between September 16 and January 31 (outside of the nesting bird season) to avoid impacts to nesting birds.

**BIO-14**      ***(Pre-construction Surveys):*** If activities must occur within the nesting bird season (February 1 to September 15), a qualified biologist (someone familiar with the identification and sign of this species) will conduct a single pre-construction take avoidance survey for Swainson's hawk nests on the site and borrow area and within a 0.5-mile radius within five calendar days prior to the start of construction. The Swainson's hawk survey will not be completed between April 21 and June 10 due to the difficulty of identifying nests during this time of year. The survey would also include a single pre-construction take avoidance survey for song sparrow and tricolored blackbird and other nesting migratory birds within and up to 100 feet outside of the site and borrow area and for other nesting raptors within and up to 500 feet outside of the site and borrow area. All raptor nests would be considered "active" upon the nest-building stage. If work stops for more than 7 days during nesting bird season a follow-up nesting bird survey will be conducted. If no active nests are observed, no further mitigation is required.

**BIO-15**      ***(Avoidance Buffers):*** On discovery of any active nests or breeding colonies near work areas, 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 nest(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.

#### Project-Related Mortality and/or Disturbance to Burrowing Owl

**BIO-16**      ***(Pre-construction Take Avoidance Survey):*** A qualified biologist (someone familiar with the identification and sign of this species) will conduct a pre-construction take avoidance

survey for BUOW and suitable burrows, 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. If no BUOW individuals or active burrows are observed, no further mitigation is required.

**BIO-17**      **(Avoidance):** If an active BUOW burrow is detected avoidance buffers will be implemented. A qualified biologist will determine appropriate avoidance buffer distances based on applicable CDFW 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 site or borrow area.

**BIO-18**      **(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 will 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 (hand tools and machinery, if needed). Following completion of passive relocation, a report will be prepared that documents the methods and results of these efforts.

#### Project-Related Mortality and/or Disturbance to Northern California Legless Lizard

**BIO-19**      **(Pre-construction Surveys):** If activities must occur in areas that contain loose soil and leaf litter within the oak grassland and riverine/riparian habitats, a qualified biologist will conduct pre-construction surveys within 48 hours prior to beginning any Project activities. Any loose substrate in which lizards could bury themselves will be gently raked with a hand tool (e.g., a garden rake) to a depth of two inches to locate any lizards that could be under the surface. Lizards that are detected will be allowed to leave the work area of their own volition or will be moved out of harm's way by a qualified biologist to suitable habitat at least 50 feet from the Project work site.

#### Project-Related Impacts to Northwestern Pond Turtle

**BIO-20**      **(Pre-Construction Survey and Avoidance Buffers):** Within seven (7) days prior to the start of construction within the site, a qualified biologist (someone who is able to identify this species) will conduct a pre-construction survey for NPT within the site 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 NPTs 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 NPTs will be conducted. If the surveys result in the identification of a NPT, or an individual is found within the site during construction activities, it will be allowed to leave the site on its own and the qualified biologist will determine appropriate buffers to be implemented to avoid impacts to the individual(s).

- BIO-21**      **(Monitor):** If NPTs are observed within the site, a qualified biologist will conduct a pre-activity clearance survey each day and remain onsite to oversee all vegetation clearing and ground disturbing activities until the individual(s) has vacated the work areas. If NPTs are detected, the biologist will stop work and allow the species to leave the site 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 site. "Take" of a state or federal special status (rare, California Species of Special Concern, threatened, or endangered) species is prohibited.

#### Project-Related Mortality and/or Disturbance to Western Spadefoot

- BIO-22**      **(Focused Survey):** A qualified biologist (someone familiar with the identification and sign of this species) will conduct a focused survey prior to the start of construction. Transects will be walked throughout the site and surrounding lands within up to 50 feet. All waterways within the site will be visually surveyed for western spadefoot adults, eggs, and larvae. If no western spadefoot adults, eggs, or larvae are observed during these surveys, then construction activities may begin. If the survey results in the identification of this species monitoring will be required.

- BIO-23**      **(Monitor):** If western spadefoot is observed within the site or borrow 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 until the individual(s) have vacated the work areas. If western spadefoot is detected, the biologist will stop work and allow the species to leave the site 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 Regulated Waters, Wetlands, and Water Quality

- BIO-24**      **(Permits):** If the River onsite cannot be avoided, permits, certifications, or agreements with USACE, RWQCB, CDFW, and any other regulating agency will be obtained, if needed. These permits, certifications, and agreements would ensure that direct or indirect impacts to jurisdictional waters are avoided or minimized to the extent possible, and any permanent impacts would be offset by compensatory mitigation plans.

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

- BIO-25**      **(Wildlife Access):** Access should not be blocked during or outside of construction hours, including during overnight hours or weekends. If construction must block the riverine/riparian habitat, an alternative route through the construction area will be identified by a qualified biologist and maintained throughout the construction schedule timeframe.
- BIO-26**      **(Cover Excavations):** Pipeline/turnout excavations and vertical pipes shall be covered each night to prevent wildlife from falling in and becoming trapped or injured during migratory or dispersal movements.



## 4.5 CULTURAL RESOURCES

Table 4-12: 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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### 4.5.1 BASELINE CONDITIONS

#### 4.5.1.1 PEDESTRIAN SURVEY

A Phase I Cultural Resources Assessment was prepared for the Project, dated June 2024 (see [Appendix C](#)). On May 18, 2024, Taylored Archaeology archaeologists conducted an archaeological pedestrian survey of the entire Project's APE. The survey method varied based on the specific conditions within the APE. The survey began in the northeast corner of the APE and was completed from east to west along transects oriented north to south using parallel transects spaced 15-20 meters apart. Areas with slopes greater than 20 percent, with thick vegetation, or active earth moving activities were subject to an opportunistic survey. All areas of the APE were accessible and surveyed. The archaeologists carefully inspected exposed ground surface and rodent burrow back-dirt piles and other areas of bare earth for soil changes and artifacts.

The APE was checked for both prehistoric deposits and historic-age features, structures, and artifacts more than 50 years old that may be present on the ground surface. The archaeologists photographed portions of the APE using digital cameras. A survey plan map of the site boundary was used to see vegetation, structures, map out transects and surveyed, and recorded observations on field notes, and collected locational data on a Gaia Global Positioning System application.

#### 4.5.1.2 RECORDS SEARCH

On April 30, 2024, Taylored Archaeology requested a cultural resource records search from the South San Joaquin Valley Information Center (SSJVIC) of the California Historical Resources Information System (CHRIS) at California State University in Bakersfield, California. The purpose of this request was to identify and review prior cultural resource studies and previously recorded cultural resources on or near the APE. The records search included prior cultural resources investigation reports conducted, previously recorded resources within the APE and the 1.0-mile radius around the APE. Also included in research were cultural resource records as well as the Historic Properties Directory of the Office of Historic Preservation list, General Land Office Maps, Archaeological Determinations of Eligibility list, and the California Inventory of Historic Resources list. The search confirmed there have been two previous cultural resource studies conducted within the Project APE and there have been 12 previous cultural resource studies conducted within a one-mile radius of the Project APE. The search also identified no cultural resources within the Project APE and five within a one-mile radius of the Project APE.

#### 4.5.1.3 NATIVE AMERICAN OUTREACH

Taylored Archaeology requested a Sacred Lands File (SLF) search from the Native American Heritage Commission (NAHC) on April 30, 2024. The objective of the SLF search was to identify any known places of

spiritual, sacred activity or traditional use or other resources of importance. The NAHC also included contact information of local Native American representatives who may have knowledge or interest in sharing information of resources of sacred significance present in or near the APE. Each individual listed was sent a nongovernmental outreach letter and a map notifying them of the Project and asking if they had any knowledge of the Project area or surrounding vicinity. Follow-up communication was performed via email and phone calls, as appropriate. As of the date of this report, no responses were received by the Native American representatives, nor was any information shared. The SLF can be found in [Appendix C](#).

#### 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?

**a and b) Less than Significant Impact with Mitigation Incorporated.** A CHRIS records search, from the SSJVIC, was conducted on April 30, 2024. No archaeological sites, isolated artifacts, buildings or features were encountered within the Project's APE during the survey. The search confirmed there have been two previous cultural resource studies conducted within the Project APE and there have been 12 previous cultural resource studies conducted within a one-mile radius of the Project APE. The search also identified no cultural resources within the Project APE and five within a one-mile radius of the Project APE. While past agricultural and development activities may have potentially destroyed or obscured ground surface evidence of archaeological resources within the APE, intact archaeological resources may potentially exist below the ground surface. According to the Phase I Cultural Resources Assessment prepared for the Project ([Appendix C](#)), based upon ethnographic data, historical maps, and archaeological sensitivity models, the Project area was dominated by natural watercourses and likely contained a rich supply of natural resources for indigenous populations. Thus, there is a high possibility of encountering buried cultural resources during Project ground disturbing activities. Therefore, mitigation measure **CUL-1** outlined below will be implemented in order to reduce impacts to less than significant.

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

**Less than Significant Impact with Mitigation Incorporated.** As mentioned above, based upon ethnographic data, historical maps, and archaeological sensitivity models, the Project area was dominated by natural watercourses and likely contained a rich supply of natural resources for indigenous populations. Thus, there is a high possibility of encountering buried cultural resources during Project ground disturbing activities. Therefore, mitigation measure **CUL-2** outlined below will be implemented in order to reduce impacts to less than significant.

#### 4.5.3 MITIGATION

**CUL-1** In the event that previously unidentified archaeological remains are encountered during development or ground-moving activities in the APE, all work should be halted until a qualified archaeologist can identify the discovery and assess its significance. In the event of accidental discovery of unidentified archaeological remains during development or ground-moving activities in the APE, all work shall be halted in the immediate vicinity until a qualified archaeologist can identify the discovery and assess its significance.

**CUL-2**

If human remains are uncovered during construction, the Tulare County Coroner is to be notified to investigate the remains and arrange proper treatment and disposition. If the remains are identified on the basis of archaeological context, age, cultural associations, or biological traits to be those of a Native American, California Health and Safety Code 7050.5 and PRC 5097.98 require that the coroner notify the NAHC within 24 hours of discovery. The NAHC will then identify the Most Likely Descendent who will be afforded an opportunity to make recommendations regarding the treatment and disposition of the remains.

## 4.6 ENERGY

Table 4-13: 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 4.6.1 BASELINE CONDITIONS

The Project site is situated immediately to the north of the City of Visalia in Tulare County and adjacent to the St. John's River. Eastside Power Authority supplies electricity to the Project area, while Southern California Gas provides natural gas. Power is currently available to the Project site. New construction would be subject to Titles 20 and 24 of the California Code of Regulations which each serve to reduce demand for electrical energy by implementing energy-efficient standards for residential, as well as non-residential buildings.

### 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.** Fuel consumed by construction equipment would be the primary energy resource expended over the course of Project construction. For heavy-duty construction equipment, horsepower and load factor were assumed using default data from the CalEEMod model. Fuel use associated with construction vehicle trips generated by the Project was also estimated; trips include construction worker trips, haul trucks trips for material transport, and vendor trips for construction material deliveries. Fuel use from these vehicles traveling to the Project was based on (1) the projected number of trips the Project would generate (CalEEMod default values), (2) default average trip distance by land use in CalEEMod, and (3) fuel efficiencies estimated in the ARB 2017 Emissions Factors model (EMFAC2017) mobile source emission model.

Construction is estimated to consume a total of 27,182.40 gallons of diesel fuel and 1,067.43 gallons of gasoline fuel (See [Appendix A](#)). California Code of Regulations Title 13, Motor Vehicles, Section 2449(d)(2), Idling, limits idling times of construction vehicles to no more than 5 minutes, thereby precluding unnecessary and wasteful consumption of fuel because of unproductive idling of construction equipment. In addition, the energy consumption for construction activities would not be ongoing as they would be limited to the duration of Project construction.

Energy consumption of non-residential uses is currently governed by the 2022 California Building Code, Part 6 for structures, and Title 20 of the California Code of Regulations for appliances. Energy consumption is anticipated to decrease over time as more energy efficient standards take effect and

energy-consuming equipment reaches its end-of-life and necessitates replacement. Therefore, impacts would be less than significant.

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

**No Impact.** State and local authorities regulate energy use and consumption. These regulations at the State level are intended to reduce energy use and greenhouse gas (GHG) emissions. These include, among others, Assembly Bill 1493 – Light-Duty Vehicle Standards; California Code of Regulations Title 24, Part 6 – Energy Efficiency Standards; and California Code of Regulations Title 24, Parts 6 and 11 – California Energy Code and Green Building Standards. The Project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Therefore, there would be no impact.



## 4.7 GEOLOGY AND SOILS

Table 4-14: 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.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii. Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii. Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv. Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 4.7.1 BASELINE CONDITIONS

#### 4.7.1.1 GEOLOGY AND SOILS

The Project is located in Tulare County, in the southern section of California's Great Valley Geomorphic Province, or Central Valley. The Sacramento Valley makes up the northern third and the San Joaquin Valley makes up the southern two-thirds of the geomorphic province.<sup>12</sup> Both valleys are watered by large rivers flowing west from the Sierra Nevada Range, with smaller tributaries flowing east from the Coast Ranges. Most of the surface of the Great Valley is covered by Quaternary (present day to 1.6 million years ago) alluvium. The sedimentary formations are steeply upturned along the western margin due to the uplifted

<sup>12</sup> (California Department of Conservation, 2002)  
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Sierra Nevada Range. From the time the Valley first began to form, sediments derived from erosion of igneous and metamorphic rocks and consolidated marine sediments in the surrounding mountains have been transported into the Valley by streams.

#### 4.7.1.2 FAULTS AND SEISMICITY

The Project site is not located within the Alquist-Priolo Earthquake Fault Zone and no known faults cut through the soil at the site. The nearest major fault is the San Andreas Fault, located approximately 74 miles west-southwest of the Project site.<sup>13</sup> The San Andreas Fault is the dominant active tectonic feature of the Coast Ranges and represents the boundary of the North American and Pacific plates. A smaller fault zone, the Pond Fault, is located approximately 47 miles south.<sup>14</sup>

#### 4.7.1.3 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. Although no specific liquefaction hazard areas have been identified in the County, this potential is recognized throughout the San Joaquin Valley where unconsolidated sediments and a high-water table coincide. It is reasonable to assume that due to the depth to groundwater within the southern portion of Tulare County, liquefaction hazards would be negligible.

#### 4.7.1.4 SOIL SUBSIDENCE

There are two types of Subsidence: Land subsidence and hydrocompaction subsidence. Hydrocompaction subsidence occurs when a large land area settles due to over-saturation. These areas are typically composed of open-textured soils that become saturated, high in silt or clay content. Land subsidence occurs when an extensive amount of ground water, oil, or natural gas is withdrawn from below the ground surface. The San Joaquin Valley has become an area that has increasingly experienced subsidence due to excessive groundwater pumping activities lowering the water table.

#### 4.7.1.5 DAM AND LEVEE FAILURE

The closest dam to the Project site is the Bravo Lake Reservoir and is approximately 11 miles east of the Project site. The Dam Breach Inundation Map by DWR indicates that the Bravo Lake Reservoir Zone breaches the Project site via the St. Johns River channel.<sup>15</sup>

### 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 substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.
- ii. Strong seismic ground shaking?

**a-i – a-ii) Less than Significant Impact.** The Project site is located in an area traditionally characterized by relatively low seismic activity. The Project site is not located in an Alquist-Priolo Earthquake Fault Zone as established by the Alquist-Priolo Fault Zoning Act. The nearest major fault is the San Andreas Fault,

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<sup>13</sup> (California Department of Conservation, 2023)

<sup>14</sup> Ibid.

<sup>15</sup> (California Department of Water Resources, 2022)

located approximately 74 miles west-southwest of the Project site. All proposed Project features would be constructed in a manner to handle seismic events, as required by the California Building Code (CBC). This would result in less than significant impacts. In addition, the Project would not include habitable structures; therefore, the Project would not result in potential substantial adverse effects, including the risk of loss, injury, or death. Impacts would be less than significant.

iii. Seismic-related ground failure, including liquefaction?

**Less than Significant Impact.** Liquefaction occurs when loose, water-saturated sediments lose strength and fail during strong ground shaking. Generally, liquefiable areas are generally confined to the Valley floor covered by Quaternary-age alluvial deposits, Holocene soil deposits, current river channels, and active wash deposits and their historic floodplains, marshes, and dry lakes. Specific liquefaction hazard areas have not been identified in Tulare County. The Project site is not located within a wetland area, and it is located in the southwestern portion of the County where liquefaction risk is considered low to moderate. Impacts would be less than significant.

iv. Landslides?

**No Impact.** The Project is located on the Valley floor where no major geologic landforms exist on or near the site that could result in a landslide event. The potential landslide impact at this location is minimal as the site is located over 10 miles from the foothills and the local topography is essentially flat. There would be no impact.

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 excavation and pond construction. 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. Dischargers whose projects disturb one (1) or more acres of soil, or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity Construction General Permit Order 2009-0009-DWQ. Construction activity subject to this permit includes clearing, grading, and disturbances to the ground such as stockpiling or excavation but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development of a Stormwater Pollution Prevention Plan (SWPPP) by a certified Qualified SWPPP Developer. Since the Project site has relatively flat terrain with a low potential for soil erosion, and would comply with the California State Water Resources Control Board (SWRCB) requirements of implementing a SWPPP, the impact 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.** The Project is not anticipated to adversely affect soil stability or increase the potential for local or regional landslides, subsidence, liquefaction, or collapse. As discussed previously, the Project site is in an area that is not reasonably assumed to contain conditions conducive to liquefaction hazards. The Project would not exacerbate hazards related to unstable soil and would not result in on- or off-site landslides, lateral spreading, subsidence, liquefaction, or collapse. 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.** The Project would not contain any facilities that could be affected by expansive soils, nor would substantial grading change the topography such that the Project would generate substantial risks to life or property. In addition, the Project site does not include soils that are conducive to expanding and contracting; therefore, 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 include any habitable structures; therefore, new septic installation or alternative wastewater disposal systems are not necessary for the Project. There would be no impact.

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

**No Impact.** No known paleontological resources have been identified at the Project site to date. Therefore, there would be no impact.

## 4.8 GREENHOUSE GAS EMISSIONS

Table 4-15: 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 4.8.1 BASELINE CONDITIONS

Commonly identified GHG emissions and sources include the following:

**Carbon dioxide (CO<sub>2</sub>)** is an odorless, colorless natural greenhouse gas. CO<sub>2</sub> is emitted from natural and anthropogenic sources. Natural sources include the following: decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic out gassing. Anthropogenic sources include the burning of coal, oil, natural gas, and wood.

**Methane (CH<sub>4</sub>)** is a flammable greenhouse gas. A natural source of methane is the anaerobic decay of organic matter. Geological deposits, known as natural gas fields, also contain methane, which is extracted for fuel. Other sources are from landfills, fermentation of manure, and ruminants such as cattle.

**Nitrous oxide (N<sub>2</sub>O)**, also known as laughing gas, is a colorless greenhouse gas. Nitrous oxide is produced by microbial processes in soil and water, including those reactions that occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load.

**Water vapor** is the most abundant and variable greenhouse gas. It is not considered a pollutant; in the atmosphere, it maintains a climate necessary for life.

**Ozone (O<sub>3</sub>)** is known as a photochemical pollutant and is a greenhouse gas; however, unlike other greenhouse gases, ozone in the troposphere is relatively short-lived and, therefore, is not global in nature. Ozone is not emitted directly into the atmosphere but is formed by a complex series of chemical reactions between volatile organic compounds, nitrogen oxides, and sunlight.

**Aerosols** are suspensions of particulate matter in a gas emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light.

**Chlorofluorocarbons (CFCs)** are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth's surface). CFCs were first synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. CFCs destroy stratospheric ozone; therefore, their production was stopped as required by the Montreal Protocol in 1987.

**Hydrofluorocarbons (HFCs)** are synthetic chemicals that are used as a substitute for CFCs. Of all the greenhouse gases, HFCs are one of three groups (the other two are perfluorocarbons and sulfur hexafluoride) with the highest global warming potential. HFCs are human made for applications such as air conditioners and refrigerants.

**Perfluorocarbons (PFCs)** have stable molecular structures and do not break down through the chemical processes in the lower atmosphere; therefore, PFCs have long atmospheric lifetimes, between 10,000 and 50,000 years. The two main sources of PFCs are primary aluminum production and semiconductor manufacture.

**Sulfur hexafluoride (SF<sub>6</sub>)** is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It has the highest global warming potential of any gas evaluated. Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

There are uncertainties as to exactly what the climate changes will be in various local areas of the earth, and what the effects of clouds will be in determining the rate at which the mean temperature will increase. There are also uncertainties associated with the magnitude and timing of other consequences of a warmer planet: sea level rise, spread of certain diseases out of their usual geographic range, the effect on agricultural production, water supply, sustainability of ecosystems, increased strength and frequency of storms, extreme heat events, air pollution episodes, and the consequence of these effects on the economy.

Emissions of GHGs contributing to global climate change are largely attributable to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. About three-quarters of human emissions of CO<sub>2</sub> to the global atmosphere during the past 20 years are due to fossil fuel burning. Atmospheric concentrations of CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O have increased 31 percent, 151 percent, and 17 percent, respectively, since the year 1750 (CEC 2008). GHG emissions are typically expressed in carbon dioxide-equivalents (CO<sub>2</sub>e), based on the GHG's Global Warming Potential (GWP). The GWP is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, one ton of CH<sub>4</sub> has the same contribution to the greenhouse effect as approximately 21 tons of CO<sub>2</sub>. Therefore, CH<sub>4</sub> is a much more potent GHG than CO<sub>2</sub>. In accordance with SJVAPCD's *CEQA Greenhouse Gas Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects*<sup>16</sup>, proposed projects complying with Best Performance Standards (BPS) would be determined to have a less-than-significant impact. Projects not complying with BPS would be considered less than significant if operational GHG emissions would be reduced or mitigated by a minimum of 29 percent, in comparison to business-as-usual (year 2004) conditions. In addition, project-generated emissions complying with an approved plan or mitigation program would also be determined to have a less-than-significant impact.

CalEEMod air quality modeling software was run in July 2024 and is contained in [Appendix A](#).

## 4.8.2 IMPACT ANALYSIS

### 4.8.2.1 PROJECT RELATED EMISSIONS

Short-term construction emissions associated with the Project were calculated using CalEEMod, Version 2022.1.1.25. The emissions modeling includes emissions generated by off-road equipment, haul trucks, and worker commute trips. Emissions were quantified based on an anticipated construction schedule of approximately six months. Remaining assumptions were based on the default parameters contained in the model. Modeling assumptions and output files are included in [Appendix A](#). Estimated construction-

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<sup>16</sup> (San Joaquin Valley Air Pollution Control District, 2009)  
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generated emissions are summarized in **Table 4-16**. As discussed in **Section 4.3**, the amount of operational related emissions generated would be considered negligible.

**Table 4-16: Short-term Construction Related GHG Emissions**

	Emissions (MT CO <sub>2</sub> e) in Tons per Year
Maximum Annual Construction CO <sub>2</sub> e Emissions	1,652
AB 32 Consistency Threshold for Stationary Source Projects*	10,000
Threshold Exceeded?	No

\* As published in the Bay Area Air Quality Management District's CEQA Air Quality Guidelines. Available online at [http://www.baaqmd.gov/~media/files/planning-and-research/ceqa/ceqa\\_guidelines\\_may2017-pdf.pdf?la=en](http://www.baaqmd.gov/~media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en) Accessed 7/15/2024.

Construction related generation of GHGs would be a maximum of 1,652 Metric Tons of Carbon Dioxide Equivalent (MTCO<sub>2</sub>e) per year. While some operational emissions could result from the Project, this quantity would be negligible. The Project would not exceed the AB 32 consistency threshold for land use projects for both short term construction emissions and long-term operational emissions as a result.

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 not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. GHG emissions would be generated during construction. As shown in **Table 4-16**, the Project would not result in the generation of GHG emissions that would exceed the AB 32 consistency threshold of 10,000 MTCO<sub>2</sub>e annually during construction activities. Therefore, impacts would be less than significant.

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.** The Project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. The Project would be in compliance with all SJVAPCD policies and regulations and would not exceed an applicable threshold for GHG emissions. Therefore, there would be no impact.

## 4.9 HAZARDS AND HAZARDOUS MATERIALS

Table 4-17: 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Expose people or structures, either directly or indirectly to a significant risk of loss, injury or death involving wildland fires?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### 4.9.1 BASELINE CONDITIONS

#### 4.9.1.1 HAZARDOUS MATERIALS

The Hazardous Waste and Substances Sites (Cortese) List is a planning document used by the State, local agencies, and developers to comply with CEQA requirements in providing information about the location of hazardous materials release sites. Government Code Section 65962.5 requires the California Environmental Protection Agency to develop at least annually an updated Cortese List. The Department of Toxic Substances Control (DTSC) is responsible for a portion of the information contained in the Cortese List. Other State and local government agencies are required to provide additional hazardous material release information for the Cortese List. DTSC's EnviroStor database provides DTSC's component of Cortese List data. In addition to the EnviroStor database, the SWRCB Geotracker database provides information on

regulated hazardous waste facilities in California, including underground storage tank (UST) cases and non-UST cleanup programs, including Spills-Leaks-Investigations-Cleanups sites, Department of Defense (DOD) sites, and Land Disposal program. A search of the DTSC EnviroStor database and the SWRCB Geotracker performed on June 7, 2024, determined that there are no known active hazardous waste generators or hazardous material spill sites within the Project sites or immediate surrounding vicinity.<sup>17</sup>

#### 4.9.1.2 AIRPORTS

The nearest airport, Visalia Municipal, is located approximately 5.8-miles southwest of the Project.

#### 4.9.1.3 EMERGENCY RESPONSE PLAN

The Tulare County Office of Emergency Services coordinates the development and maintenance of the Tulare County Operational Area Master Emergency Services Plan. Tulare County offers an alert system called “AlertTC”. AlertTC is Tulare County's public mass notification system, designed to keep those who live or work in Tulare County informed of important information during emergency events. The system is administered by the County of Tulare and is operated in partnership with many Tulare County cities.<sup>18</sup>

#### 4.9.1.4 SENSITIVE RECEPTORS

Common sensitive receptors typically consist of residences, schools, day care centers, hospitals, and nursing homes. The nearest sensitive receptors to the Project site are the single-family residences to the north and east, with the closest being approximately 100 feet away.

### 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.** There are no designated hazardous materials transportation routes in the vicinity of the Project site. Additionally, there would be no transport, use, or disposal of hazardous materials associated with the construction, with the exception of diesel fuel for construction equipment. Any potential accidental hazardous materials spills during Project construction are the responsibility of the contractor to remediate in accordance with industry best management practices (BMPs) and State and County regulations. Any impacts would therefore be less than significant.

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?

**Less than Significant Impact.** The nearest school facility to the Project is Riverway Elementary School, located approximately 0.3 miles southwest. However, since the Project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste, the Project would not result in hazardous materials impacts to a school. The Project would require the handling of diesel for construction equipment; however, diesel would be handled in accordance with industry best management practices and State and County regulations. Impacts would be less than significant.

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<sup>17</sup> (California Department of Toxic Substances Control, 2024); (California State Waterboards, 2024)

<sup>18</sup> (Tulare County , 2023)

- 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?

**No Impact.** The Project does not involve land that is actively listed as a hazardous materials site pursuant to Government Code Section 65962.5 and is not included on a list compiled by the DTSC. Both the SWRCB's Geotracker and DTSC's EnviroStor websites were checked for contaminated groundwater or sites in the area. 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?

**No Impact.** The Project is not located within an airport land use plan or within two miles of a public or public use airport. Therefore, there would be no impact.

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

**No Impact.** The Project would not provide any physical barriers or disturb any roadways in such a way that would impede emergency or hazards response; therefore, the Project would not interfere with implementation of any existing or future emergency response plans or evacuation plans of the area. There would be no impact.

- 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.** According to the California Department of Forestry and Fire Protection (Cal Fire), the Project site is not located in a State Responsibility Area (SRA) or a Very High Fire Hazard Severity Zone; therefore, the likelihood of a fire hazard is low. In addition, the Project would not include habitable structures that would be susceptible to wildland fires, nor would it result in additional permanent people in the area. For further discussion regarding wildfires, see [Section 4.20 Wildfire](#). Impacts related to wildland fires would be less than significant.

## 4.10 HYDROLOGY AND WATER QUALITY

Table 4-18: 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i. result in substantial erosion or siltation on- or off-site;	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii. create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv. impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### 4.10.1 BASELINE CONDITIONS

Hydrology in the Project area is associated with the Tulare Lake Hydrologic Region, containing three main subbasins. The Tulare Lake subbasin is in the northern alluvial fan and basin subarea characterized by southwest to south flowing rivers, creeks, and irrigation canal systems that convey water from the Sierra Nevada to the west toward the Tulare Lake Bed. The southern portion of the basin is internally drained by the Kings, Kaweah, Tule, and Kern Rivers.<sup>19</sup> The Tulare Lake Basin comprises the drainage area of the San Joaquin Valley south of the San Joaquin River and is essentially a closed basin because surface water drains north into the San Joaquin River only in years of extreme rainfall. The Project site consists of a vacant lot adjacent lot and its southern and western edge is bordered by the St. Johns River. The St. John's River is a

<sup>19</sup> (California Department of Water Resources. Natural Resources Agency, 2015)  
www.provostandpritchard.com

tributary of the Kaweah River. The St. John's River begins at the McKay's Point dam, located approximately one mile west of the community of Lemon Cove.

#### 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.** As mentioned in [Section 4.7 Geology and Soils](#), the Project would be required to implement a SWPPP. A SWPPP involves site planning and scheduling, limiting disturbed soil areas, and determining best management practices to minimize the risk of pollution and sediments being discharged from construction sites. 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. Additionally, there would be no discharge to any surface source. However, there would be percolation discharge to groundwater via the proposed multi-cell recharge basin. 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. The Project would not violate any water quality standards and would not impact waste discharge requirements. 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?

**Less than Significant Impact.** The purpose of the Project is to improve groundwater supplies by recharging the underlying aquifer with flood waters. Implementation of the Project would increase the local groundwater table. Any impacts to the underlying groundwater supply would be less than significant.

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:

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

**Less than Significant Impact.** The Project would improve groundwater storage and prevent exceedances of stormwater drainage systems by providing depressional spaces for surface water to be captured and stored for recharge purposes. The Project would not alter the course of the flow of a stream or river in which substantial erosion or siltation could occur. In addition, the Project would not result in an increase in the amount of surface runoff because the scope of this Project does not include the conversion of any permeable surface into impermeable surfaces. The proposed conservation space would not include pavement, concrete, or any other impermeable material. Therefore, impacts would be less than significant.

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

**No Impact.** The Project would improve groundwater storage and prevent exceedances of storm water drainage systems or additional polluted runoff by providing a depressional space for surface water. The volume would be stored and allowed to infiltrate the underlying soils over a period of time after a storm or flood event in an effort to recharge and replenish the underground aquifers. There would be no impact.



- 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

**Less than Significant Impact.** Construction activity would involve excavation and soil disturbing activities that could contribute to surface runoff. However, as described under impact analysis “a”, the proposed Project would be required to implement a SWPPP to reduce any impacts. Therefore, with the inclusion of the SWPPP and its associated BMPs, impacts would be less than significant.

- iv. impede or redirect flood flows?

**Less than Significant Impact.** The Project would divert water from the St. John’s River; however, the river would still maintain its existing channel and flood waters would continue to flow as currently exists. The Project would utilize excess flood flows to improve groundwater storage and prevent exceedances of storm water drainage systems or additional polluted runoff by providing a depressional space for surface water. 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 St. John’s River runs along the southern and western of the Project site. Furthermore, the southern portion of the Project is located in a 100-year floodplain (see **Figure 4-3**). In order to minimize erosion and run-off during construction activities, a SWPPP would be implemented, and the contractor would comply with all Cal/OSHA regulations regarding regular maintenance and inspection of equipment, spill prevention, and spill remediation in order to reduce the potential for incidental release of pollutants or hazardous substances onsite. While the Project would be located within a 100-year flood zone, the measures listed above would diminish any potential impacts to a less than significant level.

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

**Less than Significant Impact.** As mentioned, the Project would require coverage under the SWRCB CGP. In accordance with the requirements of the CGP, a risk assessment would be prepared and submitted to the Central Valley RWQCB to determine the Project’s risk level and associated water quality control requirements. These requirements would include the preparation and implementation of a SWPPP identifying specific BMPs to be implemented and maintained on the site in order to comply with the applicable effluent standards and prevent any potential groundwater quality impacts. Therefore, the Project would not conflict with a water quality control plan. Additionally, the Project would increase recharge to the underlying aquifer, ultimately enhancing groundwater levels. Therefore, the Project would not conflict with the local Groundwater Sustainability Plan. Impacts would be less than significant.

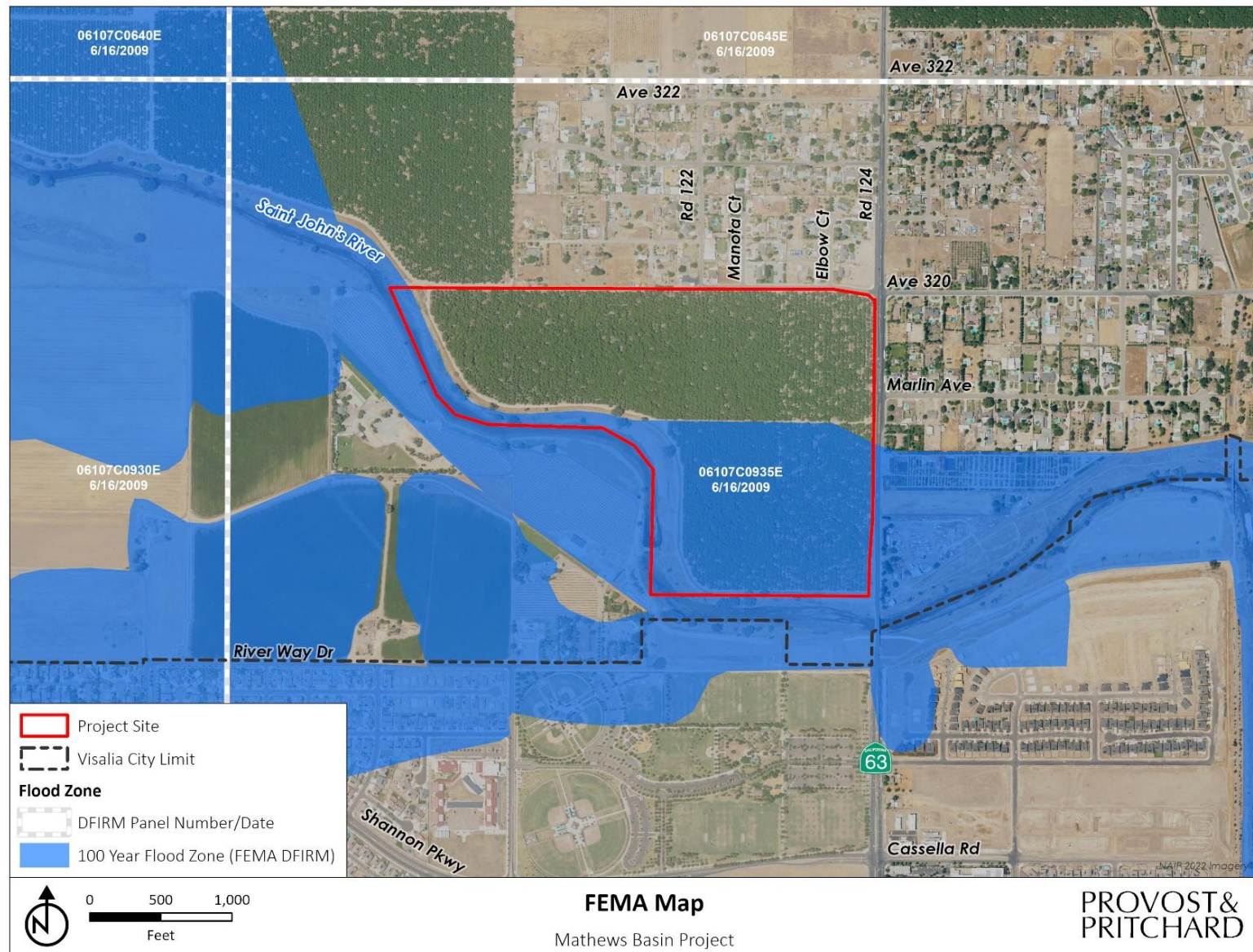


Figure 4-3: FEMA Flood Map

## 4.11 LAND USE AND PLANNING

Table 4-19: Land Use and Planning Impacts

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

### 4.11.1 BASELINE CONDITIONS

The Project is located in Tulare County, which is the land use authority for the Project site. The Project site is designated “Rural Valley Lands Plan – Agriculture” and zoned AE-20 and AE-40. As seen in [Table 2-1](#), the surrounding lands are zoned AE-20, AE-40, and R-A (Rural Residential), and planned for agriculture, residential, and conservation. The planned conservation land consists of the St. John’s River, which is located along the southern border of the Project site.

### 4.11.2 IMPACT ANALYSIS

#### a) Would the project physically divide an established community?

**No Impact.** The Project would not physically divide an established community. As mentioned, the Project site is a vacant lot just outside of the City of Visalia in Tulare County. Project features would not cause any sort of obstruction. Therefore, 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 site is zoned and planned for agricultural purposes. The Project would allow for groundwater recharge which would ultimately result in benefits to agricultural operations. Therefore, there would be no impact.

## 4.12 MINERAL RESOURCES

Table 4-20: 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 4.12.1 BASELINE CONDITIONS

The bulk of Tulare County's mineral extraction activities focus on aggregate (sand, gravel, and crushed stone), which is primarily used in building materials. Historically, the Kaweah River, Lewis Creek, and the Tule River have provided the main sources of high-quality sand and gravel in Tulare County. The highest quality deposits are located at the Kaweah and Tule Rivers. According to the Tulare County General Plan Background Report, all of the known potential mineral resource locations are mapped within the foothills and/or along major water courses. Similarly, the only active oil and gas fields are located in the foothills along Deer Creek.<sup>20</sup> These sources do not identify any known potential mineral resource locations within or adjacent to the Project site. The Project site is not delineated on a local land use plan as a locally important mineral resource recovery site. The California Geological Survey Division of Mines and Geology has not classified the Project site as a Mineral Resource Zone (MRZ) under the Surface Mining and Reclamation Act.<sup>21</sup> California's Division of Oil, Gas and Geothermal Resources has no records of active oil or gas wells on the Project site or in the immediate area.<sup>22</sup>

### 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.** No known mineral resources are within the Project site nor has the site been classified as an MRZ. Therefore, implementation of the Project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents, nor would it result in the loss of availability of a locally important mineral resource recover site delineated on a local general plan, specific

<sup>20</sup> (Environmental Science Associates, 2010)

<sup>21</sup> (California Department of Conservation, 2022)

<sup>22</sup> (California Department of Conservation, 2022)

plan or other land use plan since no known mineral resources occur in this area. There would be no impact.



## 4.13 NOISE

Table 4-21: 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Generation of excessive ground borne vibration or ground borne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 4.13.1 BASELINE CONDITIONS

The Project is located in Tulare County adjacent to the City of Visalia. The Project site is a vacant 100-acre lot that was previously a walnut orchard. The site is surrounded to the north and east by single-family residences and to the south and west by the St. Johns River. The closest residence to the Project site is approximately 100 feet north across Avenue 320. Across the St. Johns River to the south is Riverway Drive and the Riverway Sports Park. Across the St. Johns River to the west is primarily agricultural land and a few single-family residences. Traffic noise in the vicinity of the Project originates from Avenue 320 bounding the north, Highway 65 bounding the east, and Riverway Drive across the St. Johns River to the south. In addition, noise is generated from the Riverway Sports Park during sporting events.

### 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 nearest sensitive receptors to the Project site are the single-family residences to the north and east, with the closest being approximately 100 feet away. Project construction-related activities would involve temporary, short-term, and intermittent noise sources including site preparation. The construction phase of the Project would involve temporary noise sources originating predominantly from off-road equipment, such as excavators, backhoes, drilling rigs, scrapers, and tractors. Construction-related noise levels would be higher than existing ambient noise levels in the Project area but would not occur after construction-related activities are completed. Operation and maintenance noise would be similar in character to existing noise in the area resulting from existing activity such as traffic noise, farm equipment noise, and noises associated with the Riverway Sports Park



as the Project would be passive in nature. Tulare County General Plan Policies HS-8.18 and HS-8.19 address noise generated from construction-related activities. Policy HS-8.18 limits noise-generating activities (such as construction-related activities) to hours of normal business operation unless specific County approval is given. Construction-related activities would be restricted to daytime hours and would be short-term, temporary, and intermittent in nature. Policy HS-8.19 requires the County to ensure contractors implement best practices as appropriate to reduce the construction-related noise impacts. By complying with Tulare County General Plan Policies HS-8.18 and HS-8.19, the Project would have a less than significant impact.

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

**Less than Significant Impact.** There are no federal or State standards that address construction noise or vibration. Additionally, Tulare County does not have regulations that define acceptable levels of vibration. However, the Federal Transit Administration (FTA) publication concerning noise and vibration impact assessment from transit activities has vibration standards suggestions. Although the FTA guidelines are to be applied to transit activities and construction, they may be reasonably applied to the assessment of the potential for annoyance or structural damage resulting from other activities. To prevent vibration annoyance in residences, a level of 80 VdB (vibration velocity level in dB) or less is suggested when there are fewer than 70 vibration events per day. A level of 100 VdB or less is suggested by the FTA guidelines to prevent damage to fragile buildings. **Table 4-22** describes the typical construction equipment vibration levels. While these construction-related activities would result in ground borne vibration, such ground borne noise or vibration would attenuate rapidly from the source and would not be generally perceptible outside of the construction-related areas. In addition, there would not be any vibrational impacts from operation and maintenance activities.

**Table 4-22. Typical Construction Equipment Vibration Sources Levels**

Typical Construction Equipment Vibration Sources Levels		
Equipment	PPV at 25 ft, in/sec	Approximate Lv* at 25 ft
Large bulldozer	0.089	87
Caisson drilling	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58
*RMS velocity in decibels, VdB re 1 micro-in/sec		
Source: (John A. Volpe National Transportation Systems Center, 2018)		

Construction-related activities in general can have the potential to create ground borne vibrations. However, based on the soil types found in the general Project vicinity, there would not be any blasting or pile-driving in connection with construction of the Project. Therefore, the potential for ground borne vibrations to occur as part of construction-related activities of the Project would not be significant. Additionally, operation of the Project would not contain any activities that would create excessive ground borne vibrations. The Project would not result in exposure of persons to, or generation of excessive ground borne vibration or ground borne noise levels. Therefore, impacts 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?**

**No Impact.** The Project would not be located within an airport land use plan or within two miles of an airport. The nearest airport, Visalia Municipal, is located approximately 5.8-miles southwest of the Project. Furthermore, the Project would not involve the development of habitable structures or require the presence of permanent staff onsite. There would be no impact

## 4.14 POPULATION AND HOUSING

Table 4-23: 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)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 4.14.1 BASELINE CONDITIONS

According to the U.S Census Bureau, as of July 1, 2023, Tulare County has an estimated population of 479,468 people. Since the 2020 Census, it is estimated that Tulare County grew approximately 1.3% from 473,116.<sup>23</sup> Additionally, it is estimated that Tulare County currently has 140,670 households.<sup>24</sup>

### 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)?

**Less than Significant Impact.** The Project's primary purpose is to increase water resources in the region. The Project would not induce substantial unplanned population growth in an area directly or indirectly. 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 Project site is currently a vacant lot and was historically farmed as a walnut orchard. The site does not contain any homes or structures that house people. Therefore, the Project would not displace any people or houses. There would be no impact.

<sup>23</sup> (United States Census Bureau, 2023)

<sup>24</sup> Ibid.

## 4.15 PUBLIC SERVICES

Table 4-24: 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii. Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii. Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv. Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
v. Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 4.15.1 BASELINE CONDITIONS

**Fire Protection:** The Project area would be served by the Tulare County Fire Department (TCFD). The closest TCFD station to the Project is located at 835 S. Akers Street, approximately four miles southwest.

**Police Protection:** Police protection is provided by the Tulare County Sheriff's Office. The closest Tulare County Sheriff station to the Project is located at 833 S. Akers Street, approximately four miles southwest.

**Schools:** The nearest school facility to the Project is Riverway Elementary School, located approximately 0.3 miles southwest.

**Parks:** The nearest park to the Project site is the City of Visalia's Riverway Sports Park, located approximately 350 feet south across the St. Johns River and Riverway Drive.

**Landfills:** The nearest landfill to the Project site is the Visalia Landfill, located approximately four miles east-northeast.

#### 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 require new or altered governmental facilities in order to maintain acceptable service ratios, response times, or other performance objectives for public services. The Project involves the construction of a recharge basin for groundwater recharge, a surface water turnout facility to divert water into the basin, and a walking path surrounding the basin. The Project would not result in habitable structures that could result in an increase in population requiring the need for public service expansion or alteration. There would be no impact to the listed public services.

## 4.16 RECREATION

Table 4-25: 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### 4.16.1 BASELINE CONDITIONS

Tulare County has several regional parks, as well as State and national parks, national forest, wilderness areas, and ecological reserves. There are 13 park and recreation facilities that are owned and operated by Tulare County. The Tulare County Resource Management Agency, Parks and Recreation Branch maintains and develops regional parks and landscaped areas. Colonel Allensworth State Historic Park is the only State Park in Tulare County. Mountain Home State Forest, a State Forest managed by the California Department of Forestry and Fire Protection, is situated just east of Porterville and contains numerous Giant Sequoias. Lake Kaweah and Lake Success are federal recreation areas within Tulare County, operated by the U.S. Army Corps of Engineers. The majority of the recreational opportunities within Tulare County are found within Sequoia National Forest, Giant Sequoia National Monument, and in Sequoia and Kings Canyon National Parks.

Federal lands, such as wilderness, national forests, monuments, and parks occupy 52.2 percent of land area within Tulare County. Agricultural uses encompass 43 percent of the County's land. The remainder comprises miscellaneous uses, such as County parks, urban uses in cities, unincorporated communities, and hamlets, and infrastructure rights-of-way. The Tulare County General Plan sets forth guidelines in order to maintain an overall standard of five or more acres of public County parkland per 1,000 population in unincorporated areas, regional parks at one-acre per 1,000 population, neighborhood parks at three to six acres per 1,000 population, and community parks at one to two acres per 1,000 population.<sup>25</sup>

The City of Visalia, which is located adjacently south to the Project, maintains 637 acres of parkland.<sup>26</sup> Like Tulare County, the City of Visalia sets guidelines in order to maintain a parkland ratio. The City's park standard for neighborhood and community parks is 5.0 acres per 1,000 residents.<sup>27</sup>

As noted in [Section 4.15](#), the closest recreational facility to the Project is the City of Visalia's Riverway Sports Park, located roughly 350 feet south across the St. Johns River and Riverway Drive.

<sup>25</sup> (Tulare County 2030 General Plan Update, 2010)

<sup>26</sup> (Dyett & Bhatia Urban and Regional Planners, 2014)

<sup>27</sup> Ibid.



#### 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?

**Less than Significant Impact.** In addition to a recharge basin and a turnout, the Project would include a walking path around the perimeter of the basin. The site would be accessible on the east side along SR 63. This would provide residents in the area with additional space to utilize for walking, running, or something similar in that manner. As mentioned above, the Project is located approximately 350 feet north of the Riverway Sports Park. Although the park is fairly close to the Project walking path, a physical connection would not be made. In addition, private property separates the Project from the Riverway Sports Park. Therefore, it is not anticipated that the Project would increase the use of the Riverway Sports Park and therefore substantial physical deterioration of the park would not occur. Impacts would be less than significant.

- 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?

**Less than Significant Impact.** The Project would include additional recreational facilities by including a walking path around the perimeter of the proposed recharge basin. As required with construction of the whole Project, construction of the walking path would adhere to the various mitigation measures and regulatory requirements discussed throughout this document. Implementation of the mitigation measures and regulatory requirements would result in impacts being less than significant.

## 4.17 TRANSPORTATION

Table 4-26: 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### 4.17.1 BASELINE CONDITIONS

The Project is located in Tulare County adjacent to the City of Visalia. Highway 65 runs in a north-south direction along the eastern edge of the Project site. The northern boundary of the Project site is bounded by Avenue 320. Riverway Drive is located south of the Project on the south side of the Project-abutting St. Johns River. Highway 65, Avenue 320, and Riverway Drive are all paved; however there is no curb and gutter along the roadways that abut the Project site.

### 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?

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

**a and b) Less than Significant Impact.** The Project includes the construction of an approximately 100-acre groundwater recharge basin, a surface water turnout, and a walking path surrounding the proposed basin. Access to the site would be made via SR 63, located on the east side of the Project site. Construction traffic associated with the Project would be minimal and temporary, lasting approximately six months. Operational traffic consists of as-needed maintenance trips to the site. No road improvements are proposed as a part of the Project. There would not be a significant adverse effect to existing roadways in the area.

Construction associated with the Project would be restricted to the Project site and it would not intersect any roadways or pedestrian/bicycle paths. Access to the site would be made from SR 63 on the east side of the Project site. Construction-related impacts would be temporary and there would be no impacts to the surrounding transportation network. Road closures and detours are not anticipated as part of construction. Construction-related roadway interferences would be less than significant.

There is no population growth associated with the Project, nor would implementation of the Project result in an increase of staff or drivers utilizing roadways in the area. Therefore, implementation of the Project would not increase the demand for any changes to congestion management programs or interfere with existing level of service standards during the operational phase. The proposed conservation space may increase vehicles traveling to the site. However, as the proposed conservation space is minimal compared to the rest of the site, it is not anticipated that there would be many visitors that would increase roadway usage to a significant level. Overall, impacts would be less than significant.

**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.** No new roadway design features are associated with the Project. Therefore, there would be no impact.

**d) Would the project result in inadequate emergency access?**

**Less than Significant Impact.** As mentioned above in Impact Assessments a, b, and c, the Project would not propose new roadway design features or permanent alterations to roadways. All potential disturbances to roadways during construction would be temporary. Road closures and detours are not anticipated as part of the construction phase of the Project. The operational phase of the Project would have minimal effect on roadways or emergency access. Therefore, overall potential Project-related impacts to emergency access on local roadways would be considered less than significant

## 4.18 TRIBAL CULTURAL RESOURCES

Table 4-27: 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	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### 4.18.1 BASELINE CONDITIONS

The Project's APE is in the Southern Valley Yokuts ethnographic territory of the San Joaquin Valley. Within California, the Yokuts were generally divided into three major groups, the Northern Valley Yokuts, the Southern Valley Yokuts, and the Foothill Yokuts. The Yokuts are a sub-group of the Penutian language that covers much of coastal and central California and Oregon.

#### 4.18.1.1 NATIVE AMERICAN OUTREACH

Taylored Archaeology requested a SLF search from the NAHC on April 30, 2024. The NAHC responded on May 15, 2024, via letter regarding Taylored Archaeology's request. The SLF search did not identify the presence of cultural resources in the Project APE. The NAHC supplied a list of Native American representatives to contact for information or knowledge of cultural resources in the APE and the surrounding area. The following Native American organizations/individuals were contacted from the list provided by NAHC below:

1. Chairperson Robert Ledger of the Dumna Wo-Wah Tribal Government
2. Chairperson Delia Dominguez of Kitanemuk and Yowlumne Tejon Indians
3. Cultural Specialist I Nichole Escalon of the Santa Rosa Rancheria Tachi Yokut Tribe

4. Cultural Specialist II Samantha McCarty of the Santa Rosa Rancheria Tachi Yokut Tribe
5. Tribal Historic Preservation Officer Shana Powers of the Santa Rosa Rancheria Tachi Tribe
6. Cultural Resource Director Bob Pennell of Table Mountain Rancheria
7. Chairperson Michelle Heredia-Cordova of Table Mountain Rancheria
8. Chairperson David Alvarez of Traditional Choinumni Tribe
9. Chairperson Neil Peyron of the Tule River Indian Tribe
10. Tribal Archaeologist Joey Garfield of the Tule River Indian Tribe
11. Environmental Department Director Kerri Vera of the Tule River Tribe
12. Chairperson Kenneth Woodrow of the Wuksache Indian Tribe/Eshom Valley Band

Each individual on the contact list was contacted on May 22, 2024. The letters included a description of the Project and a topographic map of the location. Follow-up by emails were sent on June 3, 2024. Environmental Department Director Kerri Vera of the Tule River Tribe acknowledged that the letter was received but did not request further information or consultation.

As of the date of this report, Taylored Archaeology has not received any responses to the Native American outreach letters and emails pertaining to the APE.

#### **4.18.1.2 ASSEMBLY BILL 52**

PRC 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. As of the date of this report, KDWCD has not received any written correspondence from a Tribe pursuant to Public Resources Code Section 21080.3.1 requesting notification of a proposed project.

#### **4.18.2 IMPACT ASESMENT**

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.

**Less than Significant Impact with Mitigation Incorporated.** A search of the NAHC SLF was completed for the APE. No tribal cultural resources were identified. Additionally, a records search was conducted at the

SSJVIC, California State University, Bakersfield. This search also determined that tribal cultural resources were not present on-site.

The District, as a public lead agency, has not received any written correspondence from a Tribe pursuant to Public Resources Code Section 21080.3.1 requesting notification of a proposed project.

According to the Phase I Cultural Resources Assessment prepared for the Project ([Appendix C](#)), based upon ethnographic data, historical maps, and archaeological sensitivity models, the Project area was dominated by natural watercourses and likely contained a rich supply of natural resources for indigenous populations. Thus, there is a high possibility of encountering buried cultural resources during Project ground disturbing activities. Therefore, implementation of mitigation measures **CUL-1** and **CUL-2**, described in [Section 4.5.3](#) are recommended in the event cultural materials or human remains are unearthed during excavation or construction. Implementation of mitigation measures referenced above will reduce impacts to tribal cultural resources to less than significant.

#### **4.18.3 MITIGATION**

See **CUL-1** and **CUL-2** outlined in [Section 4.5.3](#)



## 4.19 UTILITIES AND SERVICE SYSTEMS

Table 4-28: 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 4.19.1 BASELINE CONDITIONS

The Project site is located in Tulare County adjacent to the City of Visalia. The site is a vacant lot and does not include any water or sewer infrastructure. The nearest public agency that provides water and sewer services is the City of Visalia. The Patterson Tract Community Services District, which provides water services, is located just a half-mile north. Solid waste in the Project area is managed by the Tulare County Solid Waste Department.

### 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 construction of new or relocation or expansion of existing facilities for water, wastewater treatment, storm water drainage, electric power, natural gas, or telecommunications. There would be no impact

**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?**

**No Impact.** The Project consists of the construction of a groundwater recharge basin, a turnout, and conservation space. The purpose of the Project is for the MDC to utilize its surface water rights for groundwater recharge to achieve groundwater sustainability. Project operation would be passive and would not reduce the area's available water supply under any scenario. There would be no impact

**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 does not require wastewater treatment, so analysis of capacity is not warranted. 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?**

**Less than Significant Impact.** The Project would generate minor amounts of solid waste during construction; however, it would be temporary and properly disposed of during construction and upon completion. No solid waste would be generated during operation and maintenance. Any impacts with regard to solid waste would be less than significant

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

**No Impact.** The Project would continue to comply with any federal, State, and local regulations related to solid waste. There would be no impact.

## 4.20 WILDFIRE

Table 4-29: 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrollable spread of wildfire?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

### 4.20.1 BASELINE CONDITIONS

The Project site is currently a large open dirt lot that was previously farmed. Surrounding the site lies residences to the north and east, and the St. Johns River and farmland to the south and west. The Project site is located within the jurisdiction of Tulare County and receives fire protection services from the TCFD. As mentioned in [Section 4.15](#), the closest TCFD station to the Project is located at 835 S. Akers Street, approximately four miles southwest.

According to the California Department of Forestry and Fire Protection (CalFire), the Project is not located within an SRA.<sup>28</sup> SRAs typically receive wildfire prevention and protection services from CalFire. As the Project is not located in an SRA, the Project site receives services from the local provider, TCFD. Furthermore, according to CalFire, the Project area is not located within a Very High Fire Hazard Severity Zone, nor is the Project located within a high or moderate fire hazard severity zone.<sup>29</sup>

<sup>28</sup> (California Department of Forestry and Fire Protection, 2022)

<sup>29</sup> (ArcGIS, 2023)

#### 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 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 site is located in a section of Tulare County that has not been designated as either a Very High Fire Hazard Severity Zone or an SRA. Therefore, further analysis is not required and there would be no impact.

## 4.21 CEQA MANDATORY FINDINGS OF SIGNIFICANCE

Table 4-30: 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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

### 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, 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, 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 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 include the construction of a multi-celled recharge basin, a surface water turnout, and conservation space in the form of walking path surrounding the proposed basin. The Project in and of itself would not create a significant hazard to the public or the environment. Construction-related air quality/dust exposure impacts could occur temporarily as a result of project construction. However, implementation of basic regulatory requirements identified in this IS/MND would ensure that impacts are less than significant. Therefore, the Project would not have any direct or indirect adverse impacts on humans. The impacts 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 Mathews Recharge Basin Project in Tulare 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, AIR-2 would be the second mitigation measure identified in the Air Quality analysis of the 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**

<b>Mitigation, Monitoring, and Reporting Program</b>						
Item	Mitigation Measure	When Monitoring is to Occur	Frequency of Monitoring	Agency Responsible for Monitoring	Method to Verify Compliance	Verification of Compliance
<b>Biological Resources</b>						
<b>General Project-Related Impacts</b>						
<b>BIO-1</b>	<b>(WEAP Training):</b> Prior to initiating construction activities (including staging and mobilization), all personnel associated with project construction will attend a mandatory Worker Environmental Awareness Program (WEAP) training, conducted by a qualified biologist, to aid workers in identifying special status resources that may occur within the Project site. The specifics of this program will include identification of the sensitive species and suitable habitats with the potential to occur on the site, 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 that potentially occur 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 and sensitive habitats such as wetlands with potential to occur onsite, 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	KDWCD with assistance of a qualified biological subconsultant	Report	
<b>BIO-2</b>	<b>(BMPs):</b> The Project proponent will ensure that all workers employ the following best management	Prior to the start of any construction activities	During Construction	KDWCD	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
	<p>practices (BMPs) in order to avoid and minimize potential impacts to special status species:</p> <ul style="list-style-type: none"> <li>Vehicles will observe a 15-mph speed limit while on unpaved access routes.</li> <li>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 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.</li> <li>The presence of any special status species will be reported to the project's qualified biologist, who will submit the occurrence to the CNDDDB. If necessary, the biologist will report the occurrence to CDFW and/or USFWS.</li> </ul>					
Project-Related Impacts to Special Status Plant Species						
BIO-3	<p><b>(Focused Survey):</b> A qualified botanist/biologist (someone who is able to identify Sanford's arrowhead) will conduct focused botanical surveys of aquatic areas during the appropriate blooming season for Sanford's arrowhead (May-October), according to CDFW's Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (2018) for areas where ground disturbance will occur and prior to the start of construction.</p>	September 16 to January 31	Once, as determined by qualified biologist during construction activities	KDWCD with assistance of a qualified biological subconsultant	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
<b>BIO-4</b>	<b>(Avoidance):</b> If special status plants are identified during a survey, an avoidance buffer will be determined by the qualified botanist/biologist based on the proximity to construction activities and, if necessary, use of exclusion fencing, will be placed around the area to avoid disturbance to the plants and its root system.	Prior to the start of construction activities	Once, as determined by qualified biologist prior to construction activities	KDWCD with assistance of a qualified biological subconsultant	Report	
<b>BIO-5</b>	<b>(Formal Consultation):</b> If rare plant individuals or populations or sensitive natural communities are detected within work areas during the focused botanical survey(s), and the plants cannot be avoided, the Project proponent will determine next steps for relocation.	Prior to the start of construction activities	Once, Prior to ground disturbing activities and the start of construction	KDWCD with assistance of a qualified biological subconsultant		
<b>Project-Related Mortality and/or Disturbance to American Badger</b>						
<b>BIO-6</b>	<b>(Pre-construction Take Avoidance Survey):</b> A qualified biologist (someone familiar with the identification and sign of this species) will conduct a pre-construction survey of the Project site within seven (7) days prior to vegetation clearing or ground disturbing activities. The goal of this survey is to search for potentially active badger dens.	Seven days prior to vegetation clearing or ground disturbing activities	Once, as determined by qualified biologist during construction activities	KDWCD with assistance of a qualified biological subconsultant	Report	
<b>BIO-7</b>	<b>(Remote Cameras):</b> If potential dens for American badger are detected during the pre-construction survey, each potential den will be monitored with remote cameras for a period of three consecutive nights. If there is no activity at the den location recorded for three consecutive nights, the den can be deemed “inactive” or “unoccupied” and closed or excavated	Upon discovery of potential American Badger dens	Once, as determined by qualified biologist during construction activities	KDWCD with assistance of a qualified biological subconsultant	Report	
<b>BIO-8</b>	<b>(Den Avoidance):</b> If an American badger is denning on or within 50 feet of the Project site, the Project proponent shall avoid the den by a minimum 50-foot buffer.	Upon discovery of denning	Once, as determined by qualified biologist during construction activities	KDWCD with assistance of a qualified biological subconsultant	Report	
<b>BIO-9</b>	<b>(Timed Den Excavation):</b> If an American badger is denning on or within 50 feet of the Project site and	March 15 to June 15	Once, as determined by	KDWCD with assistance of a	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
	it cannot be avoided, the badger may be evicted, and the den excavated outside of the natal season (generally March 15 – June 15) or if it is determined that there are no cubs in the den. Prior to the planned eviction and den excavation, a remote camera will be placed at the den entrance for a minimum of three consecutive nights to record the general time when the badger leaves the den. If it is outside of the natal season or it is determined by a qualified biologist that there are no cubs present in the den the badger will be evicted from the den and the den excavated by hand, with the assistance of machinery, after it has left the den for that night. Should any cubs be discovered during the excavation the work will stop and the crew will leave the site or borrow area immediately so the female can rescue her cubs and relocate them.		qualified biologist during construction activities	qualified biological subconsultant		
<b>Project-Related Mortality and/or Disturbance to San Joaquin Kit Fox</b>						
<b>BIO-10</b>	<b>(Pre-Construction Survey):</b> Within seven (7) days prior to the start of construction, a pre-construction survey for SJKF will be conducted on and within 200 feet of proposed work areas	Within seven days prior to the start of construction	Once, as determined by qualified biologist during construction activities	KDWCD with assistance of a qualified biological subconsultant	Report	
<b>BIO-11</b>	<b>(Establish Buffers):</b> On discovery of any SJKF dens near the Project site a qualified biologist will determine appropriate construction setback distances (buffer zones) based on applicable CDFW and/or USFWS guidelines (see below). If needed, construction buffers will be identified with flagging, fencing, or other easily visible means. They will be maintained until the biologist has determined that the den will no longer be impacted by construction. <ol style="list-style-type: none"> <li>At least 100 feet around den(s);</li> <li>At least 200 feet around natal dens (which SJKF young are reared); and</li> </ol>	Upon discovery of any SJKF dens	Once, as determined by qualified biologist during construction activities	KDWCD with assistance of a qualified biological subconsultant	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
	3. At least 500 feet around any natal dens with pups (except for any portions of the buffer zone that is already fully developed).					
<b>BIO-12</b>	<b>(Avoidance and Minimization):</b> The Project will observe all avoidance and minimization measures during construction and on-going operational activities as required by the qualified biologist and the USFWS's Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance (2011), including, but not limited to: maintaining buffer zones, construction speed limits, covering of pipes, installation of escape structures, restriction of herbicide and rodenticide use, proper disposal of food items and trash, prohibition of pets and firearms, and completion of an employee education program (see <b>BIO-1</b> ).	During construction activities and operation	Once, as determined by qualified biologist during construction activities	KDWCD with assistance of a qualified biological subconsultant	Report	
<b>Project-Related Mortality and/or Nest Abandonment of Migratory Birds, Raptors, and Special Status Birds, Including Loggerhead Shrike and Swainson's Hawk</b>						
<b>BIO-13</b>	<b>(Avoidance):</b> The Project's construction activities will occur, if feasible, between September 16 and January 31 (outside of the nesting bird season) to avoid impacts to nesting birds.	September 16 to January 31	Once, as determined by qualified biologist during construction activities	KDWCD with assistance of a qualified biological subconsultant	Report	
<b>BIO-14</b>	<b>(Pre-construction Surveys):</b> If activities must occur within the nesting bird season (February 1 to September 15), a qualified biologist (someone familiar with the identification and sign of this species) will conduct a single pre-construction take avoidance survey for Swainson's hawk nests on the site and borrow area and within a 0.5-mile radius within five calendar days prior to the start of construction. The Swainson's hawk survey will not be completed between April 21 and June 10 due to the difficulty of identifying nests during this time of year. The survey would also include a single pre-	Prior to the start of construction activities	Once, as determined by qualified biologist prior to construction activities	KDWCD with assistance of a qualified biological subconsultant	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
	construction take avoidance survey for song sparrow and tricolored blackbird and other nesting migratory birds within and up to 100 feet outside of the site and borrow area and for other nesting raptors within and up to 500 feet outside of the site and borrow area. All raptor nests would be considered “active” upon the nest-building stage. If work stops for more than 7 days during nesting bird season a follow-up nesting bird survey will be conducted. If no active nests are observed, no further mitigation is required.					
<b>BIO-15</b>	<b>(Avoidance Buffers):</b> On discovery of any active nests or breeding colonies near work areas, 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 nest(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.	Prior to the start of construction activities	Once, as determined by qualified biologist prior to construction activities	KDWCD with assistance of a qualified biological subconsultant	Report	
<b>Project-Related Mortality and/or Disturbance to Burrowing Owl</b>						
<b>BIO-16</b>	<b>(Pre-construction Take Avoidance Survey):</b> A qualified biologist (someone familiar with the identification and sign of this species) will conduct a pre-construction take avoidance survey for BUOW and suitable burrows, in accordance with CDFW’s <i>Staff Report on Burrowing Owl Mitigation</i> (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. If no BUOW individuals or active burrows are observed, no further mitigation is required.	Within seven days prior to the start of construction	Once, as determined by qualified biologist prior to construction activities	KDWCD with assistance of a qualified biological subconsultant	Report	
<b>BIO-17</b>	<b>(Avoidance):</b> If an active BUOW burrow is detected avoidance buffers will be implemented. A qualified biologist will determine appropriate avoidance	Upon discovery of BUOW burrow	Once, as determined by qualified biologist	KDWCD with assistance of a	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
	buffer distances based on applicable CDFW 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 site or borrow area.		during construction activities	qualified biological subconsultant		
<b>BIO-18</b>	<b>(Passive Relocation):</b> 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 will 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 (hand tools and machinery, if needed). Following completion of passive relocation, a report will be prepared that documents the methods and results of these efforts.	September 1 to January 31 or February 1 to August 31	Once, as determined by qualified biologist during construction activities	KDWCD with assistance of a qualified biological subconsultant	Report	
<b>Project-Related Mortality and/or Disturbance to Northern California Legless Lizard</b>						
<b>BIO-19</b>	<b>(Pre-construction Surveys):</b> If activities must occur in areas that contain loose soil and leaf litter within the oak grassland and riverine/riparian habitats, a qualified biologist will conduct pre-construction surveys within 48 hours prior to beginning any Project activities. Any loose substrate in which lizards could bury themselves will be gently raked with a hand tool (e.g., a garden rake) to a depth of two inches to locate any lizards that could be under the surface. Lizards that are detected will be allowed to leave the work area of their own volition or will be moved out of harm's way by a qualified biologist	Within 48 hours prior to the start of construction	Once, as determined by qualified biologist during construction activities	KDWCD with assistance of a qualified biological subconsultant		

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
	to suitable habitat at least 50 feet from the Project work site.					
<b>Project-Related Impacts to Northwestern Pond Turtle</b>						
<b>BIO-20</b>	<b>(Pre-Construction Survey and Avoidance Buffers):</b> Within seven (7) days prior to the start of construction within the site, a qualified biologist (someone who is able to identify this species) will conduct a pre-construction survey for NPT within the site and all accessible areas within up to 330 feet. Pre-construction surveys will be conducted in accordance with the draft <i>Western Pond Turtle (Emys marmorata) Visual Survey Protocol for the Southcoast Ecoregion</i> (United States Geological Survey 2006). If no NPTs 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 NPTs will be conducted. If the surveys result in the identification of a NPT, or an individual is found within the site during construction activities, it will be allowed to leave the site on its own and the qualified biologist will determine appropriate buffers to be implemented to avoid impacts to the individual(s).	Within seven days prior to the start of construction	Once, as determined by qualified biologist during construction activities	KDWCD with assistance of a qualified biological subconsultant	Report	
<b>BIO-21</b>	<b>(Monitor):</b> If NPTs are observed within the site, a qualified biologist will conduct a pre-activity clearance survey each day and remain onsite to oversee all vegetation clearing and ground disturbing activities until the individual(s) has vacated the work areas. If NPTs are detected, the biologist will stop work and allow the species to leave the site 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 site. "Take" of a state or federal special status (rare, California Species of	Upon discovery of NPT	Once, as determined by qualified biologist during construction activities	KDWCD with assistance of a qualified biological subconsultant	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
	Special Concern, threatened, or endangered) species is prohibited.					
<b>Project-Related Mortality and/or Disturbance to Western Spadefoot</b>						
<b>BIO-22</b>	<b>(Focused Survey):</b> A qualified biologist (someone familiar with the identification and sign of this species) will conduct a focused survey prior to the start of construction. Transects will be walked throughout the site and surrounding lands within up to 50 feet. All waterways within the site will be visually surveyed for western spadefoot adults, eggs, and larvae. If no western spadefoot adults, eggs, or larvae are observed during these surveys, then construction activities may begin. If the survey results in the identification of this species monitoring will be required.	Prior to the start of construction activities	Once, as determined by qualified biologist during construction activities	KDWCD with assistance of a qualified biological subconsultant	Report	
<b>BIO-23</b>	<b>(Monitor):</b> If western spadefoot is observed within the site or borrow 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 until the individual(s) have vacated the work areas. If western spadefoot is detected, the biologist will stop work and allow the species to leave the site 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.	Upon discovery of western spadefoot	Once, as determined by qualified biologist during construction activities	KDWCD with assistance of a qualified biological subconsultant	Report	
<b>Project-Related Impacts to Regulated Waters, Wetlands, and Water Quality</b>						
<b>BIO-24</b>	<b>(Permits):</b> If the River onsite cannot be avoided, permits, certifications, or agreements with USACE, RWQCB, CDFW, and any other regulating agency will be obtained, if needed. These permits, certifications, and agreements would ensure that direct or indirect impacts to jurisdictional waters are	Prior to construction activities	Once, as determined by qualified biologist during construction activities	KDWCD with assistance of a qualified biological subconsultant	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
	avoided or minimized to the extent possible, and any permanent impacts would be offset by compensatory mitigation plans.					
<b>Project-Related Impacts to Wildlife Movement Corridors and Native Wildlife Nursery Sites</b>						
<b>BIO-25</b>	<b>(Wildlife Access):</b> Access should not be blocked during or outside of construction hours, including during overnight hours or weekends. If construction must block the riverine/riparian habitat, an alternative route through the construction area will be identified by a qualified biologist and maintained throughout the construction schedule timeframe.	During construction activities	Daily during construction activities	KDWCD with assistance of a qualified biological subconsultant	Report	
<b>BIO-26</b>	<b>(Cover Excavations):</b> Pipeline/turnout excavations and vertical pipes shall be covered each night to prevent wildlife from falling in and becoming trapped or injured during migratory or dispersal movements	During construction activities	Daily during construction activities	KDWCD with assistance of a qualified biological subconsultant	Report	
<b>Cultural Resources</b>						
<b>CUL-1</b>	In the event that previously unidentified archaeological remains are encountered during development or ground-moving activities in the APE, all work should be halted until a qualified archaeologist can identify the discovery and assess its significance. In the event of accidental discovery of unidentified archaeological remains during development or ground-moving activities in the APE, all work shall be halted in the immediate vicinity until a qualified archaeologist can identify the discovery and assess its significance.	Daily during construction activities	Continuously	KDWCD	Report	
<b>CUL-2</b>	If human remains are uncovered during construction, the Tulare County Coroner is to be notified to investigate the remains and arrange proper treatment and disposition. If the remains are identified on the basis of archaeological context, age, cultural associations, or biological traits to be those of a Native American, California Health and Safety Code 7050.5 and PRC 5097.98 require that the coroner notify the NAHC within 24 hours of	Daily during construction activities	Continuously	KDWCD	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
	discovery. The NAHC will then identify the Most Likely Descendent who will be afforded an opportunity to make recommendations regarding the treatment and disposition of the remains					
Tribal Cultural Resources						
See CUL-1 and CUL-2 above.						



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# APPENDICES

## Appendix A. CalEEMod Output Files

# Mathews Basin Custom Report

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# 1. Basic Project Information

## 1.1. Basic Project Information

Data Field	Value
Project Name	Mathews Basin
Construction Start Date	6/3/2025
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.10
Precipitation (days)	23.0
Location	35.859558, -119.201747
County	Tulare
City	Unincorporated
Air District	San Joaquin Valley APCD
Air Basin	San Joaquin Valley
TAZ	2741
EDFZ	9
Electric Utility	Southern California Edison
Gas Utility	Southern California Gas
App Version	2022.1.1.26

## 1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
Other Non-Asphalt Surfaces	115	Acre	115	0.00	0.00	—	—	—



## 2. Emissions Summary

### 2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	7.59	6.15	71.1	53.3	0.22	2.38	6.97	9.35	2.21	1.37	3.58	—	27,489	27,489	0.90	2.38	33.7	28,254
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	7.53	6.09	72.5	53.2	0.22	2.38	6.97	9.35	2.21	1.37	3.58	—	27,487	27,487	0.90	2.38	0.88	28,219
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	2.67	2.16	25.5	18.8	0.08	0.84	2.45	3.29	0.78	0.48	1.26	—	9,713	9,713	0.32	0.84	5.14	9,977
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2025	0.49	0.39	4.65	3.43	0.01	0.15	0.45	0.60	0.14	0.09	0.23	—	1,608	1,608	0.05	0.14	0.85	1,652

## 3. Construction Emissions Details

### 3.1. Grading (2025) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipm ent	6.59	5.54	50.9	45.7	0.12	2.12	—	2.12	1.95	—	1.95	—	13,211	13,211	0.54	0.11	—	13,257
Dust From Material Movement	—	—	—	—	—	—	3.21	3.21	—	0.35	0.35	—	—	—	—	—	—	—
Onsite truck	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	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipm ent	6.59	5.54	50.9	45.7	0.12	2.12	—	2.12	1.95	—	1.95	—	13,211	13,211	0.54	0.11	—	13,257
Dust From Material Movement	—	—	—	—	—	—	3.21	3.21	—	0.35	0.35	—	—	—	—	—	—	—
Onsite truck	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	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipm ent	2.33	1.96	18.0	16.1	0.04	0.75	—	0.75	0.69	—	0.69	—	4,669	4,669	0.19	0.04	—	4,685
Dust From Material Movement	—	—	—	—	—	—	1.14	1.14	—	0.12	0.12	—	—	—	—	—	—	—
Onsite truck	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	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipm	0.43	0.36	3.28	2.94	0.01	0.14	—	0.14	0.13	—	0.13	—	773	773	0.03	0.01	—	776
Dust From Material Movement	—	—	—	—	—	—	0.21	0.21	—	0.02	0.02	—	—	—	—	—	—	—
Onsite truck	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	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.14	0.13	0.08	1.19	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	151	151	0.01	0.01	0.58	154
Vendor	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	0.00
Hauling	0.86	0.47	20.2	6.45	0.09	0.26	3.62	3.88	0.26	0.99	1.25	—	14,127	14,127	0.35	2.26	33.1	14,843
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.12	0.12	0.09	0.93	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	133	133	0.01	0.01	0.01	136
Vendor	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	0.00
Hauling	0.82	0.44	21.6	6.60	0.09	0.26	3.62	3.88	0.26	0.99	1.25	—	14,142	14,142	0.35	2.26	0.86	14,826
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.04	0.03	0.34	0.00	0.00	0.05	0.05	0.00	0.01	0.01	—	48.9	48.9	< 0.005	< 0.005	0.09	49.8
Vendor	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	0.00
Hauling	0.30	0.16	7.46	2.30	0.03	0.09	1.27	1.36	0.09	0.35	0.44	—	4,995	4,995	0.12	0.80	5.05	5,242
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01	0.01	0.01	0.06	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	8.10	8.10	< 0.005	< 0.005	0.01	8.24
Vendor	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	0.00
Hauling	0.05	0.03	1.36	0.42	0.01	0.02	0.23	0.25	0.02	0.06	0.08	—	827	827	0.02	0.13	0.84	868

## 5. Activity Data

### 5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Grading	Grading	6/3/2025	11/29/2025	5.00	129	—

### 5.2. Off-Road Equipment

#### 5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Grading	Excavators	Diesel	Average	1.00	8.00	36.0	0.38
Grading	Graders	Diesel	Average	2.00	8.00	148	0.41
Grading	Crawler Tractors	Diesel	Average	1.00	8.00	165	0.37
Grading	Scrapers	Diesel	Average	6.00	8.00	423	0.48

### 5.3. Construction Vehicles

#### 5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Grading	—	—	—	—
Grading	Worker	25.0	7.70	LDA,LDT1,LDT2
Grading	Vendor	—	6.80	HHDT,MHDT
Grading	Hauling	391	10.0	HHDT
Grading	Onsite truck	—	—	HHDT

### 5.4. Vehicles

### 5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

## 5.6. Dust Mitigation

### 5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Grading	0.00	881,675	116	0.00	—

### 5.6.2. Construction Earthmoving Control Strategies

Control Strategies Applied	Frequency (per day)	PM10 Reduction	PM2.5 Reduction
Water Exposed Area	2	61%	61%

## 5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
Other Non-Asphalt Surfaces	115	0%

## 8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Construction schedule provided by engineer
Construction: Off-Road Equipment	Construction equipment, horsepower, count, and hours modified to reflect Turnipseed Phase IV clean fleet information.
Construction: Trips and VMT	Assuming 35 CY haul trucks at 10 miles per trip
Characteristics: Utility Information	Actual electric provider
Construction: Dust From Material Movement	Materials exported provided by project engineer

REC	GRP	NETID	X	Y	RISK_SUM	SCENARIO	INHAL_RISI	SOIL_RISK	DERMAL_RI	MMILK_RIS	WATER_RIS	FISH_RISK	CROP_RISK	BEEF_RISK	DAIRY_RIS	PIG_RISK	CHICKEN_F	EGG_RISK
170	SENSITIV	SEN169	293947	4027011	4.53E-06	0.5YrCance	4.53E-06	0	0	0	0	0	0	0	0	0	0	0
162	SENSITIV	SEN161	293977	4027225	3.46E-06	0.5YrCance	3.46E-06	0	0	0	0	0	0	0	0	0	0	0
152	SENSITIV	SEN151	293969	4027359	3.44E-06	0.5YrCance	3.44E-06	0	0	0	0	0	0	0	0	0	0	0
160	SENSITIV	SEN159	293978	4027281	3.35E-06	0.5YrCance	3.35E-06	0	0	0	0	0	0	0	0	0	0	0
189	SENSITIV	SEN188	293524	4027567	3.20E-06	0.5YrCance	3.20E-06	0	0	0	0	0	0	0	0	0	0	0
161	SENSITIV	SEN160	294007	4027267	2.59E-06	0.5YrCance	2.59E-06	0	0	0	0	0	0	0	0	0	0	0
178	SENSITIV	SEN177	293578	4027586	2.33E-06	0.5YrCance	2.33E-06	0	0	0	0	0	0	0	0	0	0	0
153	SENSITIV	SEN152	294009	4027355	2.28E-06	0.5YrCance	2.28E-06	0	0	0	0	0	0	0	0	0	0	0
175	SENSITIV	SEN174	293678	4027587	2.18E-06	0.5YrCance	2.18E-06	0	0	0	0	0	0	0	0	0	0	0
163	SENSITIV	SEN162	294045	4027277	1.94E-06	0.5YrCance	1.94E-06	0	0	0	0	0	0	0	0	0	0	0
174	SENSITIV	SEN173	293804	4027586	1.90E-06	0.5YrCance	1.90E-06	0	0	0	0	0	0	0	0	0	0	0
145	SENSITIV	SEN144	293974	4027506	1.74E-06	0.5YrCance	1.74E-06	0	0	0	0	0	0	0	0	0	0	0
447	SENSITIV	SEN446	293326	4027617	1.69E-06	0.5YrCance	1.69E-06	0	0	0	0	0	0	0	0	0	0	0
171	SENSITIV	SEN170	293857	4027585	1.68E-06	0.5YrCance	1.68E-06	0	0	0	0	0	0	0	0	0	0	0
190	SENSITIV	SEN189	293523	4027618	1.68E-06	0.5YrCance	1.68E-06	0	0	0	0	0	0	0	0	0	0	0
154	SENSITIV	SEN153	294050	4027357	1.64E-06	0.5YrCance	1.64E-06	0	0	0	0	0	0	0	0	0	0	0
188	SENSITIV	SEN187	293477	4027624	1.60E-06	0.5YrCance	1.60E-06	0	0	0	0	0	0	0	0	0	0	0
187	SENSITIV	SEN186	293430	4027627	1.56E-06	0.5YrCance	1.56E-06	0	0	0	0	0	0	0	0	0	0	0
164	SENSITIV	SEN163	294085	4027274	1.51E-06	0.5YrCance	1.51E-06	0	0	0	0	0	0	0	0	0	0	0
177	SENSITIV	SEN176	293623	4027642	1.33E-06	0.5YrCance	1.33E-06	0	0	0	0	0	0	0	0	0	0	0
176	SENSITIV	SEN175	293686	4027638	1.32E-06	0.5YrCance	1.32E-06	0	0	0	0	0	0	0	0	0	0	0
155	SENSITIV	SEN154	294088	4027352	1.29E-06	0.5YrCance	1.29E-06	0	0	0	0	0	0	0	0	0	0	0
448	SENSITIV	SEN447	293193	4027642	1.27E-06	0.5YrCance	1.27E-06	0	0	0	0	0	0	0	0	0	0	0
165	SENSITIV	SEN164	294125	4027274	1.21E-06	0.5YrCance	1.21E-06	0	0	0	0	0	0	0	0	0	0	0
146	SENSITIV	SEN145	294018	4027501	1.14E-06	0.5YrCance	1.14E-06	0	0	0	0	0	0	0	0	0	0	0
173	SENSITIV	SEN172	293808	4027636	1.13E-06	0.5YrCance	1.13E-06	0	0	0	0	0	0	0	0	0	0	0
167	SENSITIV	SEN166	294155	4027225	1.11E-06	0.5YrCance	1.11E-06	0	0	0	0	0	0	0	0	0	0	0
457	SENSITIV		293953	4026724	1.08E-06	0.5YrCance	1.08E-06	0	0	0	0	0	0	0	0	0	0	0
172	SENSITIV	SEN171	293860	4027625	1.08E-06	0.5YrCance	1.08E-06	0	0	0	0	0	0	0	0	0	0	0
191	SENSITIV	SEN190	293525	4027680	1.06E-06	0.5YrCance	1.06E-06	0	0	0	0	0	0	0	0	0	0	0
194	SENSITIV	SEN193	293469	4027683	1.04E-06	0.5YrCance	1.04E-06	0	0	0	0	0	0	0	0	0	0	0
458	SENSITIV		294010	4026727	1.04E-06	0.5YrCance	1.04E-06	0	0	0	0	0	0	0	0	0	0	0
440	SENSITIV	SEN439	293327	4027682	1.03E-06	0.5YrCance	1.03E-06	0	0	0	0	0	0	0	0	0	0	0
459	SENSITIV		294038	4026733	1.02E-06	0.5YrCance	1.02E-06	0	0	0	0	0	0	0	0	0	0	0
156	SENSITIV	SEN155	294130	4027351	1.01E-06	0.5YrCance	1.01E-06	0	0	0	0	0	0	0	0	0	0	0
166	SENSITIV	SEN165	294163	4027271	1.01E-06	0.5YrCance	1.01E-06	0	0	0	0	0	0	0	0	0	0	0
460	SENSITIV		294096	4026758	9.97E-07	0.5YrCance	9.97E-07	0	0	0	0	0	0	0	0	0	0	0
461	SENSITIV		294122	4026771	9.72E-07	0.5YrCance	9.72E-07	0	0	0	0	0	0	0	0	0	0	0
179	SENSITIV	SEN178	293612	4027693	9.45E-07	0.5YrCance	9.45E-07	0	0	0	0	0	0	0	0	0	0	0
182	SENSITIV	SEN181	293691	4027684	9.44E-07	0.5YrCance	9.44E-07	0	0	0	0	0	0	0	0	0	0	0
439	SENSITIV	SEN438	293218	4027690	9.28E-07	0.5YrCance	9.28E-07	0	0	0	0	0	0	0	0	0	0	0
147	SENSITIV	SEN146	294051	4027496	9.18E-07	0.5YrCance	9.18E-07	0	0	0	0	0	0	0	0	0	0	0
441	SENSITIV	SEN440	293389	4027708	8.97E-07	0.5YrCance	8.97E-07	0	0	0	0	0	0	0	0	0	0	0

442	SENSITIV	SEN441	293433	4027711	8.85E-07	0.5YrCance	8.85E-07	0	0	0	0	0	0	0	0	0	0
462	SENSITIV		294170	4026778	8.72E-07	0.5YrCance	8.72E-07	0	0	0	0	0	0	0	0	0	0
186	SENSITIV	SEN185	293801	4027676	8.49E-07	0.5YrCance	8.49E-07	0	0	0	0	0	0	0	0	0	0
169	SENSITIV	SEN168	294203	4027273	8.39E-07	0.5YrCance	8.39E-07	0	0	0	0	0	0	0	0	0	0
193	SENSITIV	SEN192	293468	4027722	8.34E-07	0.5YrCance	8.34E-07	0	0	0	0	0	0	0	0	0	0
446	SENSITIV	SEN445	293184	4027704	8.31E-07	0.5YrCance	8.31E-07	0	0	0	0	0	0	0	0	0	0
438	SENSITIV	SEN437	293285	4027720	8.17E-07	0.5YrCance	8.17E-07	0	0	0	0	0	0	0	0	0	0
157	SENSITIV	SEN156	294174	4027351	8.16E-07	0.5YrCance	8.16E-07	0	0	0	0	0	0	0	0	0	0
192	SENSITIV	SEN191	293522	4027730	7.94E-07	0.5YrCance	7.94E-07	0	0	0	0	0	0	0	0	0	0
180	SENSITIV	SEN179	293612	4027730	7.66E-07	0.5YrCance	7.66E-07	0	0	0	0	0	0	0	0	0	0
132	SENSITIV	SEN131	294003	4027566	7.61E-07	0.5YrCance	7.61E-07	0	0	0	0	0	0	0	0	0	0
185	SENSITIV	SEN184	293868	4027673	7.38E-07	0.5YrCance	7.38E-07	0	0	0	0	0	0	0	0	0	0
168	SENSITIV	SEN167	294241	4027270	7.22E-07	0.5YrCance	7.22E-07	0	0	0	0	0	0	0	0	0	0
181	SENSITIV	SEN180	293685	4027731	7.21E-07	0.5YrCance	7.21E-07	0	0	0	0	0	0	0	0	0	0
148	SENSITIV	SEN147	294094	4027497	7.05E-07	0.5YrCance	7.05E-07	0	0	0	0	0	0	0	0	0	0
158	SENSITIV	SEN157	294221	4027349	6.70E-07	0.5YrCance	6.70E-07	0	0	0	0	0	0	0	0	0	0
149	SENSITIV	SEN148	294135	4027480	6.27E-07	0.5YrCance	6.27E-07	0	0	0	0	0	0	0	0	0	0
183	SENSITIV	SEN182	293800	4027729	6.22E-07	0.5YrCance	6.22E-07	0	0	0	0	0	0	0	0	0	0
200	SENSITIV	SEN199	293462	4027792	5.97E-07	0.5YrCance	5.97E-07	0	0	0	0	0	0	0	0	0	0
159	SENSITIV	SEN158	294252	4027351	5.91E-07	0.5YrCance	5.91E-07	0	0	0	0	0	0	0	0	0	0
195	SENSITIV	SEN194	293514	4027793	5.89E-07	0.5YrCance	5.89E-07	0	0	0	0	0	0	0	0	0	0
203	SENSITIV	SEN202	293644	4027779	5.87E-07	0.5YrCance	5.87E-07	0	0	0	0	0	0	0	0	0	0
443	SENSITIV	SEN442	293425	4027799	5.81E-07	0.5YrCance	5.81E-07	0	0	0	0	0	0	0	0	0	0
444	SENSITIV	SEN443	293391	4027800	5.79E-07	0.5YrCance	5.79E-07	0	0	0	0	0	0	0	0	0	0
184	SENSITIV	SEN183	293862	4027726	5.58E-07	0.5YrCance	5.58E-07	0	0	0	0	0	0	0	0	0	0
445	SENSITIV	SEN444	293355	4027810	5.54E-07	0.5YrCance	5.54E-07	0	0	0	0	0	0	0	0	0	0
196	SENSITIV	SEN195	293586	4027803	5.47E-07	0.5YrCance	5.47E-07	0	0	0	0	0	0	0	0	0	0
202	SENSITIV	SEN201	293616	4027801	5.41E-07	0.5YrCance	5.41E-07	0	0	0	0	0	0	0	0	0	0
133	SENSITIV	SEN132	294046	4027587	5.31E-07	0.5YrCance	5.31E-07	0	0	0	0	0	0	0	0	0	0
204	SENSITIV	SEN203	293685	4027799	5.16E-07	0.5YrCance	5.16E-07	0	0	0	0	0	0	0	0	0	0
437	SENSITIV	SEN436	293320	4027827	5.15E-07	0.5YrCance	5.15E-07	0	0	0	0	0	0	0	0	0	0
436	SENSITIV	SEN435	293272	4027829	5.03E-07	0.5YrCance	5.03E-07	0	0	0	0	0	0	0	0	0	0
205	SENSITIV	SEN204	293715	4027798	5.02E-07	0.5YrCance	5.02E-07	0	0	0	0	0	0	0	0	0	0
261	SENSITIV	SEN260	293226	4027829	4.91E-07	0.5YrCance	4.91E-07	0	0	0	0	0	0	0	0	0	0
206	SENSITIV	SEN205	293751	4027797	4.83E-07	0.5YrCance	4.83E-07	0	0	0	0	0	0	0	0	0	0
150	SENSITIV	SEN149	294179	4027496	4.82E-07	0.5YrCance	4.82E-07	0	0	0	0	0	0	0	0	0	0
260	SENSITIV	SEN259	293181	4027828	4.77E-07	0.5YrCance	4.77E-07	0	0	0	0	0	0	0	0	0	0
207	SENSITIV	SEN206	293778	4027796	4.68E-07	0.5YrCance	4.68E-07	0	0	0	0	0	0	0	0	0	0
199	SENSITIV	SEN198	293481	4027856	4.59E-07	0.5YrCance	4.59E-07	0	0	0	0	0	0	0	0	0	0
201	SENSITIV	SEN200	293438	4027859	4.57E-07	0.5YrCance	4.57E-07	0	0	0	0	0	0	0	0	0	0
213	SENSITIV	SEN212	293580	4027847	4.57E-07	0.5YrCance	4.57E-07	0	0	0	0	0	0	0	0	0	0
134	SENSITIV	SEN133	293993	4027680	4.50E-07	0.5YrCance	4.50E-07	0	0	0	0	0	0	0	0	0	0
255	SENSITIV	SEN254	293390	4027865	4.49E-07	0.5YrCance	4.49E-07	0	0	0	0	0	0	0	0	0	0
197	SENSITIV	SEN196	293528	4027858	4.49E-07	0.5YrCance	4.49E-07	0	0	0	0	0	0	0	0	0	0
208	SENSITIV	SEN207	293812	4027797	4.44E-07	0.5YrCance	4.44E-07	0	0	0	0	0	0	0	0	0	0
232	SENSITIV	SEN231	293620	4027848	4.43E-07	0.5YrCance	4.43E-07	0	0	0	0	0	0	0	0	0	0
231	SENSITIV	SEN230	293654	4027844	4.38E-07	0.5YrCance	4.38E-07	0	0	0	0	0	0	0	0	0	0



198	SENSITIV	SEN197	293514	4027870	4.31E-07	0.5YrCanc€	4.31E-07	0	0	0	0	0	0	0	0	0
230	SENSITIV	SEN229	293686	4027844	4.26E-07	0.5YrCanc€	4.26E-07	0	0	0	0	0	0	0	0	0
209	SENSITIV	SEN208	293842	4027796	4.25E-07	0.5YrCanc€	4.25E-07	0	0	0	0	0	0	0	0	0
141	SENSITIV	SEN140	294123	4027564	4.21E-07	0.5YrCanc€	4.21E-07	0	0	0	0	0	0	0	0	0
211	SENSITIV	SEN210	293918	4027760	4.17E-07	0.5YrCanc€	4.17E-07	0	0	0	0	0	0	0	0	0
229	SENSITIV	SEN228	293714	4027843	4.16E-07	0.5YrCanc€	4.16E-07	0	0	0	0	0	0	0	0	0
137	SENSITIV	SEN136	293974	4027719	4.15E-07	0.5YrCanc€	4.15E-07	0	0	0	0	0	0	0	0	0
214	SENSITIV	SEN213	293581	4027878	4.05E-07	0.5YrCanc€	4.05E-07	0	0	0	0	0	0	0	0	0
259	SENSITIV	SEN258	293331	4027896	4.03E-07	0.5YrCanc€	4.03E-07	0	0	0	0	0	0	0	0	0
210	SENSITIV	SEN209	293879	4027793	4.02E-07	0.5YrCanc€	4.02E-07	0	0	0	0	0	0	0	0	0
228	SENSITIV	SEN227	293750	4027844	3.98E-07	0.5YrCanc€	3.98E-07	0	0	0	0	0	0	0	0	0
135	SENSITIV	SEN134	294028	4027676	3.97E-07	0.5YrCanc€	3.97E-07	0	0	0	0	0	0	0	0	0
258	SENSITIV	SEN257	293286	4027902	3.92E-07	0.5YrCanc€	3.92E-07	0	0	0	0	0	0	0	0	0
227	SENSITIV	SEN226	293781	4027840	3.90E-07	0.5YrCanc€	3.90E-07	0	0	0	0	0	0	0	0	0
257	SENSITIV	SEN256	293234	4027902	3.85E-07	0.5YrCanc€	3.85E-07	0	0	0	0	0	0	0	0	0
131	SENSITIV	SEN130	293974	4027741	3.82E-07	0.5YrCanc€	3.82E-07	0	0	0	0	0	0	0	0	0
151	SENSITIV	SEN150	294255	4027492	3.75E-07	0.5YrCanc€	3.75E-07	0	0	0	0	0	0	0	0	0
256	SENSITIV	SEN255	293184	4027902	3.73E-07	0.5YrCanc€	3.73E-07	0	0	0	0	0	0	0	0	0
226	SENSITIV	SEN225	293815	4027842	3.71E-07	0.5YrCanc€	3.71E-07	0	0	0	0	0	0	0	0	0
215	SENSITIV	SEN214	293583	4027904	3.68E-07	0.5YrCanc€	3.68E-07	0	0	0	0	0	0	0	0	0
212	SENSITIV	SEN211	293920	4027795	3.63E-07	0.5YrCanc€	3.63E-07	0	0	0	0	0	0	0	0	0
233	SENSITIV	SEN232	293846	4027839	3.59E-07	0.5YrCanc€	3.59E-07	0	0	0	0	0	0	0	0	0
252	SENSITIV	SEN251	293441	4027930	3.56E-07	0.5YrCanc€	3.56E-07	0	0	0	0	0	0	0	0	0
251	SENSITIV	SEN250	293394	4027934	3.55E-07	0.5YrCanc€	3.55E-07	0	0	0	0	0	0	0	0	0
253	SENSITIV	SEN252	293482	4027929	3.54E-07	0.5YrCanc€	3.54E-07	0	0	0	0	0	0	0	0	0
254	SENSITIV	SEN253	293532	4027926	3.50E-07	0.5YrCanc€	3.50E-07	0	0	0	0	0	0	0	0	0
108	SENSITIV	SEN107	293976	4027764	3.50E-07	0.5YrCanc€	3.50E-07	0	0	0	0	0	0	0	0	0
138	SENSITIV	SEN137	294024	4027718	3.48E-07	0.5YrCanc€	3.48E-07	0	0	0	0	0	0	0	0	0
237	SENSITIV	SEN236	29383													

140	SENSITIV	SEN139	294108	4027681	2.92E-07	0.5YrCance	2.92E-07	0	0	0	0	0	0	0	0	0	0
449	SENSITIV		293335	4026835	2.92E-07	0.5YrCance	2.92E-07	0	0	0	0	0	0	0	0	0	0
142	SENSITIV	SEN141	294211	4027579	2.92E-07	0.5YrCance	2.92E-07	0	0	0	0	0	0	0	0	0	0
105	SENSITIV	SEN104	293979	4027821	2.89E-07	0.5YrCance	2.89E-07	0	0	0	0	0	0	0	0	0	0
222	SENSITIV	SEN221	293780	4027932	2.86E-07	0.5YrCance	2.86E-07	0	0	0	0	0	0	0	0	0	0
109	SENSITIV	SEN108	294028	4027779	2.84E-07	0.5YrCance	2.84E-07	0	0	0	0	0	0	0	0	0	0
250	SENSITIV	SEN249	293457	4028001	2.84E-07	0.5YrCance	2.84E-07	0	0	0	0	0	0	0	0	0	0
241	SENSITIV	SEN240	293922	4027871	2.81E-07	0.5YrCance	2.81E-07	0	0	0	0	0	0	0	0	0	0
264	SENSITIV	SEN263	293344	4028018	2.78E-07	0.5YrCance	2.78E-07	0	0	0	0	0	0	0	0	0	0
223	SENSITIV	SEN222	293813	4027932	2.77E-07	0.5YrCance	2.77E-07	0	0	0	0	0	0	0	0	0	0
249	SENSITIV	SEN248	293602	4027986	2.76E-07	0.5YrCance	2.76E-07	0	0	0	0	0	0	0	0	0	0
451	SENSITIV		293379	4026771	2.74E-07	0.5YrCance	2.74E-07	0	0	0	0	0	0	0	0	0	0
247	SENSITIV	SEN246	293640	4027984	2.71E-07	0.5YrCance	2.71E-07	0	0	0	0	0	0	0	0	0	0
455	SENSITIV		293186	4026953	2.70E-07	0.5YrCance	2.70E-07	0	0	0	0	0	0	0	0	0	0
127	SENSITIV	SEN126	294067	4027755	2.69E-07	0.5YrCance	2.69E-07	0	0	0	0	0	0	0	0	0	0
103	SENSITIV	SEN102	293981	4027844	2.69E-07	0.5YrCance	2.69E-07	0	0	0	0	0	0	0	0	0	0
110	SENSITIV	SEN109	294029	4027799	2.68E-07	0.5YrCance	2.68E-07	0	0	0	0	0	0	0	0	0	0
245	SENSITIV	SEN244	293694	4027979	2.65E-07	0.5YrCance	2.65E-07	0	0	0	0	0	0	0	0	0	0
244	SENSITIV	SEN243	293726	4027973	2.64E-07	0.5YrCance	2.64E-07	0	0	0	0	0	0	0	0	0	0
240	SENSITIV	SEN239	293923	4027893	2.63E-07	0.5YrCance	2.63E-07	0	0	0	0	0	0	0	0	0	0
224	SENSITIV	SEN223	293852	4027935	2.63E-07	0.5YrCance	2.63E-07	0	0	0	0	0	0	0	0	0	0
225	SENSITIV	SEN224	293876	4027932	2.57E-07	0.5YrCance	2.57E-07	0	0	0	0	0	0	0	0	0	0
104	SENSITIV	SEN103	293979	4027866	2.54E-07	0.5YrCance	2.54E-07	0	0	0	0	0	0	0	0	0	0
101	SENSITIV	SEN100	294027	4027823	2.53E-07	0.5YrCance	2.53E-07	0	0	0	0	0	0	0	0	0	0
238	SENSITIV	SEN237	293906	4027921	2.51E-07	0.5YrCance	2.51E-07	0	0	0	0	0	0	0	0	0	0
263	SENSITIV	SEN262	293349	4028059	2.48E-07	0.5YrCance	2.48E-07	0	0	0	0	0	0	0	0	0	0
246	SENSITIV	SEN245	293701	4028001	2.47E-07	0.5YrCance	2.47E-07	0	0	0	0	0	0	0	0	0	0
128	SENSITIV	SEN127	294095	4027756	2.46E-07	0.5YrCance	2.46E-07	0	0	0	0	0	0	0	0	0	0
102	SENSITIV	SEN101	294027	4027843	2.40E-07	0.5YrCance	2.40E-07	0	0	0	0	0	0	0	0	0	0
239	SENSITIV	SEN238	293922	4027930	2.38E-07	0.5YrCance	2.38E-07	0	0	0	0	0	0	0	0	0	0
111	SENSITIV	SEN110	294071	4027800	2.36E-07	0.5YrCance	2.36E-07	0	0	0	0	0	0	0	0	0	0
126	SENSITIV	SEN125	294118	4027756	2.30E-07	0.5YrCance	2.30E-07	0	0	0	0	0	0	0	0	0	0
96	SENSITIV	SEN95	294027	4027866	2.26E-07	0.5YrCance	2.26E-07	0	0	0	0	0	0	0	0	0	0
143	SENSITIV	SEN142	294219	4027657	2.26E-07	0.5YrCance	2.26E-07	0	0	0	0	0	0	0	0	0	0
100	SENSITIV	SEN99	294072	4027827	2.20E-07	0.5YrCance	2.20E-07	0	0	0	0	0	0	0	0	0	0
112	SENSITIV	SEN111	294095	4027800	2.20E-07	0.5YrCance	2.20E-07	0	0	0	0	0	0	0	0	0	0
95	SENSITIV	SEN94	293983	4027918	2.20E-07	0.5YrCance	2.20E-07	0	0	0	0	0	0	0	0	0	0
125	SENSITIV	SEN124	294138	4027754	2.19E-07	0.5YrCance	2.19E-07	0	0	0	0	0	0	0	0	0	0
113	SENSITIV	SEN112	294115	4027794	2.11E-07	0.5YrCance	2.11E-07	0	0	0	0	0	0	0	0	0	0
97	SENSITIV	SEN96	294046	4027879	2.09E-07	0.5YrCance	2.09E-07	0	0	0	0	0	0	0	0	0	0
83	SENSITIV	SEN82	293986	4027938	2.08E-07	0.5YrCance	2.08E-07	0	0	0	0	0	0	0	0	0	0
124	SENSITIV	SEN123	294166	4027754	2.03E-07	0.5YrCance	2.03E-07	0	0	0	0	0	0	0	0	0	0
98	SENSITIV	SEN97	294069	4027874	1.99E-07	0.5YrCance	1.99E-07	0	0	0	0	0	0	0	0	0	0
114	SENSITIV	SEN113	294143	4027799	1.94E-07	0.5YrCance	1.94E-07	0	0	0	0	0	0	0	0	0	0
85	SENSITIV	SEN84	293979	4027978	1.92E-07	0.5YrCance	1.92E-07	0	0	0	0	0	0	0	0	0	0
452	SENSITIV		293251	4026772	1.90E-07	0.5YrCance	1.90E-07	0	0	0	0	0	0	0	0	0	0
123	SENSITIV	SEN122	294197	4027751	1.89E-07	0.5YrCance	1.89E-07	0	0	0	0	0	0	0	0	0	0

[illegible]

269	SENSITIV	SEN268	293933	4028430	9.24E-08	0.5YrCance	9.24E-08	0	0	0	0	0	0	0	0	0	0
338	SENSITIV	SEN337	293991	4028402	9.22E-08	0.5YrCance	9.22E-08	0	0	0	0	0	0	0	0	0	0
271	SENSITIV	SEN270	294098	4028373	8.72E-08	0.5YrCance	8.72E-08	0	0	0	0	0	0	0	0	0	0
337	SENSITIV	SEN336	294042	4028459	8.29E-08	0.5YrCance	8.29E-08	0	0	0	0	0	0	0	0	0	0
286	SENSITIV	SEN285	294142	4028372	8.28E-08	0.5YrCance	8.28E-08	0	0	0	0	0	0	0	0	0	0
463	SENSITIV		293095	4026551	8.17E-08	0.5YrCance	8.17E-08	0	0	0	0	0	0	0	0	0	0
330	SENSITIV	SEN329	293865	4028570	8.13E-08	0.5YrCance	8.13E-08	0	0	0	0	0	0	0	0	0	0
287	SENSITIV	SEN286	294152	4028388	8.03E-08	0.5YrCance	8.03E-08	0	0	0	0	0	0	0	0	0	0
290	SENSITIV	SEN289	294102	4028446	8.00E-08	0.5YrCance	8.00E-08	0	0	0	0	0	0	0	0	0	0
331	SENSITIV	SEN330	293901	4028570	7.92E-08	0.5YrCance	7.92E-08	0	0	0	0	0	0	0	0	0	0
288	SENSITIV	SEN287	294167	4028383	7.91E-08	0.5YrCance	7.91E-08	0	0	0	0	0	0	0	0	0	0
289	SENSITIV	SEN288	294142	4028421	7.87E-08	0.5YrCance	7.87E-08	0	0	0	0	0	0	0	0	0	0
332	SENSITIV	SEN331	294033	4028513	7.84E-08	0.5YrCance	7.84E-08	0	0	0	0	0	0	0	0	0	0
291	SENSITIV	SEN290	294103	4028466	7.82E-08	0.5YrCance	7.82E-08	0	0	0	0	0	0	0	0	0	0
329	SENSITIV	SEN328	293940	4028573	7.70E-08	0.5YrCance	7.70E-08	0	0	0	0	0	0	0	0	0	0
333	SENSITIV	SEN332	294036	4028535	7.63E-08	0.5YrCance	7.63E-08	0	0	0	0	0	0	0	0	0	0
295	SENSITIV	SEN294	294105	4028488	7.63E-08	0.5YrCance	7.63E-08	0	0	0	0	0	0	0	0	0	0
335	SENSITIV	SEN334	294004	4028556	7.59E-08	0.5YrCance	7.59E-08	0	0	0	0	0	0	0	0	0	0
334	SENSITIV	SEN333	294020	4028551	7.57E-08	0.5YrCance	7.57E-08	0	0	0	0	0	0	0	0	0	0
296	SENSITIV	SEN295	294097	4028513	7.48E-08	0.5YrCance	7.48E-08	0	0	0	0	0	0	0	0	0	0
292	SENSITIV	SEN291	294147	4028465	7.48E-08	0.5YrCance	7.48E-08	0	0	0	0	0	0	0	0	0	0
336	SENSITIV	SEN335	294018	4028564	7.47E-08	0.5YrCance	7.47E-08	0	0	0	0	0	0	0	0	0	0
328	SENSITIV	SEN327	293941	4028605	7.42E-08	0.5YrCance	7.42E-08	0	0	0	0	0	0	0	0	0	0
285	SENSITIV	SEN284	294223	4028372	7.32E-08	0.5YrCance	7.32E-08	0	0	0	0	0	0	0	0	0	0
297	SENSITIV	SEN296	294098	4028534	7.32E-08	0.5YrCance	7.32E-08	0	0	0	0	0	0	0	0	0	0
294	SENSITIV	SEN293	294146	4028491	7.30E-08	0.5YrCance	7.30E-08	0	0	0	0	0	0	0	0	0	0
293	SENSITIV	SEN292	294146	4028509	7.18E-08	0.5YrCance	7.18E-08	0	0	0	0	0	0	0	0	0	0
300	SENSITIV	SEN299	294098	4028560	7.13E-08	0.5YrCance	7.13E-08	0	0	0	0	0	0	0	0	0	0
327	SENSITIV	SEN326	293944	4028649	7.07E-08	0.5YrCance	7.07E-08	0	0	0	0	0	0	0	0	0	0
298	SENSITIV	SEN297	294145	4028530	7.04E-08	0.5YrCance	7.04E-08	0	0	0	0	0	0	0	0	0	0
323	SENSITIV	SEN322	294098	4028581	6.99E-08	0.5YrCance	6.99E-08	0	0	0	0	0	0	0	0	0	0
284	SENSITIV	SEN283	294254	4028374	6.94E-08	0.5YrCance	6.94E-08	0	0	0	0	0	0	0	0	0	0
322	SENSITIV	SEN321	294089	4028599	6.91E-08	0.5YrCance	6.91E-08	0	0	0	0	0	0	0	0	0	0
324	SENSITIV	SEN323	294001	4028647	6.90E-08	0.5YrCance	6.90E-08	0	0	0	0	0	0	0	0	0	0
299	SENSITIV	SEN298	294148	4028558	6.84E-08	0.5YrCance	6.84E-08	0	0	0	0	0	0	0	0	0	0
325	SENSITIV	SEN324	294025	4028646	6.84E-08	0.5YrCance	6.84E-08	0	0	0	0	0	0	0	0	0	0
308	SENSITIV	SEN307	294042	4028647	6.78E-08	0.5YrCance	6.78E-08	0	0	0	0	0	0	0	0	0	0
326	SENSITIV	SEN325	294002	4028665	6.78E-08	0.5YrCance	6.78E-08	0	0	0	0	0	0	0	0	0	0
321	SENSITIV	SEN320	294105	4028618	6.71E-08	0.5YrCance	6.71E-08	0	0	0	0	0	0	0	0	0	0
319	SENSITIV	SEN318	294148	4028580	6.71E-08	0.5YrCance	6.71E-08	0	0	0	0	0	0	0	0	0	0
283	SENSITIV	SEN282	294255	4028415	6.70E-08	0.5YrCance	6.70E-08	0	0	0	0	0	0	0	0	0	0
309	SENSITIV	SEN308	294031	4028676	6.62E-08	0.5YrCance	6.62E-08	0	0	0	0	0	0	0	0	0	0
282	SENSITIV	SEN281	294252	4028439	6.60E-08	0.5YrCance	6.60E-08	0	0	0	0	0	0	0	0	0	0
307	SENSITIV	SEN306	294047	4028672	6.60E-08	0.5YrCance	6.60E-08	0	0	0	0	0	0	0	0	0	0
313	SENSITIV	SEN312	294111	4028632	6.60E-08	0.5YrCance	6.60E-08	0	0	0	0	0	0	0	0	0	0
306	SENSITIV	SEN305	294060	4028673	6.55E-08	0.5YrCance	6.55E-08	0	0	0	0	0	0	0	0	0	0
320	SENSITIV	SEN319	294156	4028599	6.55E-08	0.5YrCance	6.55E-08	0	0	0	0	0	0	0	0	0	0

312 SENSITIV	SEN311	294106	4028645	6.54E-08	0.5YrCance	6.54E-08	0	0	0	0	0	0	0	0	0	0
305 SENSITIV	SEN304	294072	4028672	6.52E-08	0.5YrCance	6.52E-08	0	0	0	0	0	0	0	0	0	0
310 SENSITIV	SEN309	294037	4028692	6.51E-08	0.5YrCance	6.51E-08	0	0	0	0	0	0	0	0	0	0
304 SENSITIV	SEN303	294089	4028671	6.46E-08	0.5YrCance	6.46E-08	0	0	0	0	0	0	0	0	0	0
281 SENSITIV	SEN280	294254	4028464	6.46E-08	0.5YrCance	6.46E-08	0	0	0	0	0	0	0	0	0	0
311 SENSITIV	SEN310	294109	4028659	6.45E-08	0.5YrCance	6.45E-08	0	0	0	0	0	0	0	0	0	0
272 SENSITIV	SEN271	294297	4028378	6.44E-08	0.5YrCance	6.44E-08	0	0	0	0	0	0	0	0	0	0
314 SENSITIV	SEN313	294155	4028628	6.39E-08	0.5YrCance	6.39E-08	0	0	0	0	0	0	0	0	0	0
66 SENSITIV	SEN65	294562	4028078	6.39E-08	0.5YrCance	6.39E-08	0	0	0	0	0	0	0	0	0	0
280 SENSITIV	SEN279	294251	4028484	6.39E-08	0.5YrCance	6.39E-08	0	0	0	0	0	0	0	0	0	0
303 SENSITIV	SEN302	294111	4028673	6.36E-08	0.5YrCance	6.36E-08	0	0	0	0	0	0	0	0	0	0
301 SENSITIV	SEN300	294044	4028715	6.35E-08	0.5YrCance	6.35E-08	0	0	0	0	0	0	0	0	0	0
273 SENSITIV	SEN272	294296	4028400	6.34E-08	0.5YrCance	6.34E-08	0	0	0	0	0	0	0	0	0	0
302 SENSITIV	SEN301	294076	4028704	6.32E-08	0.5YrCance	6.32E-08	0	0	0	0	0	0	0	0	0	0
279 SENSITIV	SEN278	294247	4028511	6.30E-08	0.5YrCance	6.30E-08	0	0	0	0	0	0	0	0	0	0
274 SENSITIV	SEN273	294296	4028424	6.22E-08	0.5YrCance	6.22E-08	0	0	0	0	0	0	0	0	0	0
315 SENSITIV	SEN314	294155	4028667	6.19E-08	0.5YrCance	6.19E-08	0	0	0	0	0	0	0	0	0	0
396 SENSITIV	SEN395	294043	4028756	6.12E-08	0.5YrCance	6.12E-08	0	0	0	0	0	0	0	0	0	0
316 SENSITIV	SEN315	294152	4028687	6.11E-08	0.5YrCance	6.11E-08	0	0	0	0	0	0	0	0	0	0
275 SENSITIV	SEN274	294297	4028451	6.09E-08	0.5YrCance	6.09E-08	0	0	0	0	0	0	0	0	0	0
346 SENSITIV	SEN345	294253	4028552	6.06E-08	0.5YrCance	6.06E-08	0	0	0	0	0	0	0	0	0	0
317 SENSITIV	SEN316	294163	4028708	5.95E-08	0.5YrCance	5.95E-08	0	0	0	0	0	0	0	0	0	0
395 SENSITIV	SEN394	294077	4028776	5.94E-08	0.5YrCance	5.94E-08	0	0	0	0	0	0	0	0	0	0
277 SENSITIV	SEN276	294296	4028490	5.93E-08	0.5YrCance	5.93E-08	0	0	0	0	0	0	0	0	0	0
347 SENSITIV	SEN346	294255	4028578	5.93E-08	0.5YrCance	5.93E-08	0	0	0	0	0	0	0	0	0	0
394 SENSITIV	SEN393	294096	4028767	5.93E-08	0.5YrCance	5.93E-08	0	0	0	0	0	0	0	0	0	0
276 SENSITIV	SEN275	294306	4028473	5.91E-08	0.5YrCance	5.91E-08	0	0	0	0	0	0	0	0	0	0
343 SENSITIV	SEN342	294150	4028752	5.81E-08	0.5YrCance	5.81E-08	0	0	0	0	0	0	0	0	0	0
345 SENSITIV	SEN344	294257	4028609	5.79E-08	0.5YrCance	5.79E-08	0	0	0	0	0	0	0	0	0	0
278 SENSITIV	SEN277	294300	4028518	5.78E-08	0.5YrCance	5.78E-08	0	0	0	0	0	0	0	0	0	0
318 SENSITIV	SEN317	294194	4028714	5.77E-08	0.5YrCance	5.77E-08	0	0	0	0	0	0	0	0	0	0
393 SENSITIV	SEN392	294112	4028796	5.74E-08	0.5YrCance	5.74E-08	0	0	0	0	0	0	0	0	0	0
348 SENSITIV	SEN347	294301	4028533	5.72E-08	0.5YrCance	5.72E-08	0	0	0	0	0	0	0	0	0	0
342 SENSITIV	SEN341	294254	4028645	5.67E-08	0.5YrCance	5.67E-08	0	0	0	0	0	0	0	0	0	0
340 SENSITIV	SEN339	294219	4028713	5.64E-08	0.5YrCance	5.64E-08	0	0	0	0	0	0	0	0	0	0
364 SENSITIV	SEN363	294153	4028795	5.61E-08	0.5YrCance	5.61E-08	0	0	0	0	0	0	0	0	0	0
349 SENSITIV	SEN348	294305	4028560	5.58E-08	0.5YrCance	5.58E-08	0	0	0	0	0	0	0	0	0	0
392 SENSITIV	SEN391	294106	4028841	5.56E-08	0.5YrCance	5.56E-08	0	0	0	0	0	0	0	0	0	0
344 SENSITIV	SEN343	294258	4028681	5.51E-08	0.5YrCance	5.51E-08	0	0	0	0	0	0	0	0	0	0
365 SENSITIV	SEN364	294154	4028822	5.50E-08	0.5YrCance	5.50E-08	0	0	0	0	0	0	0	0	0	0
350 SENSITIV	SEN349	294306	4028583	5.49E-08	0.5YrCance	5.49E-08	0	0	0	0	0	0	0	0	0	0
391 SENSITIV	SEN390	294109	4028864	5.46E-08	0.5YrCance	5.46E-08	0	0	0	0	0	0	0	0	0	0
341 SENSITIV	SEN340	294256	4028707	5.43E-08	0.5YrCance	5.43E-08	0	0	0	0	0	0	0	0	0	0
352 SENSITIV	SEN351	294302	4028609	5.43E-08	0.5YrCance	5.43E-08	0	0	0	0	0	0	0	0	0	0
366 SENSITIV	SEN365	294156	4028863	5.34E-08	0.5YrCance	5.34E-08	0	0	0	0	0	0	0	0	0	0
354 SENSITIV	SEN353	294300	4028646	5.33E-08	0.5YrCance	5.33E-08	0	0	0	0	0	0	0	0	0	0
351 SENSITIV	SEN350	294331	4028580	5.30E-08	0.5YrCance	5.30E-08	0	0	0	0	0	0	0	0	0	0

380	SENSITIV	SEN379	294118	4028899	5.30E-08	0.5YrCance	5.30E-08	0	0	0	0	0	0	0	0	0	0
363	SENSITIV	SEN362	294262	4028752	5.25E-08	0.5YrCance	5.25E-08	0	0	0	0	0	0	0	0	0	0
360	SENSITIV	SEN359	294264	4028770	5.18E-08	0.5YrCance	5.18E-08	0	0	0	0	0	0	0	0	0	0
390	SENSITIV	SEN389	294113	4028943	5.14E-08	0.5YrCance	5.14E-08	0	0	0	0	0	0	0	0	0	0
369	SENSITIV	SEN368	294220	4028857	5.13E-08	0.5YrCance	5.13E-08	0	0	0	0	0	0	0	0	0	0
355	SENSITIV	SEN354	294323	4028658	5.12E-08	0.5YrCance	5.12E-08	0	0	0	0	0	0	0	0	0	0
359	SENSITIV	SEN358	294264	4028795	5.11E-08	0.5YrCance	5.11E-08	0	0	0	0	0	0	0	0	0	0
389	SENSITIV	SEN388	294158	4028934	5.08E-08	0.5YrCance	5.08E-08	0	0	0	0	0	0	0	0	0	0
357	SENSITIV	SEN356	294309	4028709	5.07E-08	0.5YrCance	5.07E-08	0	0	0	0	0	0	0	0	0	0
353	SENSITIV	SEN352	294353	4028610	5.04E-08	0.5YrCance	5.04E-08	0	0	0	0	0	0	0	0	0	0
361	SENSITIV	SEN360	294267	4028815	5.03E-08	0.5YrCance	5.03E-08	0	0	0	0	0	0	0	0	0	0
409	SENSITIV	SEN408	294117	4028974	5.03E-08	0.5YrCance	5.03E-08	0	0	0	0	0	0	0	0	0	0
358	SENSITIV	SEN357	294310	4028729	5.01E-08	0.5YrCance	5.01E-08	0	0	0	0	0	0	0	0	0	0
368	SENSITIV	SEN367	294239	4028869	5.01E-08	0.5YrCance	5.01E-08	0	0	0	0	0	0	0	0	0	0
379	SENSITIV	SEN378	294161	4028954	5.00E-08	0.5YrCance	5.00E-08	0	0	0	0	0	0	0	0	0	0
406	SENSITIV	SEN405	293822	4029127	5.00E-08	0.5YrCance	5.00E-08	0	0	0	0	0	0	0	0	0	0
356	SENSITIV	SEN355	294336	4028682	4.96E-08	0.5YrCance	4.96E-08	0	0	0	0	0	0	0	0	0	0
407	SENSITIV	SEN406	294167	4028969	4.94E-08	0.5YrCance	4.94E-08	0	0	0	0	0	0	0	0	0	0
408	SENSITIV	SEN407	294118	4029007	4.91E-08	0.5YrCance	4.91E-08	0	0	0	0	0	0	0	0	0	0
367	SENSITIV	SEN366	294269	4028863	4.89E-08	0.5YrCance	4.89E-08	0	0	0	0	0	0	0	0	0	0
402	SENSITIV	SEN401	294022	4029044	4.89E-08	0.5YrCance	4.89E-08	0	0	0	0	0	0	0	0	0	0
381	SENSITIV	SEN380	294229	4028933	4.87E-08	0.5YrCance	4.87E-08	0	0	0	0	0	0	0	0	0	0
61	SENSITIV	SEN60	294540	4028357	4.87E-08	0.5YrCance	4.87E-08	0	0	0	0	0	0	0	0	0	0
373	SENSITIV	SEN372	294318	4028768	4.86E-08	0.5YrCance	4.86E-08	0	0	0	0	0	0	0	0	0	0
370	SENSITIV	SEN369	294266	4028883	4.85E-08	0.5YrCance	4.85E-08	0	0	0	0	0	0	0	0	0	0
376	SENSITIV	SEN375	294170	4028996	4.85E-08	0.5YrCance	4.85E-08	0	0	0	0	0	0	0	0	0	0
1	SENSITIV	SEN0	293748	4029209	4.85E-08	0.5YrCance	4.85E-08	0	0	0	0	0	0	0	0	0	0
375	SENSITIV	SEN374	294122	4029024	4.85E-08	0.5YrCance	4.85E-08	0	0	0	0	0	0	0	0	0	0
2	SENSITIV	SEN1	293799	4029195	4.82E-08	0.5YrCance	4.82E-08	0	0	0	0	0	0	0	0	0	0
382	SENSITIV	SEN381	294229	4028951	4.82E-08	0.5YrCance	4.82E-08	0	0	0	0	0	0	0	0	0	0
374	SENSITIV	SEN373	294114	4029044	4.79E-08	0.5YrCance	4.79E-08	0	0	0	0	0	0	0	0	0	0
372	SENSITIV	SEN371	294307	4028844	4.74E-08	0.5YrCance	4.74E-08	0	0	0	0	0	0	0	0	0	0
385	SENSITIV	SEN384	294265	4028931	4.73E-08	0.5YrCance	4.73E-08	0	0	0	0	0	0	0	0	0	0
403	SENSITIV	SEN402	294018	4029093	4.73E-08	0.5YrCance	4.73E-08	0	0	0	0	0	0	0	0	0	0
52	SENSITIV	SEN51	294539	4028397	4.72E-08	0.5YrCance	4.72E-08	0	0	0	0	0	0	0	0	0	0
377	SENSITIV	SEN376	294161	4029050	4.70E-08	0.5YrCance	4.70E-08	0	0	0	0	0	0	0	0	0	0
404	SENSITIV	SEN403	294038	4029095	4.70E-08	0.5YrCance	4.70E-08	0	0	0	0	0	0	0	0	0	0
405	SENSITIV	SEN404	294054	4029095	4.69E-08	0.5YrCance	4.69E-08	0	0	0	0	0	0	0	0	0	0
362	SENSITIV	SEN361	294324	4028824	4.69E-08	0.5YrCance	4.69E-08	0	0	0	0	0	0	0	0	0	0
414	SENSITIV	SEN413	294243	4028982	4.69E-08	0.5YrCance	4.69E-08	0	0	0	0	0	0	0	0	0	0
401	SENSITIV	SEN400	294121	4029079	4.68E-08	0.5YrCance	4.68E-08	0	0	0	0	0	0	0	0	0	0
65	SENSITIV	SEN64	294596	4028353	4.65E-08	0.5YrCance	4.65E-08	0	0	0	0	0	0	0	0	0	0
371	SENSITIV	SEN370	294310	4028875	4.65E-08	0.5YrCance	4.65E-08	0	0	0	0	0	0	0	0	0	0
378	SENSITIV	SEN377	294163	4029067	4.65E-08	0.5YrCance	4.65E-08	0	0	0	0	0	0	0	0	0	0
383	SENSITIV	SEN382	294271	4028955	4.65E-08	0.5YrCance	4.65E-08	0	0	0	0	0	0	0	0	0	0
3	SENSITIV	SEN2	293874	4029194	4.64E-08	0.5YrCance	4.64E-08	0	0	0	0	0	0	0	0	0	0
384	SENSITIV	SEN383	294272	4028974	4.60E-08	0.5YrCance	4.60E-08	0	0	0	0	0	0	0	0	0	0

399	SENSITIV	SEN398	294059	4029129	4.58E-08	0.5YrCance	4.58E-08	0	0	0	0	0	0	0	0	0	0
51	SENSITIV	SEN50	294536	4028439	4.58E-08	0.5YrCance	4.58E-08	0	0	0	0	0	0	0	0	0	0
50	SENSITIV	SEN49	294524	4028463	4.55E-08	0.5YrCance	4.55E-08	0	0	0	0	0	0	0	0	0	0
400	SENSITIV	SEN399	294117	4029123	4.55E-08	0.5YrCance	4.55E-08	0	0	0	0	0	0	0	0	0	0
410	SENSITIV	SEN409	294273	4028997	4.54E-08	0.5YrCance	4.54E-08	0	0	0	0	0	0	0	0	0	0
424	SENSITIV	SEN423	294228	4029065	4.52E-08	0.5YrCance	4.52E-08	0	0	0	0	0	0	0	0	0	0
53	SENSITIV	SEN52	294596	4028393	4.50E-08	0.5YrCance	4.50E-08	0	0	0	0	0	0	0	0	0	0
386	SENSITIV	SEN385	294315	4028937	4.49E-08	0.5YrCance	4.49E-08	0	0	0	0	0	0	0	0	0	0
411	SENSITIV	SEN410	294271	4029023	4.49E-08	0.5YrCance	4.49E-08	0	0	0	0	0	0	0	0	0	0
4	SENSITIV	SEN3	293935	4029200	4.48E-08	0.5YrCance	4.48E-08	0	0	0	0	0	0	0	0	0	0
397	SENSITIV	SEN396	294191	4029123	4.45E-08	0.5YrCance	4.45E-08	0	0	0	0	0	0	0	0	0	0
64	SENSITIV	SEN63	294634	4028370	4.45E-08	0.5YrCance	4.45E-08	0	0	0	0	0	0	0	0	0	0
387	SENSITIV	SEN386	294313	4028967	4.44E-08	0.5YrCance	4.44E-08	0	0	0	0	0	0	0	0	0	0
412	SENSITIV	SEN411	294277	4029041	4.43E-08	0.5YrCance	4.43E-08	0	0	0	0	0	0	0	0	0	0
398	SENSITIV	SEN397	294210	4029123	4.42E-08	0.5YrCance	4.42E-08	0	0	0	0	0	0	0	0	0	0
388	SENSITIV	SEN387	294315	4028988	4.39E-08	0.5YrCance	4.39E-08	0	0	0	0	0	0	0	0	0	0
54	SENSITIV	SEN53	294603	4028421	4.38E-08	0.5YrCance	4.38E-08	0	0	0	0	0	0	0	0	0	0
413	SENSITIV	SEN412	294277	4029066	4.38E-08	0.5YrCance	4.38E-08	0	0	0	0	0	0	0	0	0	0
423	SENSITIV	SEN422	294230	4029125	4.37E-08	0.5YrCance	4.37E-08	0	0	0	0	0	0	0	0	0	0
426	SENSITIV	SEN425	294342	4028933	4.37E-08	0.5YrCance	4.37E-08	0	0	0	0	0	0	0	0	0	0
45	SENSITIV	SEN44	294524	4028523	4.36E-08	0.5YrCance	4.36E-08	0	0	0	0	0	0	0	0	0	0
5	SENSITIV	SEN4	293980	4029224	4.36E-08	0.5YrCance	4.36E-08	0	0	0	0	0	0	0	0	0	0
415	SENSITIV	SEN414	294317	4029010	4.34E-08	0.5YrCance	4.34E-08	0	0	0	0	0	0	0	0	0	0
60	SENSITIV	SEN59	294690	4028360	4.31E-08	0.5YrCance	4.31E-08	0	0	0	0	0	0	0	0	0	0
55	SENSITIV	SEN54	294600	4028447	4.31E-08	0.5YrCance	4.31E-08	0	0	0	0	0	0	0	0	0	0
416	SENSITIV	SEN415	294317	4029038	4.29E-08	0.5YrCance	4.29E-08	0	0	0	0	0	0	0	0	0	0
7	SENSITIV	SEN6	293982	4029249	4.29E-08	0.5YrCance	4.29E-08	0	0	0	0	0	0	0	0	0	0
422	SENSITIV	SEN421	294270	4029122	4.28E-08	0.5YrCance	4.28E-08	0	0	0	0	0	0	0	0	0	0
57	SENSITIV	SEN56	294592	4028468	4.27E-08	0.5YrCance	4.27E-08	0	0	0	0	0	0	0	0	0	0
6	SENSITIV	SEN5	293950	4029278	4.24E-08	0.5YrCance	4.24E-08	0	0	0	0	0	0	0	0	0	0
62	SENSITIV	SEN61	294643	4028428	4.23E-08	0.5YrCance	4.23E-08	0	0	0	0	0	0	0	0	0	0
44	SENSITIV	SEN43	294524	4028575	4.21E-08	0.5YrCance	4.21E-08	0	0	0	0	0	0	0	0	0	0
63	SENSITIV	SEN62	294753	4028346	4.18E-08	0.5YrCance	4.18E-08	0	0	0	0	0	0	0	0	0	0
419	SENSITIV	SEN418	294315	4029106	4.17E-08	0.5YrCance	4.17E-08	0	0	0	0	0	0	0	0	0	0
420	SENSITIV	SEN419	294327	4029081	4.17E-08	0.5YrCance	4.17E-08	0	0	0	0	0	0	0	0	0	0
417	SENSITIV	SEN416	294349	4029037	4.15E-08	0.5YrCance	4.15E-08	0	0	0	0	0	0	0	0	0	0
56	SENSITIV	SEN55	294637	4028461	4.14E-08	0.5YrCance	4.14E-08	0	0	0	0	0	0	0	0	0	0
47	SENSITIV	SEN46	294589	4028521	4.12E-08	0.5YrCance	4.12E-08	0	0	0	0	0	0	0	0	0	0
58	SENSITIV	SEN57	294701	4028410	4.11E-08	0.5YrCance	4.11E-08	0	0	0	0	0	0	0	0	0	0
20	SENSITIV	SEN19	294295	4029180	4.10E-08	0.5YrCance	4.10E-08	0	0	0	0	0	0	0	0	0	0
418	SENSITIV	SEN417	294329	4029122	4.09E-08	0.5YrCance	4.09E-08	0	0	0	0	0	0	0	0	0	0
46	SENSITIV	SEN45	294588	4028537	4.08E-08	0.5YrCance	4.08E-08	0	0	0	0	0	0	0	0	0	0
10	SENSITIV	SEN9	294314	4029174	4.05E-08	0.5YrCance	4.05E-08	0	0	0	0	0	0	0	0	0	0
433	SENSITIV	SEN432	294479	4028726	4.03E-08	0.5YrCance	4.03E-08	0	0	0	0	0	0	0	0	0	0
43	SENSITIV	SEN42	294535	4028629	4.02E-08	0.5YrCance	4.02E-08	0	0	0	0	0	0	0	0	0	0
9	SENSITIV	SEN8	293948	4029381	3.99E-08	0.5YrCance	3.99E-08	0	0	0	0	0	0	0	0	0	0
11	SENSITIV	SEN10	294333	4029181	3.98E-08	0.5YrCance	3.98E-08	0	0	0	0	0	0	0	0	0	0

421	SENSITIV	SEN420	294358	4029125	3.98E-08	0.5YrCance	3.98E-08	0	0	0	0	0	0	0	0	0	0
59	SENSITIV	SEN58	294759	4028403	3.98E-08	0.5YrCance	3.98E-08	0	0	0	0	0	0	0	0	0	0
42	SENSITIV	SEN41	294539	4028650	3.96E-08	0.5YrCance	3.96E-08	0	0	0	0	0	0	0	0	0	0
49	SENSITIV	SEN48	294617	4028570	3.90E-08	0.5YrCance	3.90E-08	0	0	0	0	0	0	0	0	0	0
12	SENSITIV	SEN11	294361	4029180	3.89E-08	0.5YrCance	3.89E-08	0	0	0	0	0	0	0	0	0	0
41	SENSITIV	SEN40	294542	4028674	3.89E-08	0.5YrCance	3.89E-08	0	0	0	0	0	0	0	0	0	0
48	SENSITIV	SEN47	294605	4028608	3.84E-08	0.5YrCance	3.84E-08	0	0	0	0	0	0	0	0	0	0
8	SENSITIV	SEN7	293982	4029440	3.83E-08	0.5YrCance	3.83E-08	0	0	0	0	0	0	0	0	0	0
425	SENSITIV	SEN424	294410	4029091	3.81E-08	0.5YrCance	3.81E-08	0	0	0	0	0	0	0	0	0	0
430	SENSITIV	SEN429	294441	4028991	3.79E-08	0.5YrCance	3.79E-08	0	0	0	0	0	0	0	0	0	0
39	SENSITIV	SEN38	294604	4028647	3.75E-08	0.5YrCance	3.75E-08	0	0	0	0	0	0	0	0	0	0
40	SENSITIV	SEN39	294550	4028726	3.75E-08	0.5YrCance	3.75E-08	0	0	0	0	0	0	0	0	0	0
431	SENSITIV	SEN430	294442	4029020	3.75E-08	0.5YrCance	3.75E-08	0	0	0	0	0	0	0	0	0	0
13	SENSITIV	SEN12	294409	4029187	3.71E-08	0.5YrCance	3.71E-08	0	0	0	0	0	0	0	0	0	0
38	SENSITIV	SEN37	294603	4028671	3.70E-08	0.5YrCance	3.70E-08	0	0	0	0	0	0	0	0	0	0
435	SENSITIV	SEN434	294510	4028865	3.64E-08	0.5YrCance	3.64E-08	0	0	0	0	0	0	0	0	0	0
432	SENSITIV	SEN431	294553	4028790	3.61E-08	0.5YrCance	3.61E-08	0	0	0	0	0	0	0	0	0	0
37	SENSITIV	SEN36	294608	4028714	3.60E-08	0.5YrCance	3.60E-08	0	0	0	0	0	0	0	0	0	0
15	SENSITIV	SEN14	294439	4029182	3.59E-08	0.5YrCance	3.59E-08	0	0	0	0	0	0	0	0	0	0
14	SENSITIV	SEN13	294437	4029213	3.57E-08	0.5YrCance	3.57E-08	0	0	0	0	0	0	0	0	0	0
434	SENSITIV	SEN433	294545	4028875	3.50E-08	0.5YrCance	3.50E-08	0	0	0	0	0	0	0	0	0	0
35	SENSITIV	SEN34	294554	4028897	3.43E-08	0.5YrCance	3.43E-08	0	0	0	0	0	0	0	0	0	0
34	SENSITIV	SEN33	294555	4028947	3.36E-08	0.5YrCance	3.36E-08	0	0	0	0	0	0	0	0	0	0
429	SENSITIV	SEN428	294542	4029031	3.31E-08	0.5YrCance	3.31E-08	0	0	0	0	0	0	0	0	0	0
21	SENSITIV	SEN20	294511	4029177	3.31E-08	0.5YrCance	3.31E-08	0	0	0	0	0	0	0	0	0	0
36	SENSITIV	SEN35	294610	4028872	3.30E-08	0.5YrCance	3.30E-08	0	0	0	0	0	0	0	0	0	0
16	SENSITIV	SEN15	294522	4029189	3.26E-08	0.5YrCance	3.26E-08	0	0	0	0	0	0	0	0	0	0
428	SENSITIV	SEN427	294559	4029073	3.21E-08	0.5YrCance	3.21E-08	0	0	0	0	0	0	0	0	0	0
31	SENSITIV	SEN30	294608	4028953	3.19E-08	0.5YrCance	3.19E-08	0	0	0	0	0	0	0	0	0	0
32	SENSITIV	SEN31	294618	4028943	3.18E-08	0.5YrCance	3.18E-08	0	0	0	0	0	0	0	0	0	0
427	SENSITIV	SEN426	294563	4029118	3.16E-08	0.5YrCance	3.16E-08	0	0	0	0	0	0	0	0	0	0
30	SENSITIV	SEN29	294607	4028983	3.16E-08	0.5YrCance	3.16E-08	0	0	0	0	0	0	0	0	0	0
33	SENSITIV	SEN32	294620	4028957	3.15E-08	0.5YrCance	3.15E-08	0	0	0	0	0	0	0	0	0	0
17	SENSITIV	SEN16	294562	4029177	3.12E-08	0.5YrCance	3.12E-08	0	0	0	0	0	0	0	0	0	0
25	SENSITIV	SEN24	294609	4029080	3.04E-08	0.5YrCance	3.04E-08	0	0	0	0	0	0	0	0	0	0
28	SENSITIV	SEN27	294619	4029053	3.04E-08	0.5YrCance	3.04E-08	0	0	0	0	0	0	0	0	0	0
26	SENSITIV	SEN25	294618	4029080	3.02E-08	0.5YrCance	3.02E-08	0	0	0	0	0	0	0	0	0	0
18	SENSITIV	SEN17	294580	4029246	3.01E-08	0.5YrCance	3.01E-08	0	0	0	0	0	0	0	0	0	0
22	SENSITIV	SEN21	294595	4029194	2.99E-08	0.5YrCance	2.99E-08	0	0	0	0	0	0	0	0	0	0
24	SENSITIV	SEN23	294631	4029107	2.96E-08	0.5YrCance	2.96E-08	0	0	0	0	0	0	0	0	0	0
29	SENSITIV	SEN28	294664	4029029	2.95E-08	0.5YrCance	2.95E-08	0	0	0	0	0	0	0	0	0	0
23	SENSITIV	SEN22	294619	4029209	2.91E-08	0.5YrCance	2.91E-08	0	0	0	0	0	0	0	0	0	0
19	SENSITIV	SEN18	294630	4029179	2.90E-08	0.5YrCance	2.90E-08	0	0	0	0	0	0	0	0	0	0



\*\*7/15/2024

REC	GRP	NETID	X	Y	SCENARIO CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DE	RESP	SKIN	EYE	BONE/TEET	ENDO	BLOOD	ODOR	GENERAL	MAXHI
170	SENSITIV	SEN169	293947	4027011	NonCancer	0	0	0	0	0	0	0.009464	0	0	0	0	0	0	0.009464
162	SENSITIV	SEN161	293977	4027225	NonCancer	0	0	0	0	0	0	0.007236	0	0	0	0	0	0	0.007236
152	SENSITIV	SEN151	293969	4027359	NonCancer	0	0	0	0	0	0	0.007196	0	0	0	0	0	0	0.007196
160	SENSITIV	SEN159	293978	4027281	NonCancer	0	0	0	0	0	0	0.006997	0	0	0	0	0	0	0.006997
189	SENSITIV	SEN188	293524	4027567	NonCancer	0	0	0	0	0	0	0.006686	0	0	0	0	0	0	0.006686
161	SENSITIV	SEN160	294007	4027267	NonCancer	0	0	0	0	0	0	0.005417	0	0	0	0	0	0	0.005417
178	SENSITIV	SEN177	293578	4027586	NonCancer	0	0	0	0	0	0	0.004866	0	0	0	0	0	0	0.004866
153	SENSITIV	SEN152	294009	4027355	NonCancer	0	0	0	0	0	0	0.004773	0	0	0	0	0	0	0.004773
175	SENSITIV	SEN174	293678	4027587	NonCancer	0	0	0	0	0	0	0.004554	0	0	0	0	0	0	0.004554
163	SENSITIV	SEN162	294045	4027277	NonCancer	0	0	0	0	0	0	0.004043	0	0	0	0	0	0	0.004043
174	SENSITIV	SEN173	293804	4027586	NonCancer	0	0	0	0	0	0	0.003966	0	0	0	0	0	0	0.003966
145	SENSITIV	SEN144	293974	4027506	NonCancer	0	0	0	0	0	0	0.003637	0	0	0	0	0	0	0.003637
447	SENSITIV	SEN446	293326	4027617	NonCancer	0	0	0	0	0	0	0.003526	0	0	0	0	0	0	0.003526
171	SENSITIV	SEN170	293857	4027585	NonCancer	0	0	0	0	0	0	0.003507	0	0	0	0	0	0	0.003507
190	SENSITIV	SEN189	293523	4027618	NonCancer	0	0	0	0	0	0	0.003503	0	0	0	0	0	0	0.003503
154	SENSITIV	SEN153	294050	4027357	NonCancer	0	0	0	0	0	0	0.00342	0	0	0	0	0	0	0.00342
188	SENSITIV	SEN187	293477	4027624	NonCancer	0	0	0	0	0	0	0.003336	0	0	0	0	0	0	0.003336
187	SENSITIV	SEN186	293430	4027627	NonCancer	0	0	0	0	0	0	0.003252	0	0	0	0	0	0	0.003252
164	SENSITIV	SEN163	294085	4027274	NonCancer	0	0	0	0	0	0	0.003151	0	0	0	0	0	0	0.003151
177	SENSITIV	SEN176	293623	4027642	NonCancer	0	0	0	0	0	0	0.002778	0	0	0	0	0	0	0.002778
176	SENSITIV	SEN175	293686	4027638	NonCancer	0	0	0	0	0	0	0.002748	0	0	0	0	0	0	0.002748
155	SENSITIV	SEN154	294088	4027352	NonCancer	0	0	0	0	0	0	0.002686	0	0	0	0	0	0	0.002686
448	SENSITIV	SEN447	293193	4027642	NonCancer	0	0	0	0	0	0	0.002656	0	0	0	0	0	0	0.002656
165	SENSITIV	SEN164	294125	4027274	NonCancer	0	0	0	0	0	0	0.002526	0	0	0	0	0	0	0.002526
146	SENSITIV	SEN145	294018	4027501	NonCancer	0	0	0	0	0	0	0.002378	0	0	0	0	0	0	0.002378
173																			

### \*\*Exported Risk Results

[illegible]

101	SENSITIV	SEN100	294027	4027823	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
102	SENSITIV	SEN101	294027	4027843	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
103	SENSITIV	SEN102	293981	4027844	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
104	SENSITIV	SEN103	293979	4027866	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
105	SENSITIV	SEN104	293979	4027821	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
106	SENSITIV	SEN105	293976	4027803	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
107	SENSITIV	SEN106	293977	4027780	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
108	SENSITIV	SEN107	293976	4027764	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
109	SENSITIV	SEN108	294028	4027779	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
110	SENSITIV	SEN109	294029	4027799	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
111	SENSITIV	SEN110	294071	4027800	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
112	SENSITIV	SEN111	294095	4027800	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
113	SENSITIV	SEN112	294115	4027794	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
114	SENSITIV	SEN113	294143	4027799	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
115	SENSITIV	SEN114	294166	4027794	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
116	SENSITIV	SEN115	294198	4027808	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
117	SENSITIV	SEN116	294145	4027870	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
118	SENSITIV	SEN117	294125	4027880	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
119	SENSITIV	SEN118	294196	4027877	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
120	SENSITIV	SEN119	294226	4027826	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
121	SENSITIV	SEN120	294244	4027811	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
122	SENSITIV	SEN121	294227	4027788	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
123	SENSITIV	SEN122	294197	4027751	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
124	SENSITIV	SEN123	294166	4027754	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
125	SENSITIV	SEN124	294138	4027754	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
126	SENSITIV	SEN125	294118	4027756	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127	SENSITIV	SEN126	294067	4027755	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
128	SENSITIV	SEN127	294095	4027756	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
129	SENSITIV	SEN128	294025	4027757	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130	SENSITIV	SEN129	294027	4027739	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
131	SENSITIV	SEN130	293974	4027741	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
132	SENSITIV	SEN131	294003	4027566	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
133	SENSITIV	SEN132	294046	4027587	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
134	SENSITIV	SEN133	293993	4027680	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
135	SENSITIV	SEN134	294028	4027676	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
136	SENSITIV	SEN135	294070	4027676	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
137	SENSITIV	SEN136	293974	4027719	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
138	SENSITIV	SEN137	294024	4027718	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
139	SENSITIV	SEN138	294066	4027723	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	SENSITIV	SEN139	294108	4027681	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141	SENSITIV	SEN140	294123	4027564	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
142	SENSITIV	SEN141	294211	4027579	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
143	SENSITIV	SEN142	294219	4027657	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
144	SENSITIV	SEN143	294252	4027702	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
145	SENSITIV	SEN144	293974	4027506	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
146	SENSITIV	SEN145	294018	4027501	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
147	SENSITIV	SEN146	294051	4027496	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
148	SENSITIV	SEN147	294094	4027497	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
149	SENSITIV	SEN148	294135	4027480	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150	SENSITIV	SEN149	294179	4027496	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
151	SENSITIV	SEN150	294255	4027492	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
152	SENSITIV	SEN151	293969	4027359	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0

153	SENSITIV	SEN152	294009	4027355	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
154	SENSITIV	SEN153	294050	4027357	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155	SENSITIV	SEN154	294088	4027352	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
156	SENSITIV	SEN155	294130	4027351	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
157	SENSITIV	SEN156	294174	4027351	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
158	SENSITIV	SEN157	294221	4027349	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
159	SENSITIV	SEN158	294252	4027351	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
160	SENSITIV	SEN159	293978	4027281	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
161	SENSITIV	SEN160	294007	4027267	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
162	SENSITIV	SEN161	293977	4027225	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
163	SENSITIV	SEN162	294045	4027277	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
164	SENSITIV	SEN163	294085	4027274	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
165	SENSITIV	SEN164	294125	4027274	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
166	SENSITIV	SEN165	294163	4027271	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
167	SENSITIV	SEN166	294155	4027225	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
168	SENSITIV	SEN167	294241	4027270	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169	SENSITIV	SEN168	294203	4027273	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170	SENSITIV	SEN169	293947	4027011	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
171	SENSITIV	SEN170	293857	4027585	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
172	SENSITIV	SEN171	293860	4027625	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
173	SENSITIV	SEN172	293808	4027636	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
174	SENSITIV	SEN173	293804	4027586	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
175	SENSITIV	SEN174	293678	4027587	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
176	SENSITIV	SEN175	293686	4027638	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
177	SENSITIV	SEN176	293623	4027642	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
178	SENSITIV	SEN177	293578	4027586	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
179	SENSITIV	SEN178	293612	4027693	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180	SENSITIV	SEN179	293612	4027730	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
181	SENSITIV	SEN180	293685	4027731	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
182	SENSITIV	SEN181	293691	4027684	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
183	SENSITIV	SEN182	293800	4027729	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
184	SENSITIV	SEN183	293862	4027726	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
185	SENSITIV	SEN184	293868	4027673	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
186	SENSITIV	SEN185	293801	4027676	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
187	SENSITIV	SEN186	293430	4027627	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
188	SENSITIV	SEN187	293477	4027624	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
189	SENSITIV	SEN188	293524	4027567	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
190	SENSITIV	SEN189	293523	4027618	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
191	SENSITIV	SEN190	293525	4027680	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
192	SENSITIV	SEN191	293522	4027730	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
193	SENSITIV	SEN192	293468	4027722	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
194	SENSITIV	SEN193	293469	4027683	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
195	SENSITIV	SEN194	293514	4027793	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
196	SENSITIV	SEN195	293586	4027803	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
197	SENSITIV	SEN196	293528	4027858	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
198	SENSITIV	SEN197	293514	4027870	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
199	SENSITIV	SEN198	293481	4027856	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
200	SENSITIV	SEN199	293462	4027792	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
201	SENSITIV	SEN200	293438	4027859	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
202	SENSITIV	SEN201	293616	4027801	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
203	SENSITIV	SEN202	293644	4027779	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
204	SENSITIV	SEN203	293685	4027799	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0

205	SENSITIV	SEN204	293715	4027798	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
206	SENSITIV	SEN205	293751	4027797	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
207	SENSITIV	SEN206	293778	4027796	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
208	SENSITIV	SEN207	293812	4027797	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
209	SENSITIV	SEN208	293842	4027796	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
210	SENSITIV	SEN209	293879	4027793	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
211	SENSITIV	SEN210	293918	4027760	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
212	SENSITIV	SEN211	293920	4027795	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
213	SENSITIV	SEN212	293580	4027847	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
214	SENSITIV	SEN213	293581	4027878	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
215	SENSITIV	SEN214	293583	4027904	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
216	SENSITIV	SEN215	293585	4027935	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
217	SENSITIV	SEN216	293624	4027935	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
218	SENSITIV	SEN217	293651	4027937	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
219	SENSITIV	SEN218	293681	4027934	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
220	SENSITIV	SEN219	293717	4027934	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
221	SENSITIV	SEN220	293750	4027933	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
222	SENSITIV	SEN221	293780	4027932	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
223	SENSITIV	SEN222	293813	4027932	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
224	SENSITIV	SEN223	293852	4027935	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
225	SENSITIV	SEN224	293876	4027932	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
226	SENSITIV	SEN225	293815	4027842	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
227	SENSITIV	SEN226	293781	4027840	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
228	SENSITIV	SEN227	293750	4027844	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
229	SENSITIV	SEN228	293714	4027843	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
230	SENSITIV	SEN229	293686	4027844	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
231	SENSITIV	SEN230	293654	4027844	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
232	SENSITIV	SEN231	293620	4027848	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
233	SENSITIV	SEN232	293846	4027839	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
234	SENSITIV	SEN233	293883	4027841	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
235	SENSITIV	SEN234	293906	4027842	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
236	SENSITIV	SEN235	293923	4027839	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
237	SENSITIV	SEN236	293838	4027853	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
238	SENSITIV	SEN237	293906	4027921	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
239	SENSITIV	SEN238	293922	4027930	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
240	SENSITIV	SEN239	293923	4027893	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
241	SENSITIV	SEN240	293922	4027871	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
242	SENSITIV	SEN241	293928	4028042	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
243	SENSITIV	SEN242	293915	4028034	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
244	SENSITIV	SEN243	293726	4027973	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
245	SENSITIV	SEN244	293694	4027979	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
246	SENSITIV	SEN245	293701	4028001	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
247	SENSITIV	SEN246	293640	4027984	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
248	SENSITIV	SEN247	293541	4027977	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
249	SENSITIV	SEN248	293602	4027986	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
250	SENSITIV	SEN249	293457	4028001	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
251	SENSITIV	SEN250	293394	4027934	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
252	SENSITIV	SEN251	293441	4027930	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
253	SENSITIV	SEN252	293482	4027929	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
254	SENSITIV	SEN253	293532	4027926	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
255	SENSITIV	SEN254	293390	4027865	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
256	SENSITIV	SEN255	293184	4027902	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0

257	SENSITIV	SEN256	293234	4027902	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
258	SENSITIV	SEN257	293286	4027902	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
259	SENSITIV	SEN258	293331	4027896	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
260	SENSITIV	SEN259	293181	4027828	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
261	SENSITIV	SEN260	293226	4027829	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
262	SENSITIV	SEN261	293340	4027978	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
263	SENSITIV	SEN262	293349	4028059	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
264	SENSITIV	SEN263	293344	4028018	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
265	SENSITIV	SEN264	293930	4028108	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
266	SENSITIV	SEN265	293932	4028167	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
267	SENSITIV	SEN266	293930	4028194	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
268	SENSITIV	SEN267	293920	4028222	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
269	SENSITIV	SEN268	293933	4028430	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
270	SENSITIV	SEN269	293870	4028395	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
271	SENSITIV	SEN270	294098	4028373	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
272	SENSITIV	SEN271	294297	4028378	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
273	SENSITIV	SEN272	294296	4028400	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
274	SENSITIV	SEN273	294296	4028424	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
275	SENSITIV	SEN274	294297	4028451	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
276	SENSITIV	SEN275	294306	4028473	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
277	SENSITIV	SEN276	294296	4028490	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
278	SENSITIV	SEN277	294300	4028518	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
279	SENSITIV	SEN278	294247	4028511	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
280	SENSITIV	SEN279	294251	4028484	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
281	SENSITIV	SEN280	294254	4028464	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
282	SENSITIV	SEN281	294252	4028439	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
283	SENSITIV	SEN282	294255	4028415	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
284	SENSITIV	SEN283	294254	4028374	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
285	SENSITIV	SEN284	294223	4028372	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
286	SENSITIV	SEN285	294142	4028372	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
287	SENSITIV	SEN286	294152	4028388	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
288	SENSITIV	SEN287	294167	4028383	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
289	SENSITIV	SEN288	294142	4028421	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
290	SENSITIV	SEN289	294102	4028446	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
291	SENSITIV	SEN290	294103	4028466	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
292	SENSITIV	SEN291	294147	4028465	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
293	SENSITIV	SEN292	294146	4028509	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
294	SENSITIV	SEN293	294146	4028491	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
295	SENSITIV	SEN294	294105	4028488	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
296	SENSITIV	SEN295	294097	4028513	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
297	SENSITIV	SEN296	294098	4028534	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
298	SENSITIV	SEN297	294145	4028530	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
299	SENSITIV	SEN298	294148	4028558	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
300	SENSITIV	SEN299	294098	4028560	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
301	SENSITIV	SEN300	294044	4028715	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
302	SENSITIV	SEN301	294076	4028704	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
303	SENSITIV	SEN302	294111	4028673	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
304	SENSITIV	SEN303	294089	4028671	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
305	SENSITIV	SEN304	294072	4028672	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
306	SENSITIV	SEN305	294060	4028673	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
307	SENSITIV	SEN306	294047	4028672	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
308	SENSITIV	SEN307	294042	4028647	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0







413	SENSITIV	SEN412	294277	4029066	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
414	SENSITIV	SEN413	294243	4028982	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
415	SENSITIV	SEN414	294317	4029010	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
416	SENSITIV	SEN415	294317	4029038	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
417	SENSITIV	SEN416	294349	4029037	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
418	SENSITIV	SEN417	294329	4029122	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
419	SENSITIV	SEN418	294315	4029106	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
420	SENSITIV	SEN419	294327	4029081	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
421	SENSITIV	SEN420	294358	4029125	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
422	SENSITIV	SEN421	294270	4029122	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
423	SENSITIV	SEN422	294230	4029125	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
424	SENSITIV	SEN423	294228	4029065	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
425	SENSITIV	SEN424	294410	4029091	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
426	SENSITIV	SEN425	294342	4028933	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
427	SENSITIV	SEN426	294563	4029118	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
428	SENSITIV	SEN427	294559	4029073	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
429	SENSITIV	SEN428	294542	4029031	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
430	SENSITIV	SEN429	294441	4028991	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
431	SENSITIV	SEN430	294442	4029020	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
432	SENSITIV	SEN431	294553	4028790	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
433	SENSITIV	SEN432	294479	4028726	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
434	SENSITIV	SEN433	294545	4028875	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
435	SENSITIV	SEN434	294510	4028865	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
436	SENSITIV	SEN435	293272	4027829	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
437	SENSITIV	SEN436	293320	4027827	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
438	SENSITIV	SEN437	293285	4027720	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
439	SENSITIV	SEN438	293218	4027690	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
440	SENSITIV	SEN439	293327	4027682	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
441	SENSITIV	SEN440	293389	4027708	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
442	SENSITIV	SEN441	293433	4027711	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
443	SENSITIV	SEN442	293425	4027799	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
444	SENSITIV	SEN443	293391	4027800	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
445	SENSITIV	SEN444	293355	4027810	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
446	SENSITIV	SEN445	293184	4027704	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
447	SENSITIV	SEN446	293326	4027617	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
448	SENSITIV	SEN447	293193	4027642	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
449	SENSITIV		293335	4026835	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
450	SENSITIV		293401	4026773	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
451	SENSITIV		293379	4026771	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
452	SENSITIV		293251	4026772	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
453	SENSITIV		293214	4026784	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
454	SENSITIV		293171	4026822	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
455	SENSITIV		293186	4026953	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
456	SENSITIV		292781	4027313	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
457	SENSITIV		293953	4026724	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
458	SENSITIV		294010	4026727	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
459	SENSITIV		294038	4026733	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
460	SENSITIV		294096	4026758	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
461	SENSITIV		294122	4026771	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
462	SENSITIV		294170	4026778	NonCancer	0	0	0	0	0	0	0	0	0	0	0	0	0	0

446	SENSITIV	SEN445	293184	4027704	NonCancer	0	0	0	0	0	0	0.001736	0	0	0	0	0	0	0.001736
438	SENSITIV	SEN437	293285	4027720	NonCancer	0	0	0	0	0	0	0.001707	0	0	0	0	0	0	0.001707
157	SENSITIV	SEN156	294174	4027351	NonCancer	0	0	0	0	0	0	0.001705	0	0	0	0	0	0	0.001705
192	SENSITIV	SEN191	293522	4027730	NonCancer	0	0	0	0	0	0	0.001659	0	0	0	0	0	0	0.001659
180	SENSITIV	SEN179	293612	4027730	NonCancer	0	0	0	0	0	0	0.001601	0	0	0	0	0	0	0.001601
132	SENSITIV	SEN131	294003	4027566	NonCancer	0	0	0	0	0	0	0.00159	0	0	0	0	0	0	0.00159
185	SENSITIV	SEN184	293868	4027673	NonCancer	0	0	0	0	0	0	0.001542	0	0	0	0	0	0	0.001542
168	SENSITIV	SEN167	294241	4027270	NonCancer	0	0	0	0	0	0	0.001508	0	0	0	0	0	0	0.001508
181	SENSITIV	SEN180	293685	4027731	NonCancer	0	0	0	0	0	0	0.001506	0	0	0	0	0	0	0.001506
148	SENSITIV	SEN147	294094	4027497	NonCancer	0	0	0	0	0	0	0.001474	0	0	0	0	0	0	0.001474
158	SENSITIV	SEN157	294221	4027349	NonCancer	0	0	0	0	0	0	0.001399	0	0	0	0	0	0	0.001399
149	SENSITIV	SEN148	294135	4027480	NonCancer	0	0	0	0	0	0	0.001311	0	0	0	0	0	0	0.001311
183	SENSITIV	SEN182	293800	4027729	NonCancer	0	0	0	0	0	0	0.001299	0	0	0	0	0	0	0.001299
200	SENSITIV	SEN199	293462	4027792	NonCancer	0	0	0	0	0	0	0.001246	0	0	0	0	0	0	0.001246
159	SENSITIV	SEN158	294252	4027351	NonCancer	0	0	0	0	0	0	0.001234	0	0	0	0	0	0	0.001234
195	SENSITIV	SEN194	293514	4027793	NonCancer	0	0	0	0	0	0	0.00123	0	0	0	0	0	0	0.00123
203	SENSITIV	SEN202	293644	4027779	NonCancer	0	0	0	0	0	0	0.001226	0	0	0	0	0	0	0.001226
443	SENSITIV	SEN442	293425	4027799	NonCancer	0	0	0	0	0	0	0.001213	0	0	0	0	0	0	0.001213
444	SENSITIV	SEN443	293391	4027800	NonCancer	0	0	0	0	0	0	0.001209	0	0	0	0	0	0	0.001209
184	SENSITIV	SEN183	293862	4027726	NonCancer	0	0	0	0	0	0	0.001167	0	0	0	0	0	0	0.001167
445	SENSITIV	SEN444	293355	4027810	NonCancer	0	0	0	0	0	0	0.001158	0	0	0	0	0	0	0.001158
196	SENSITIV	SEN195	293586	4027803	NonCancer	0	0	0	0	0	0	0.001143	0	0	0	0	0	0	0.001143
202	SENSITIV	SEN201	293616	4027801	NonCancer	0	0	0	0	0	0	0.001131	0	0	0	0	0	0	0.001131
133	SENSITIV	SEN132	294046	4027587	NonCancer	0	0	0	0	0	0	0.00111	0	0	0	0	0	0	0.00111
204	SENSITIV	SEN203	293685	4027799	NonCancer	0	0	0	0	0	0	0.001078	0	0	0	0	0	0	0.001078
437	SENSITIV	SEN436	293320	4027827	NonCancer	0	0	0	0	0	0	0.001076	0	0	0	0	0	0	0.001076
436	SENSITIV	SEN435	293272	4027829	NonCancer	0	0	0	0	0	0	0.001052	0	0	0	0	0	0	0.001052
205	SENSITIV	SEN204	293715	4027798	NonCancer	0	0	0	0	0	0	0.001049	0	0	0	0	0	0	0.001049
261	SENSITIV	SEN260	293226	4027829	NonCancer	0	0	0	0	0	0	0.001027	0	0	0	0	0	0	0.001027
206	SENSITIV	SEN205	293751	4027797	NonCancer	0	0	0	0	0	0	0.001009	0	0	0	0	0	0	0.001009
150	SENSITIV	SEN149	294179	4027496	NonCancer	0	0	0	0	0	0	0.001007	0	0	0	0	0	0	0.001007
260	SENSITIV	SEN259	293181	4027828	NonCancer	0	0	0	0	0	0	0.000997	0	0	0	0	0	0	0.000997
207	SENSITIV	SEN206	293778	4027796	NonCancer	0	0	0	0	0	0	0.000978	0	0	0	0	0	0	0.000978
199	SENSITIV	SEN198	293481	4027856	NonCancer	0	0	0	0	0	0	0.000958	0	0	0	0	0	0	0.000958
201	SENSITIV	SEN200	293438	4027859	NonCancer	0	0	0	0	0	0	0.000955	0	0	0	0	0	0	0.000955
213	SENSITIV	SEN212	293580	4027847	NonCancer	0	0	0	0	0	0	0.000954	0	0	0	0	0	0	0.000954
134	SENSITIV	SEN133	293993	4027680	NonCancer	0	0	0	0	0	0	0.00094	0	0	0	0	0	0	0.00094
255	SENSITIV	SEN254	293390	4027865	NonCancer	0	0	0	0	0	0	0.000939	0	0	0	0	0	0	0.000939
197	SENSITIV	SEN196	293528	4027858	NonCancer	0	0	0	0	0	0	0.000938	0	0	0	0	0	0	0.000938
208	SENSITIV	SEN207	293812	4027797	NonCancer	0	0	0	0	0	0	0.000928	0	0	0	0	0	0	0.000928
232	SENSITIV	SEN231	293620	4027848	NonCancer	0	0	0	0	0	0	0.000925	0	0	0	0	0	0	0.000925
231	SENSITIV	SEN230	293654	4027844	NonCancer	0	0	0	0	0	0	0.000915	0	0	0	0	0	0	0.000915
198	SENSITIV	SEN197	293514	4027870	NonCancer	0	0	0	0	0	0	0.000901	0	0	0	0	0	0	0.000901
230	SENSITIV	SEN229	293686	4027844	NonCancer	0	0	0	0	0	0	0.000889	0	0	0	0	0	0	0.000889
209	SENSITIV	SEN208	293842	4027796	NonCancer	0	0	0	0	0	0	0.000888	0	0	0	0	0	0	0.000888
141	SENSITIV	SEN140	294123	4027564	NonCancer	0	0	0	0	0	0	0.000879	0	0	0	0	0	0	0.000879
211	SENSITIV	SEN210	293918	4027760	NonCancer	0	0	0	0	0	0	0.000871	0	0	0	0	0	0	0.000871
229	SENSITIV	SEN228	293714	4027843	NonCancer	0	0	0	0	0	0	0.000868	0	0	0	0	0	0	0.000868
137	SENSITIV	SEN136	293974	4027719	NonCancer	0	0	0	0	0	0	0.000867	0	0	0	0	0	0	0.000867
214	SENSITIV	SEN213	293581	4027878	NonCancer	0	0	0	0	0	0	0.000846	0	0	0	0	0	0	0.000846
259	SENSITIV	SEN258	293331	4027896	NonCancer	0	0	0	0	0	0	0.000842	0	0	0	0	0	0	0.000842
210	SENSITIV	SEN209	293879	4027793	NonCancer	0	0	0	0	0	0	0.00084	0	0	0	0	0	0	0.00084

228	SENSITIV	SEN227	293750	4027844	NonCancer	0	0	0	0	0	0	0.000832	0	0	0	0	0	0	0.000832
135	SENSITIV	SEN134	294028	4027676	NonCancer	0	0	0	0	0	0	0.000828	0	0	0	0	0	0	0.000828
258	SENSITIV	SEN257	293286	4027902	NonCancer	0	0	0	0	0	0	0.000819	0	0	0	0	0	0	0.000819
227	SENSITIV	SEN226	293781	4027840	NonCancer	0	0	0	0	0	0	0.000816	0	0	0	0	0	0	0.000816
257	SENSITIV	SEN256	293234	4027902	NonCancer	0	0	0	0	0	0	0.000804	0	0	0	0	0	0	0.000804
131	SENSITIV	SEN130	293974	4027741	NonCancer	0	0	0	0	0	0	0.000798	0	0	0	0	0	0	0.000798
151	SENSITIV	SEN150	294255	4027492	NonCancer	0	0	0	0	0	0	0.000784	0	0	0	0	0	0	0.000784
256	SENSITIV	SEN255	293184	4027902	NonCancer	0	0	0	0	0	0	0.000779	0	0	0	0	0	0	0.000779
226	SENSITIV	SEN225	293815	4027842	NonCancer	0	0	0	0	0	0	0.000776	0	0	0	0	0	0	0.000776
215	SENSITIV	SEN214	293583	4027904	NonCancer	0	0	0	0	0	0	0.000768	0	0	0	0	0	0	0.000768
212	SENSITIV	SEN211	293920	4027795	NonCancer	0	0	0	0	0	0	0.000758	0	0	0	0	0	0	0.000758
233	SENSITIV	SEN232	293846	4027839	NonCancer	0	0	0	0	0	0	0.000751	0	0	0	0	0	0	0.000751
252	SENSITIV	SEN251	293441	4027930	NonCancer	0	0	0	0	0	0	0.000744	0	0	0	0	0	0	0.000744
251	SENSITIV	SEN250	293394	4027934	NonCancer	0	0	0	0	0	0	0.000741	0	0	0	0	0	0	0.000741
253	SENSITIV	SEN252	293482	4027929	NonCancer	0	0	0	0	0	0	0.000739	0	0	0	0	0	0	0.000739
254	SENSITIV	SEN253	293532	4027926	NonCancer	0	0	0	0	0	0	0.000732	0	0	0	0	0	0	0.000732
108	SENSITIV	SEN107	293976	4027764	NonCancer	0	0	0	0	0	0	0.00073	0	0	0	0	0	0	0.00073
138	SENSITIV	SEN137	294024	4027718	NonCancer	0	0	0	0	0	0	0.000726	0	0	0	0	0	0	0.000726
237	SENSITIV	SEN236	293838	4027853	NonCancer	0	0	0	0	0	0	0.000723	0	0	0	0	0	0	0.000723
136	SENSITIV	SEN135	294070	4027676	NonCancer	0	0	0	0	0	0	0.000707	0	0	0	0	0	0	0.000707
234	SENSITIV	SEN233	293883	4027841	NonCancer	0	0	0	0	0	0	0.000701	0	0	0	0	0	0	0.000701
107	SENSITIV	SEN106	293977	4027780	NonCancer	0	0	0	0	0	0	0.00069	0	0	0	0	0	0	0.00069
216	SENSITIV	SEN215	293585	4027935	NonCancer	0	0	0	0	0	0	0.000688	0	0	0	0	0	0	0.000688
130	SENSITIV	SEN129	294027	4027739	NonCancer	0	0	0	0	0	0	0.000671	0	0	0	0	0	0	0.000671
217	SENSITIV	SEN216	293624	4027935	NonCancer	0	0	0	0	0	0	0.00067	0	0	0	0	0	0	0.00067
235	SENSITIV	SEN234	293906	4027842	NonCancer	0	0	0	0	0	0	0.000666	0	0	0	0	0	0	0.000666
218	SENSITIV	SEN217	293651	4027937	NonCancer	0	0	0	0	0	0	0.000652	0	0	0	0	0	0	0.000652
262	SENSITIV	SEN261	293340	4027978	NonCancer	0	0	0	0	0	0	0.000651	0	0	0	0	0	0	0.000651
236	SENSITIV	SEN235	293923	4027839	NonCancer	0	0	0	0	0	0	0.000648	0	0	0	0	0	0	0.000648
219	SENSITIV	SEN218	293681	4027934	NonCancer	0	0	0	0	0	0	0.000643	0	0	0	0	0	0	0.000643
106	SENSITIV	SEN105	293976	4027803	NonCancer	0	0	0	0	0	0	0.000642	0	0	0	0	0	0	0.000642
129	SENSITIV	SEN128	294025	4027757	NonCancer	0	0	0	0	0	0	0.000639	0	0	0	0	0	0	0.000639
220	SENSITIV	SEN219	293717	4027934	NonCancer	0	0	0	0	0	0	0.000625	0	0	0	0	0	0	0.000625
450	SENSITIV		293401	4026773	NonCancer	0	0	0	0	0	0	0.000618	0	0	0	0	0	0	0.000618
139	SENSITIV	SEN138	294066	4027723	NonCancer	0	0	0	0	0	0	0.000618	0	0	0	0	0	0	0.000618
248	SENSITIV	SEN247	293541	4027977	NonCancer	0	0	0	0	0	0	0.000617	0	0	0	0	0	0	0.000617
221	SENSITIV	SEN220	293750	4027933	NonCancer	0	0	0	0	0	0	0.000611	0	0	0	0	0	0	0.000611
140	SENSITIV	SEN139	294108	4027681	NonCancer	0	0	0	0	0	0	0.00061	0	0	0	0	0	0	0.00061
449	SENSITIV		293335	4026835	NonCancer	0	0	0	0	0	0	0.00061	0	0	0	0	0	0	0.00061
142	SENSITIV	SEN141	294211	4027579	NonCancer	0	0	0	0	0	0	0.000609	0	0	0	0	0	0	0.000609
105	SENSITIV	SEN104	293979	4027821	NonCancer	0	0	0	0	0	0	0.000603	0	0	0	0	0	0	0.000603
222	SENSITIV	SEN221	293780	4027932	NonCancer	0	0	0	0	0	0	0.000597	0	0	0	0	0	0	0.000597
109	SENSITIV	SEN108	294028	4027779	NonCancer	0	0	0	0	0	0	0.000594	0	0	0	0	0	0	0.000594
250	SENSITIV	SEN249	293457	4028001	NonCancer	0	0	0	0	0	0	0.000593	0	0	0	0	0	0	0.000593
241	SENSITIV	SEN240	293922	4027871	NonCancer	0	0	0	0	0	0	0.000588	0	0	0	0	0	0	0.000588
264	SENSITIV	SEN263	293344	4028018	NonCancer	0	0	0	0	0	0	0.000581	0	0	0	0	0	0	0.000581
223	SENSITIV	SEN222	293813	4027932	NonCancer	0	0	0	0	0	0	0.000579	0	0	0	0	0	0	0.000579
249	SENSITIV	SEN248	293602	4027986	NonCancer	0	0	0	0	0	0	0.000577	0	0	0	0	0	0	0.000577
451	SENSITIV		293379	4026771	NonCancer	0	0	0	0	0	0	0.000572	0	0	0	0	0	0	0.000572
247	SENSITIV	SEN246	293640	4027984	NonCancer	0	0	0	0	0	0	0.000566	0	0	0	0	0	0	0.000566
455	SENSITIV		293186	4026953	NonCancer	0	0	0	0	0	0	0.000564	0	0	0	0	0	0	0.000564
127	SENSITIV	SEN126	294067	4027755	NonCancer	0	0	0	0	0	0	0.000562	0	0	0	0	0	0	0.000562

103	SENSITIV	SEN102	293981	4027844	NonCancer	0	0	0	0	0	0	0.000561	0	0	0	0	0	0	0.000561
110	SENSITIV	SEN109	294029	4027799	NonCancer	0	0	0	0	0	0	0.00056	0	0	0	0	0	0	0.00056
245	SENSITIV	SEN244	293694	4027979	NonCancer	0	0	0	0	0	0	0.000554	0	0	0	0	0	0	0.000554
244	SENSITIV	SEN243	293726	4027973	NonCancer	0	0	0	0	0	0	0.000551	0	0	0	0	0	0	0.000551
240	SENSITIV	SEN239	293923	4027893	NonCancer	0	0	0	0	0	0	0.00055	0	0	0	0	0	0	0.00055
224	SENSITIV	SEN223	293852	4027935	NonCancer	0	0	0	0	0	0	0.00055	0	0	0	0	0	0	0.00055
225	SENSITIV	SEN224	293876	4027932	NonCancer	0	0	0	0	0	0	0.000536	0	0	0	0	0	0	0.000536
104	SENSITIV	SEN103	293979	4027866	NonCancer	0	0	0	0	0	0	0.00053	0	0	0	0	0	0	0.00053
101	SENSITIV	SEN100	294027	4027823	NonCancer	0	0	0	0	0	0	0.000528	0	0	0	0	0	0	0.000528
238	SENSITIV	SEN237	293906	4027921	NonCancer	0	0	0	0	0	0	0.000525	0	0	0	0	0	0	0.000525
263	SENSITIV	SEN262	293349	4028059	NonCancer	0	0	0	0	0	0	0.000519	0	0	0	0	0	0	0.000519
246	SENSITIV	SEN245	293701	4028001	NonCancer	0	0	0	0	0	0	0.000517	0	0	0	0	0	0	0.000517
128	SENSITIV	SEN127	294095	4027756	NonCancer	0	0	0	0	0	0	0.000514	0	0	0	0	0	0	0.000514
102	SENSITIV	SEN101	294027	4027843	NonCancer	0	0	0	0	0	0	0.000501	0	0	0	0	0	0	0.000501
239	SENSITIV	SEN238	293922	4027930	NonCancer	0	0	0	0	0	0	0.000498	0	0	0	0	0	0	0.000498
111	SENSITIV	SEN110	294071	4027800	NonCancer	0	0	0	0	0	0	0.000492	0	0	0	0	0	0	0.000492
126	SENSITIV	SEN125	294118	4027756	NonCancer	0	0	0	0	0	0	0.00048	0	0	0	0	0	0	0.00048
96	SENSITIV	SEN95	294027	4027866	NonCancer	0	0	0	0	0	0	0.000473	0	0	0	0	0	0	0.000473
143	SENSITIV	SEN142	294219	4027657	NonCancer	0	0	0	0	0	0	0.000471	0	0	0	0	0	0	0.000471
100	SENSITIV	SEN99	294072	4027827	NonCancer	0	0	0	0	0	0	0.000459	0	0	0	0	0	0	0.000459
112	SENSITIV	SEN111	294095	4027800	NonCancer	0	0	0	0	0	0	0.000459	0	0	0	0	0	0	0.000459
95	SENSITIV	SEN94	293983	4027918	NonCancer	0	0	0	0	0	0	0.000459	0	0	0	0	0	0	0.000459
125	SENSITIV	SEN124	294138	4027754	NonCancer	0	0	0	0	0	0	0.000457	0	0	0	0	0	0	0.000457
113	SENSITIV	SEN112	294115	4027794	NonCancer	0	0	0	0	0	0	0.000441	0	0	0	0	0	0	0.000441
97	SENSITIV	SEN96	294046	4027879	NonCancer	0	0	0	0	0	0	0.000437	0	0	0	0	0	0	0.000437
83	SENSITIV	SEN82	293986	4027938	NonCancer	0	0	0	0	0	0	0.000435	0	0	0	0	0	0	0.000435
124	SENSITIV	SEN123	294166	4027754	NonCancer	0	0	0	0	0	0	0.000424	0	0	0	0	0	0	0.000424
98	SENSITIV	SEN97	294069	4027874	NonCancer	0	0	0	0	0	0	0.000416	0	0	0	0	0	0	0.000416
114	SENSITIV	SEN113	294143	4027799	NonCancer	0	0	0	0	0	0	0.000404	0	0	0	0	0	0	0.000404
85	SENSITIV	SEN84	293979	4027978	NonCancer	0	0	0	0	0	0	0.000401	0	0	0	0	0	0	0.000401
452	SENSITIV		293251	4026772	NonCancer	0	0	0	0	0	0	0.000397	0	0	0	0	0	0	0.000397
123	SENSITIV	SEN122	294197	4027751	NonCancer	0	0	0	0	0	0	0.000395	0	0	0	0	0	0	0.000395
243	SENSITIV	SEN242	293915	4028034	NonCancer	0	0	0	0	0	0	0.000391	0	0	0	0	0	0	0.000391
144	SENSITIV	SEN143	294252	4027702	NonCancer	0	0	0	0	0	0	0.000389	0	0	0	0	0	0	0.000389
99	SENSITIV	SEN98	294096	4027873	NonCancer	0	0	0	0	0	0	0.000388	0	0	0	0	0	0	0.000388
115	SENSITIV	SEN114	294166	4027794	NonCancer	0	0	0	0	0	0	0.000386	0	0	0	0	0	0	0.000386
86	SENSITIV	SEN85	294009	4027972	NonCancer	0	0	0	0	0	0	0.000386	0	0	0	0	0	0	0.000386
242	SENSITIV	SEN241	293928	4028042	NonCancer	0	0	0	0	0	0	0.000377	0	0	0	0	0	0	0.000377
453	SENSITIV		293214	4026784	NonCancer	0	0	0	0	0	0	0.00037	0	0	0	0	0	0	0.00037
454	SENSITIV		293171	4026822	NonCancer	0	0	0	0	0	0	0.000365	0	0	0	0	0	0	0.000365
89	SENSITIV	SEN88	294072	4027944	NonCancer	0	0	0	0	0	0	0.000357	0	0	0	0	0	0	0.000357
118	SENSITIV	SEN117	294125	4027880	NonCancer	0	0	0	0	0	0	0.000355	0	0	0	0	0	0	0.000355
84	SENSITIV	SEN83	294053	4027970	NonCancer	0	0	0	0	0	0	0.000355	0	0	0	0	0	0	0.000355
116	SENSITIV	SEN115	294198	4027808	NonCancer	0	0	0	0	0	0	0.000347	0	0	0	0	0	0	0.000347
117	SENSITIV	SEN116	294145	4027870	NonCancer	0	0	0	0	0	0	0.000345	0	0	0	0	0	0	0.000345
122	SENSITIV	SEN121	294227	4027788	NonCancer	0	0	0	0	0	0	0.00034	0	0	0	0	0	0	0.00034
88	SENSITIV	SEN87	294081	4027970	NonCancer	0	0	0	0	0	0	0.000333	0	0	0	0	0	0	0.000333
265	SENSITIV	SEN264	293930	4028108	NonCancer	0	0	0	0	0	0	0.000328	0	0	0	0	0	0	0.000328
74	SENSITIV	SEN73	294050	4028018	NonCancer	0	0	0	0	0	0	0.000326	0	0	0	0	0	0	0.000326
82	SENSITIV	SEN81	293984	4028092	NonCancer	0	0	0	0	0	0	0.000315	0	0	0	0	0	0	0.000315
120	SENSITIV	SEN119	294226	4027826	NonCancer	0	0	0	0	0	0	0.000315	0	0	0	0	0	0	0.000315
75	SENSITIV	SEN74	294060	4028028	NonCancer	0	0	0	0	0	0	0.000314	0	0	0	0	0	0	0.000314

121	SENSITIV	SEN120	294244	4027811	NonCancer	0	0	0	0	0	0	0.000313	0	0	0	0	0	0	0.000313
87	SENSITIV	SEN86	294116	4027968	NonCancer	0	0	0	0	0	0	0.000308	0	0	0	0	0	0	0.000308
119	SENSITIV	SEN118	294196	4027877	NonCancer	0	0	0	0	0	0	0.000303	0	0	0	0	0	0	0.000303
77	SENSITIV	SEN76	294092	4028022	NonCancer	0	0	0	0	0	0	0.000297	0	0	0	0	0	0	0.000297
266	SENSITIV	SEN265	293932	4028167	NonCancer	0	0	0	0	0	0	0.000293	0	0	0	0	0	0	0.000293
76	SENSITIV	SEN75	294088	4028040	NonCancer	0	0	0	0	0	0	0.000291	0	0	0	0	0	0	0.000291
456	SENSITIV		292781	4027313	NonCancer	0	0	0	0	0	0	0.000284	0	0	0	0	0	0	0.000284
90	SENSITIV	SEN89	294150	4027970	NonCancer	0	0	0	0	0	0	0.000284	0	0	0	0	0	0	0.000284
78	SENSITIV	SEN77	294112	4028023	NonCancer	0	0	0	0	0	0	0.000284	0	0	0	0	0	0	0.000284
267	SENSITIV	SEN266	293930	4028194	NonCancer	0	0	0	0	0	0	0.000279	0	0	0	0	0	0	0.000279
79	SENSITIV	SEN78	294134	4028016	NonCancer	0	0	0	0	0	0	0.000273	0	0	0	0	0	0	0.000273
268	SENSITIV	SEN267	293920	4028222	NonCancer	0	0	0	0	0	0	0.000269	0	0	0	0	0	0	0.000269
80	SENSITIV	SEN79	294149	4028019	NonCancer	0	0	0	0	0	0	0.000263	0	0	0	0	0	0	0.000263
91	SENSITIV	SEN90	294187	4027970	NonCancer	0	0	0	0	0	0	0.000262	0	0	0	0	0	0	0.000262
339	SENSITIV	SEN338	293919	4028268	NonCancer	0	0	0	0	0	0	0.000249	0	0	0	0	0	0	0.000249
81	SENSITIV	SEN80	294156	4028054	NonCancer	0	0	0	0	0	0	0.000246	0	0	0	0	0	0	0.000246
72	SENSITIV	SEN71	294181	4028020	NonCancer	0	0	0	0	0	0	0.000245	0	0	0	0	0	0	0.000245
92	SENSITIV	SEN91	294232	4027966	NonCancer	0	0	0	0	0	0	0.000241	0	0	0	0	0	0	0.000241
93	SENSITIV	SEN92	294249	4027959	NonCancer	0	0	0	0	0	0	0.000236	0	0	0	0	0	0	0.000236
71	SENSITIV	SEN70	294207	4028018	NonCancer	0	0	0	0	0	0	0.000233	0	0	0	0	0	0	0.000233
73	SENSITIV	SEN72	294189	4028060	NonCancer	0	0	0	0	0	0	0.000228	0	0	0	0	0	0	0.000228
69	SENSITIV	SEN68	294231	4028019	NonCancer	0	0	0	0	0	0	0.000222	0	0	0	0	0	0	0.000222
94	SENSITIV	SEN93	294272	4027975	NonCancer	0	0	0	0	0	0	0.000221	0	0	0	0	0	0	0.000221
68	SENSITIV	SEN67	294254	4028015	NonCancer	0	0	0	0	0	0	0.000214	0	0	0	0	0	0	0.000214
70	SENSITIV	SEN69	294225	4028054	NonCancer	0	0	0	0	0	0	0.000214	0	0	0	0	0	0	0.000214
270	SENSITIV	SEN269	293870	4028395	NonCancer	0	0	0	0	0	0	0.000213	0	0	0	0	0	0	0.000213
67	SENSITIV	SEN66	294259	4028077	NonCancer	0	0	0	0	0	0	0.000195	0	0	0	0	0	0	0.000195
269	SENSITIV	SEN268	293933	4028430	NonCancer	0	0	0	0	0	0	0.000193	0	0	0	0	0	0	0.000193
338	SENSITIV	SEN337	293991	4028402	NonCancer	0	0	0	0	0	0	0.000193	0	0	0	0	0	0	0.000193
271	SENSITIV	SEN270	294098	4028373	NonCancer	0	0	0	0	0	0	0.000182	0	0	0	0	0	0	0.000182
337	SENSITIV	SEN336	294042	4028459	NonCancer	0	0	0	0	0	0	0.000173	0	0	0	0	0	0	0.000173
286	SENSITIV	SEN285	294142	4028372	NonCancer	0	0	0	0	0	0	0.000173	0	0	0	0	0	0	0.000173
463	SENSITIV		293095	4026551	NonCancer	0	0	0	0	0	0	0.000171	0	0	0	0	0	0	0.000171
330	SENSITIV	SEN329	293865	4028570	NonCancer	0	0	0	0	0	0	0.00017	0	0	0	0	0	0	0.00017
287	SENSITIV	SEN286	294152	4028388	NonCancer	0	0	0	0	0	0	0.000168	0	0	0	0	0	0	0.000168
290	SENSITIV	SEN289	294102	4028446	NonCancer	0	0	0	0	0	0	0.000167	0	0	0	0	0	0	0.000167
331	SENSITIV	SEN330	293901	4028570	NonCancer	0	0	0	0	0	0	0.000166	0	0	0	0	0	0	0.000166
288	SENSITIV	SEN287	294167	4028383	NonCancer	0	0	0	0	0	0	0.000165	0	0	0	0	0	0	0.000165
289	SENSITIV	SEN288	294142	4028421	NonCancer	0	0	0	0	0	0	0.000164	0	0	0	0	0	0	0.000164
332	SENSITIV	SEN331	294033	4028513	NonCancer	0	0	0	0	0	0	0.000164	0	0	0	0	0	0	0.000164
291	SENSITIV	SEN290	294103	4028466	NonCancer	0	0	0	0	0	0	0.000163	0	0	0	0	0	0	0.000163
329	SENSITIV	SEN328	293940	4028573	NonCancer	0	0	0	0	0	0	0.000161	0	0	0	0	0	0	0.000161
333	SENSITIV	SEN332	294036	4028535	NonCancer	0	0	0	0	0	0	0.000159	0	0	0	0	0	0	0.000159
295	SENSITIV	SEN294	294105	4028488	NonCancer	0	0	0	0	0	0	0.000159	0	0	0	0	0	0	0.000159
335	SENSITIV	SEN334	294004	4028556	NonCancer	0	0	0	0	0	0	0.000159	0	0	0	0	0	0	0.000159
334	SENSITIV	SEN333	294020	4028551	NonCancer	0	0	0	0	0	0	0.000158	0	0	0	0	0	0	0.000158
292	SENSITIV	SEN291	294147	4028465	NonCancer	0	0	0	0	0	0	0.000156	0	0	0	0	0	0	0.000156
296	SENSITIV	SEN295	294097	4028513	NonCancer	0	0	0	0	0	0	0.000156	0	0	0	0	0	0	0.000156
336	SENSITIV	SEN335	294018	4028564	NonCancer	0	0	0	0	0	0	0.000156	0	0	0	0	0	0	0.000156
328	SENSITIV	SEN327	293941	4028605	NonCancer	0	0	0	0	0	0	0.000155	0	0	0	0	0	0	0.000155
285	SENSITIV	SEN284	294223	4028372	NonCancer	0	0	0	0	0	0	0.000153	0	0	0	0	0	0	0.000153
297	SENSITIV	SEN296	294098	4028534	NonCancer	0	0	0	0	0	0	0.000153	0	0	0	0	0	0	0.000153

294	SENSITIV	SEN293	294146	4028491	NonCancer	0	0	0	0	0	0	0.000153	0	0	0	0	0	0	0.000153
293	SENSITIV	SEN292	294146	4028509	NonCancer	0	0	0	0	0	0	0.00015	0	0	0	0	0	0	0.00015
300	SENSITIV	SEN299	294098	4028560	NonCancer	0	0	0	0	0	0	0.000149	0	0	0	0	0	0	0.000149
327	SENSITIV	SEN326	293944	4028649	NonCancer	0	0	0	0	0	0	0.000148	0	0	0	0	0	0	0.000148
298	SENSITIV	SEN297	294145	4028530	NonCancer	0	0	0	0	0	0	0.000147	0	0	0	0	0	0	0.000147
323	SENSITIV	SEN322	294098	4028581	NonCancer	0	0	0	0	0	0	0.000146	0	0	0	0	0	0	0.000146
284	SENSITIV	SEN283	294254	4028374	NonCancer	0	0	0	0	0	0	0.000145	0	0	0	0	0	0	0.000145
322	SENSITIV	SEN321	294089	4028599	NonCancer	0	0	0	0	0	0	0.000144	0	0	0	0	0	0	0.000144
324	SENSITIV	SEN323	294001	4028647	NonCancer	0	0	0	0	0	0	0.000144	0	0	0	0	0	0	0.000144
299	SENSITIV	SEN298	294148	4028558	NonCancer	0	0	0	0	0	0	0.000143	0	0	0	0	0	0	0.000143
325	SENSITIV	SEN324	294025	4028646	NonCancer	0	0	0	0	0	0	0.000143	0	0	0	0	0	0	0.000143
308	SENSITIV	SEN307	294042	4028647	NonCancer	0	0	0	0	0	0	0.000142	0	0	0	0	0	0	0.000142
326	SENSITIV	SEN325	294002	4028665	NonCancer	0	0	0	0	0	0	0.000142	0	0	0	0	0	0	0.000142
321	SENSITIV	SEN320	294105	4028618	NonCancer	0	0	0	0	0	0	0.00014	0	0	0	0	0	0	0.00014
319	SENSITIV	SEN318	294148	4028580	NonCancer	0	0	0	0	0	0	0.00014	0	0	0	0	0	0	0.00014
283	SENSITIV	SEN282	294255	4028415	NonCancer	0	0	0	0	0	0	0.00014	0	0	0	0	0	0	0.00014
309	SENSITIV	SEN308	294031	4028676	NonCancer	0	0	0	0	0	0	0.000138	0	0	0	0	0	0	0.000138
282	SENSITIV	SEN281	294252	4028439	NonCancer	0	0	0	0	0	0	0.000138	0	0	0	0	0	0	0.000138
307	SENSITIV	SEN306	294047	4028672	NonCancer	0	0	0	0	0	0	0.000138	0	0	0	0	0	0	0.000138
313	SENSITIV	SEN312	294111	4028632	NonCancer	0	0	0	0	0	0	0.000138	0	0	0	0	0	0	0.000138
306	SENSITIV	SEN305	294060	4028673	NonCancer	0	0	0	0	0	0	0.000137	0	0	0	0	0	0	0.000137
320	SENSITIV	SEN319	294156	4028599	NonCancer	0	0	0	0	0	0	0.000137	0	0	0	0	0	0	0.000137
312	SENSITIV	SEN311	294106	4028645	NonCancer	0	0	0	0	0	0	0.000137	0	0	0	0	0	0	0.000137
305	SENSITIV	SEN304	294072	4028672	NonCancer	0	0	0	0	0	0	0.000136	0	0	0	0	0	0	0.000136
310	SENSITIV	SEN309	294037	4028692	NonCancer	0	0	0	0	0	0	0.000136	0	0	0	0	0	0	0.000136
304	SENSITIV	SEN303	294089	4028671	NonCancer	0	0	0	0	0	0	0.000135	0	0	0	0	0	0	0.000135
281	SENSITIV	SEN280	294254	4028464	NonCancer	0	0	0	0	0	0	0.000135	0	0	0	0	0	0	0.000135
311	SENSITIV	SEN310	294109	4028659	NonCancer	0	0	0	0	0	0	0.000135	0	0	0	0	0	0	0.000135
272	SENSITIV	SEN271	294297	4028378	NonCancer	0	0	0	0	0	0	0.000135	0	0	0	0	0	0	0.000135
314	SENSITIV	SEN313	294155	4028628	NonCancer	0	0	0	0	0	0	0.000134	0	0	0	0	0	0	0.000134
66	SENSITIV	SEN65	294562	4028078	NonCancer	0	0	0	0	0	0	0.000134	0	0	0	0	0	0	0.000134
280	SENSITIV	SEN279	294251	4028484	NonCancer	0	0	0	0	0	0	0.000133	0	0	0	0	0	0	0.000133
303	SENSITIV	SEN302	294111	4028673	NonCancer	0	0	0	0	0	0	0.000133	0	0	0	0	0	0	0.000133
301	SENSITIV	SEN300	294044	4028715	NonCancer	0	0	0	0	0	0	0.000133	0	0	0	0	0	0	0.000133
273	SENSITIV	SEN272	294296	4028400	NonCancer	0	0	0	0	0	0	0.000132	0	0	0	0	0	0	0.000132
302	SENSITIV	SEN301	294076	4028704	NonCancer	0	0	0	0	0	0	0.000132	0	0	0	0	0	0	0.000132
279	SENSITIV	SEN278	294247	4028511	NonCancer	0	0	0	0	0	0	0.000132	0	0	0	0	0	0	0.000132
274	SENSITIV	SEN273	294296	4028424	NonCancer	0	0	0	0	0	0	0.00013	0	0	0	0	0	0	0.00013
315	SENSITIV	SEN314	294155	4028667	NonCancer	0	0	0	0	0	0	0.000129	0	0	0	0	0	0	0.000129
396	SENSITIV	SEN395	294043	4028756	NonCancer	0	0	0	0	0	0	0.000128	0	0	0	0	0	0	0.000128
316	SENSITIV	SEN315	294152	4028687	NonCancer	0	0	0	0	0	0	0.000128	0	0	0	0	0	0	0.000128
275	SENSITIV	SEN274	294297	4028451	NonCancer	0	0	0	0	0	0	0.000127	0	0	0	0	0	0	0.000127
346	SENSITIV	SEN345	294253	4028552	NonCancer	0	0	0	0	0	0	0.000127	0	0	0	0	0	0	0.000127
317	SENSITIV	SEN316	294163	4028708	NonCancer	0	0	0	0	0	0	0.000124	0	0	0	0	0	0	0.000124
395	SENSITIV	SEN394	294077	4028776	NonCancer	0	0	0	0	0	0	0.000124	0	0	0	0	0	0	0.000124
277	SENSITIV	SEN276	294296	4028490	NonCancer	0	0	0	0	0	0	0.000124	0	0	0	0	0	0	0.000124
347	SENSITIV	SEN346	294255	4028578	NonCancer	0	0	0	0	0	0	0.000124	0	0	0	0	0	0	0.000124
394	SENSITIV	SEN393	294096	4028767	NonCancer	0	0	0	0	0	0	0.000124	0	0	0	0	0	0	0.000124
276	SENSITIV	SEN275	294306	4028473	NonCancer	0	0	0	0	0	0	0.000124	0	0	0	0	0	0	0.000124
343	SENSITIV	SEN342	294150	4028752	NonCancer	0	0	0	0	0	0	0.000121	0	0	0	0	0	0	0.000121
345	SENSITIV	SEN344	294257	4028609	NonCancer	0	0	0	0	0	0	0.000121	0	0	0	0	0	0	0.000121
278	SENSITIV	SEN277	294300	4028518	NonCancer	0	0	0	0	0	0	0.000121	0	0	0	0	0	0	0.000121

318	SENSITIV	SEN317	294194	4028714	NonCancer	0	0	0	0	0	0	0.000121	0	0	0	0	0	0	0.000121
393	SENSITIV	SEN392	294112	4028796	NonCancer	0	0	0	0	0	0	0.00012	0	0	0	0	0	0	0.00012
348	SENSITIV	SEN347	294301	4028533	NonCancer	0	0	0	0	0	0	0.000119	0	0	0	0	0	0	0.000119
342	SENSITIV	SEN341	294254	4028645	NonCancer	0	0	0	0	0	0	0.000119	0	0	0	0	0	0	0.000119
340	SENSITIV	SEN339	294219	4028713	NonCancer	0	0	0	0	0	0	0.000118	0	0	0	0	0	0	0.000118
364	SENSITIV	SEN363	294153	4028795	NonCancer	0	0	0	0	0	0	0.000117	0	0	0	0	0	0	0.000117
349	SENSITIV	SEN348	294305	4028560	NonCancer	0	0	0	0	0	0	0.000117	0	0	0	0	0	0	0.000117
392	SENSITIV	SEN391	294106	4028841	NonCancer	0	0	0	0	0	0	0.000116	0	0	0	0	0	0	0.000116
344	SENSITIV	SEN343	294258	4028681	NonCancer	0	0	0	0	0	0	0.000115	0	0	0	0	0	0	0.000115
365	SENSITIV	SEN364	294154	4028822	NonCancer	0	0	0	0	0	0	0.000115	0	0	0	0	0	0	0.000115
350	SENSITIV	SEN349	294306	4028583	NonCancer	0	0	0	0	0	0	0.000115	0	0	0	0	0	0	0.000115
391	SENSITIV	SEN390	294109	4028864	NonCancer	0	0	0	0	0	0	0.000114	0	0	0	0	0	0	0.000114
341	SENSITIV	SEN340	294256	4028707	NonCancer	0	0	0	0	0	0	0.000114	0	0	0	0	0	0	0.000114
352	SENSITIV	SEN351	294302	4028609	NonCancer	0	0	0	0	0	0	0.000114	0	0	0	0	0	0	0.000114
366	SENSITIV	SEN365	294156	4028863	NonCancer	0	0	0	0	0	0	0.000112	0	0	0	0	0	0	0.000112
354	SENSITIV	SEN353	294300	4028646	NonCancer	0	0	0	0	0	0	0.000111	0	0	0	0	0	0	0.000111
351	SENSITIV	SEN350	294331	4028580	NonCancer	0	0	0	0	0	0	0.000111	0	0	0	0	0	0	0.000111
380	SENSITIV	SEN379	294118	4028899	NonCancer	0	0	0	0	0	0	0.000111	0	0	0	0	0	0	0.000111
363	SENSITIV	SEN362	294262	4028752	NonCancer	0	0	0	0	0	0	0.00011	0	0	0	0	0	0	0.00011
360	SENSITIV	SEN359	294264	4028770	NonCancer	0	0	0	0	0	0	0.000108	0	0	0	0	0	0	0.000108
390	SENSITIV	SEN389	294113	4028943	NonCancer	0	0	0	0	0	0	0.000107	0	0	0	0	0	0	0.000107
369	SENSITIV	SEN368	294220	4028857	NonCancer	0	0	0	0	0	0	0.000107	0	0	0	0	0	0	0.000107
355	SENSITIV	SEN354	294323	4028658	NonCancer	0	0	0	0	0	0	0.000107	0	0	0	0	0	0	0.000107
359	SENSITIV	SEN358	294264	4028795	NonCancer	0	0	0	0	0	0	0.000107	0	0	0	0	0	0	0.000107
389	SENSITIV	SEN388	294158	4028934	NonCancer	0	0	0	0	0	0	0.000106	0	0	0	0	0	0	0.000106
357	SENSITIV	SEN356	294309	4028709	NonCancer	0	0	0	0	0	0	0.000106	0	0	0	0	0	0	0.000106
353	SENSITIV	SEN352	294353	4028610	NonCancer	0	0	0	0	0	0	0.000105	0	0	0	0	0	0	0.000105
361	SENSITIV	SEN360	294267	4028815	NonCancer	0	0	0	0	0	0	0.000105	0	0	0	0	0	0	0.000105
409	SENSITIV	SEN408	294117	4028974	NonCancer	0	0	0	0	0	0	0.000105	0	0	0	0	0	0	0.000105
358	SENSITIV	SEN357	294310	4028729	NonCancer	0	0	0	0	0	0	0.000105	0	0	0	0	0	0	0.000105
368	SENSITIV	SEN367	294239	4028869	NonCancer	0	0	0	0	0	0	0.000105	0	0	0	0	0	0	0.000105
379	SENSITIV	SEN378	294161	4028954	NonCancer	0	0	0	0	0	0	0.000105	0	0	0	0	0	0	0.000105
406	SENSITIV	SEN405	293822	4029127	NonCancer	0	0	0	0	0	0	0.000105	0	0	0	0	0	0	0.000105
356	SENSITIV	SEN355	294336	4028682	NonCancer	0	0	0	0	0	0	0.000104	0	0	0	0	0	0	0.000104
407	SENSITIV	SEN406	294167	4028969	NonCancer	0	0	0	0	0	0	0.000103	0	0	0	0	0	0	0.000103
408	SENSITIV	SEN407	294118	4029007	NonCancer	0	0	0	0	0	0	0.000103	0	0	0	0	0	0	0.000103
367	SENSITIV	SEN366	294269	4028863	NonCancer	0	0	0	0	0	0	0.000102	0	0	0	0	0	0	0.000102
402	SENSITIV	SEN401	294022	4029044	NonCancer	0	0	0	0	0	0	0.000102	0	0	0	0	0	0	0.000102
381	SENSITIV	SEN380	294229	4028933	NonCancer	0	0	0	0	0	0	0.000102	0	0	0	0	0	0	0.000102
61	SENSITIV	SEN60	294540	4028357	NonCancer	0	0	0	0	0	0	0.000102	0	0	0	0	0	0	0.000102
373	SENSITIV	SEN372	294318	4028768	NonCancer	0	0	0	0	0	0	0.000102	0	0	0	0	0	0	0.000102
370	SENSITIV	SEN369	294266	4028883	NonCancer	0	0	0	0	0	0	0.000101	0	0	0	0	0	0	0.000101
376	SENSITIV	SEN375	294170	4028996	NonCancer	0	0	0	0	0	0	0.000101	0	0	0	0	0	0	0.000101
1	SENSITIV	SEN0	293748	4029209	NonCancer	0	0	0	0	0	0	0.000101	0	0	0	0	0	0	0.000101
375	SENSITIV	SEN374	294122	4029024	NonCancer	0	0	0	0	0	0	0.000101	0	0	0	0	0	0	0.000101
2	SENSITIV	SEN1	293799	4029195	NonCancer	0	0	0	0	0	0	0.000101	0	0	0	0	0	0	0.000101
382	SENSITIV	SEN381	294229	4028951	NonCancer	0	0	0	0	0	0	0.000101	0	0	0	0	0	0	0.000101
374	SENSITIV	SEN373	294114	4029044	NonCancer	0	0	0	0	0	0	0.0001	0	0	0	0	0	0	0.0001
372	SENSITIV	SEN371	294307	4028844	NonCancer	0	0	0	0	0	0	9.90E-05	0	0	0	0	0	0	9.90E-05
385	SENSITIV	SEN384	294265	4028931	NonCancer	0	0	0	0	0	0	9.89E-05	0	0	0	0	0	0	9.89E-05
403	SENSITIV	SEN402	294018	4029093	NonCancer	0	0	0	0	0	0	9.87E-05	0	0	0	0	0	0	9.87E-05
52	SENSITIV	SEN51	294539	4028397	NonCancer	0	0	0	0	0	0	9.85E-05	0	0	0	0	0	0	9.85E-05



377	SENSITIV	SEN376	294161	4029050	NonCancer	0	0	0	0	0	0	9.83E-05	0	0	0	0	0	0	9.83E-05
404	SENSITIV	SEN403	294038	4029095	NonCancer	0	0	0	0	0	0	9.83E-05	0	0	0	0	0	0	9.83E-05
405	SENSITIV	SEN404	294054	4029095	NonCancer	0	0	0	0	0	0	9.80E-05	0	0	0	0	0	0	9.80E-05
362	SENSITIV	SEN361	294324	4028824	NonCancer	0	0	0	0	0	0	9.79E-05	0	0	0	0	0	0	9.79E-05
414	SENSITIV	SEN413	294243	4028982	NonCancer	0	0	0	0	0	0	9.79E-05	0	0	0	0	0	0	9.79E-05
401	SENSITIV	SEN400	294121	4029079	NonCancer	0	0	0	0	0	0	9.77E-05	0	0	0	0	0	0	9.77E-05
65	SENSITIV	SEN64	294596	4028353	NonCancer	0	0	0	0	0	0	9.72E-05	0	0	0	0	0	0	9.72E-05
371	SENSITIV	SEN370	294310	4028875	NonCancer	0	0	0	0	0	0	9.72E-05	0	0	0	0	0	0	9.72E-05
378	SENSITIV	SEN377	294163	4029067	NonCancer	0	0	0	0	0	0	9.72E-05	0	0	0	0	0	0	9.72E-05
383	SENSITIV	SEN382	294271	4028955	NonCancer	0	0	0	0	0	0	9.71E-05	0	0	0	0	0	0	9.71E-05
3	SENSITIV	SEN2	293874	4029194	NonCancer	0	0	0	0	0	0	9.69E-05	0	0	0	0	0	0	9.69E-05
384	SENSITIV	SEN383	294272	4028974	NonCancer	0	0	0	0	0	0	9.61E-05	0	0	0	0	0	0	9.61E-05
399	SENSITIV	SEN398	294059	4029129	NonCancer	0	0	0	0	0	0	9.57E-05	0	0	0	0	0	0	9.57E-05
51	SENSITIV	SEN50	294536	4028439	NonCancer	0	0	0	0	0	0	9.57E-05	0	0	0	0	0	0	9.57E-05
50	SENSITIV	SEN49	294524	4028463	NonCancer	0	0	0	0	0	0	9.50E-05	0	0	0	0	0	0	9.50E-05
400	SENSITIV	SEN399	294117	4029123	NonCancer	0	0	0	0	0	0	9.50E-05	0	0	0	0	0	0	9.50E-05
410	SENSITIV	SEN409	294273	4028997	NonCancer	0	0	0	0	0	0	9.49E-05	0	0	0	0	0	0	9.49E-05
424	SENSITIV	SEN423	294228	4029065	NonCancer	0	0	0	0	0	0	9.45E-05	0	0	0	0	0	0	9.45E-05
53	SENSITIV	SEN52	294596	4028393	NonCancer	0	0	0	0	0	0	9.41E-05	0	0	0	0	0	0	9.41E-05
386	SENSITIV	SEN385	294315	4028937	NonCancer	0	0	0	0	0	0	9.39E-05	0	0	0	0	0	0	9.39E-05
411	SENSITIV	SEN410	294271	4029023	NonCancer	0	0	0	0	0	0	9.38E-05	0	0	0	0	0	0	9.38E-05
4	SENSITIV	SEN3	293935	4029200	NonCancer	0	0	0	0	0	0	9.36E-05	0	0	0	0	0	0	9.36E-05
397	SENSITIV	SEN396	294191	4029123	NonCancer	0	0	0	0	0	0	9.30E-05	0	0	0	0	0	0	9.30E-05
64	SENSITIV	SEN63	294634	4028370	NonCancer	0	0	0	0	0	0	9.30E-05	0	0	0	0	0	0	9.30E-05
387	SENSITIV	SEN386	294313	4028967	NonCancer	0	0	0	0	0	0	9.28E-05	0	0	0	0	0	0	9.28E-05
412	SENSITIV	SEN411	294277	4029041	NonCancer	0	0	0	0	0	0	9.26E-05	0	0	0	0	0	0	9.26E-05
398	SENSITIV	SEN397	294210	4029123	NonCancer	0	0	0	0	0	0	9.23E-05	0	0	0	0	0	0	9.23E-05
388	SENSITIV	SEN387	294315	4028988	NonCancer	0	0	0	0	0	0	9.17E-05	0	0	0	0	0	0	9.17E-05
54	SENSITIV	SEN53	294603	4028421	NonCancer	0	0	0	0	0	0	9.16E-05	0	0	0	0	0	0	9.16E-05
413	SENSITIV	SEN412	294277	4029066	NonCancer	0	0	0	0	0	0	9.14E-05	0	0	0	0	0	0	9.14E-05
423	SENSITIV	SEN422	294230	4029125	NonCancer	0	0	0	0	0	0	9.13E-05	0	0	0	0	0	0	9.13E-05
426	SENSITIV	SEN425	294342	4028933	NonCancer	0	0	0	0	0	0	9.12E-05	0	0	0	0	0	0	9.12E-05
45	SENSITIV	SEN44	294524	4028523	NonCancer	0	0	0	0	0	0	9.11E-05	0	0	0	0	0	0	9.11E-05
5	SENSITIV	SEN4	293980	4029224	NonCancer	0	0	0	0	0	0	9.10E-05	0	0	0	0	0	0	9.10E-05
415	SENSITIV	SEN414	294317	4029010	NonCancer	0	0	0	0	0	0	9.07E-05	0	0	0	0	0	0	9.07E-05
60	SENSITIV	SEN59	294690	4028360	NonCancer	0	0	0	0	0	0	9.00E-05	0	0	0	0	0	0	9.00E-05
55	SENSITIV	SEN54	294600	4028447	NonCancer	0	0	0	0	0	0	9.00E-05	0	0	0	0	0	0	9.00E-05
416	SENSITIV	SEN415	294317	4029038	NonCancer	0	0	0	0	0	0	8.96E-05	0	0	0	0	0	0	8.96E-05
7	SENSITIV	SEN6	293982	4029249	NonCancer	0	0	0	0	0	0	8.96E-05	0	0	0	0	0	0	8.96E-05
422	SENSITIV	SEN421	294270	4029122	NonCancer	0	0	0	0	0	0	8.94E-05	0	0	0	0	0	0	8.94E-05
57	SENSITIV	SEN56	294592	4028468	NonCancer	0	0	0	0	0	0	8.92E-05	0	0	0	0	0	0	8.92E-05
6	SENSITIV	SEN5	293950	4029278	NonCancer	0	0	0	0	0	0	8.86E-05	0	0	0	0	0	0	8.86E-05
62	SENSITIV	SEN61	294643	4028428	NonCancer	0	0	0	0	0	0	8.83E-05	0	0	0	0	0	0	8.83E-05
44	SENSITIV	SEN43	294524	4028575	NonCancer	0	0	0	0	0	0	8.79E-05	0	0	0	0	0	0	8.79E-05
63	SENSITIV	SEN62	294753	4028346	NonCancer	0	0	0	0	0	0	8.74E-05	0	0	0	0	0	0	8.74E-05
419	SENSITIV	SEN418	294315	4029106	NonCancer	0	0	0	0	0	0	8.71E-05	0	0	0	0	0	0	8.71E-05
420	SENSITIV	SEN419	294327	4029081	NonCancer	0	0	0	0	0	0	8.71E-05	0	0	0	0	0	0	8.71E-05
417	SENSITIV	SEN416	294349	4029037	NonCancer	0	0	0	0	0	0	8.68E-05	0	0	0	0	0	0	8.68E-05
56	SENSITIV	SEN55	294637	4028461	NonCancer	0	0	0	0	0	0	8.66E-05	0	0	0	0	0	0	8.66E-05
47	SENSITIV	SEN46	294589	4028521	NonCancer	0	0	0	0	0	0	8.62E-05	0	0	0	0	0	0	8.62E-05
58	SENSITIV	SEN57	294701	4028410	NonCancer	0	0	0	0	0	0	8.58E-05	0	0	0	0	0	0	8.58E-05
20	SENSITIV	SEN19	294295	4029180	NonCancer	0	0	0	0	0	0	8.56E-05	0	0	0	0	0	0	8.56E-05

418	SENSITIV	SEN417	294329	4029122	NonCancer	0	0	0	0	0	8.55E-05	0	0	0	0	0	0	8.55E-05
46	SENSITIV	SEN45	294588	4028537	NonCancer	0	0	0	0	0	8.53E-05	0	0	0	0	0	0	8.53E-05
10	SENSITIV	SEN9	294314	4029174	NonCancer	0	0	0	0	0	8.47E-05	0	0	0	0	0	0	8.47E-05
433	SENSITIV	SEN432	294479	4028726	NonCancer	0	0	0	0	0	8.42E-05	0	0	0	0	0	0	8.42E-05
43	SENSITIV	SEN42	294535	4028629	NonCancer	0	0	0	0	0	8.41E-05	0	0	0	0	0	0	8.41E-05
9	SENSITIV	SEN8	293948	4029381	NonCancer	0	0	0	0	0	8.33E-05	0	0	0	0	0	0	8.33E-05
11	SENSITIV	SEN10	294333	4029181	NonCancer	0	0	0	0	0	8.32E-05	0	0	0	0	0	0	8.32E-05
421	SENSITIV	SEN420	294358	4029125	NonCancer	0	0	0	0	0	8.32E-05	0	0	0	0	0	0	8.32E-05
59	SENSITIV	SEN58	294759	4028403	NonCancer	0	0	0	0	0	8.31E-05	0	0	0	0	0	0	8.31E-05
42	SENSITIV	SEN41	294539	4028650	NonCancer	0	0	0	0	0	8.27E-05	0	0	0	0	0	0	8.27E-05
49	SENSITIV	SEN48	294617	4028570	NonCancer	0	0	0	0	0	8.15E-05	0	0	0	0	0	0	8.15E-05
12	SENSITIV	SEN11	294361	4029180	NonCancer	0	0	0	0	0	8.13E-05	0	0	0	0	0	0	8.13E-05
41	SENSITIV	SEN40	294542	4028674	NonCancer	0	0	0	0	0	8.13E-05	0	0	0	0	0	0	8.13E-05
48	SENSITIV	SEN47	294605	4028608	NonCancer	0	0	0	0	0	8.03E-05	0	0	0	0	0	0	8.03E-05
8	SENSITIV	SEN7	293982	4029440	NonCancer	0	0	0	0	0	8.00E-05	0	0	0	0	0	0	8.00E-05
425	SENSITIV	SEN424	294410	4029091	NonCancer	0	0	0	0	0	7.96E-05	0	0	0	0	0	0	7.96E-05
430	SENSITIV	SEN429	294441	4028991	NonCancer	0	0	0	0	0	7.91E-05	0	0	0	0	0	0	7.91E-05
39	SENSITIV	SEN38	294604	4028647	NonCancer	0	0	0	0	0	7.85E-05	0	0	0	0	0	0	7.85E-05
40	SENSITIV	SEN39	294550	4028726	NonCancer	0	0	0	0	0	7.83E-05	0	0	0	0	0	0	7.83E-05
431	SENSITIV	SEN430	294442	4029020	NonCancer	0	0	0	0	0	7.83E-05	0	0	0	0	0	0	7.83E-05
13	SENSITIV	SEN12	294409	4029187	NonCancer	0	0	0	0	0	7.74E-05	0	0	0	0	0	0	7.74E-05
38	SENSITIV	SEN37	294603	4028671	NonCancer	0	0	0	0	0	7.74E-05	0	0	0	0	0	0	7.74E-05
435	SENSITIV	SEN434	294510	4028865	NonCancer	0	0	0	0	0	7.62E-05	0	0	0	0	0	0	7.62E-05
432	SENSITIV	SEN431	294553	4028790	NonCancer	0	0	0	0	0	7.55E-05	0	0	0	0	0	0	7.55E-05
37	SENSITIV	SEN36	294608	4028714	NonCancer	0	0	0	0	0	7.52E-05	0	0	0	0	0	0	7.52E-05
15	SENSITIV	SEN14	294439	4029182	NonCancer	0	0	0	0	0	7.51E-05	0	0	0	0	0	0	7.51E-05
14	SENSITIV	SEN13	294437	4029213	NonCancer	0	0	0	0	0	7.46E-05	0	0	0	0	0	0	7.46E-05
434	SENSITIV	SEN433	294545	4028875	NonCancer	0	0	0	0	0	7.31E-05	0	0	0	0	0	0	7.31E-05
35	SENSITIV	SEN34	294554	4028897	NonCancer	0	0	0	0	0	7.17E-05	0	0	0	0	0	0	7.17E-05
34	SENSITIV	SEN33	294555	4028947	NonCancer	0	0	0	0	0	7.02E-05	0	0	0	0	0	0	7.02E-05
429	SENSITIV	SEN428	294542	4029031	NonCancer	0	0	0	0	0	6.92E-05	0	0	0	0	0	0	6.92E-05
21	SENSITIV	SEN20	294511	4029177	NonCancer	0	0	0	0	0	6.91E-05	0	0	0	0	0	0	6.91E-05
36	SENSITIV	SEN35	294610	4028872	NonCancer	0	0	0	0	0	6.90E-05	0	0	0	0	0	0	6.90E-05
16	SENSITIV	SEN15	294522	4029189	NonCancer	0	0	0	0	0	6.80E-05	0	0	0	0	0	0	6.80E-05
428	SENSITIV	SEN427	294559	4029073	NonCancer	0	0	0	0	0	6.71E-05	0	0	0	0	0	0	6.71E-05
31	SENSITIV	SEN30	294608	4028953	NonCancer	0	0	0	0	0	6.67E-05	0	0	0	0	0	0	6.67E-05
32	SENSITIV	SEN31	294618	4028943	NonCancer	0	0	0	0	0	6.64E-05	0	0	0	0	0	0	6.64E-05
427	SENSITIV	SEN426	294563	4029118	NonCancer	0	0	0	0	0	6.60E-05	0	0	0	0	0	0	6.60E-05
30	SENSITIV	SEN29	294607	4028983	NonCancer	0	0	0	0	0	6.59E-05	0	0	0	0	0	0	6.59E-05
33	SENSITIV	SEN32	294620	4028957	NonCancer	0	0	0	0	0	6.59E-05	0	0	0	0	0	0	6.59E-05
17	SENSITIV	SEN16	294562	4029177	NonCancer	0	0	0	0	0	6.51E-05	0	0	0	0	0	0	6.51E-05
25	SENSITIV	SEN24	294609	4029080	NonCancer	0	0	0	0	0	6.36E-05	0	0	0	0	0	0	6.36E-05
28	SENSITIV	SEN27	294619	4029053	NonCancer	0	0	0	0	0	6.36E-05	0	0	0	0	0	0	6.36E-05
26	SENSITIV	SEN25	294618	4029080	NonCancer	0	0	0	0	0	6.31E-05	0	0	0	0	0	0	6.31E-05
18	SENSITIV	SEN17	294580	4029246	NonCancer	0	0	0	0	0	6.29E-05	0	0	0	0	0	0	6.29E-05
22	SENSITIV	SEN21	294595	4029194	NonCancer	0	0	0	0	0	6.26E-05	0	0	0	0	0	0	6.26E-05
24	SENSITIV	SEN23	294631	4029107	NonCancer	0	0	0	0	0	6.18E-05	0	0	0	0	0	0	6.18E-05
29	SENSITIV	SEN28	294664	4029029	NonCancer	0	0	0	0	0	6.17E-05	0	0	0	0	0	0	6.17E-05
23	SENSITIV	SEN22	294619	4029209	NonCancer	0	0	0	0	0	6.08E-05	0	0	0	0	0	0	6.08E-05
19	SENSITIV	SEN18	294630	4029179	NonCancer	0	0	0	0	0	6.06E-05	0	0	0	0	0	0	6.06E-05

## Appendix B. Biological Resources Evaluation

**MATHEWS DITCH COMPANY**

# **MATHEWS BASIN PROJECT BIOLOGICAL EVALUATION**

**TULARE COUNTY  
AUGUST 2024**

**PREPARED FOR:**

Mathews Ditch Company  
TULARE COUNTY

**PREPARED BY:**

PROVOST & PRITCHARD CONSULTING GROUP  
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PRITCHARD**

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## ACRONYMS AND ABBREVIATIONS

BMP .....	Best Management Practices
CDFW.....	California Department of Fish and Wildlife
CEQA .....	California Environmental Quality Act
CESA .....	California Endangered Species Act
CFR .....	Code of Federal Regulations
City .....	City of Visalia
CNDDb.....	California Natural Diversity Database
CNPS.....	California Native Plant Society
County.....	Tulare County
CWA .....	Clean Water Act
ECOS.....	United States Fish and Wildlife Service’s Environmental Conservation Online System
EPA .....	Environmental Protection Agency
ESA .....	Endangered Species Act
°F.....	degrees Fahrenheit
HCP .....	Habitat Conservation Plan
HUC .....	Hydrologic Unit Code
IPaC .....	United States Fish and Wildlife Service’s Information for Planning and Consultation system
MBTA.....	Migratory Bird Treaty Act
MDC .....	Mathews Ditch Company
NCCP.....	Natural Community Conservation Plan
NPDES.....	National Pollution Discharge Elimination System
NRCS.....	Natural Resources Conservation Service
NWI .....	National Wetlands Inventory
Project.....	Mathews Basin Project
Provost & Pritchard.....	Provost & Pritchard Consulting Group
River .....	Saint John’s River
RWQCB.....	Regional Water Quality Control Board
SWPPP .....	Storm Water Pollution Prevention Plan
SWANCC Decision.....	<i>2001 Solid Waste Agency of Northern Cook County v. U. S. Army Corps of Engineers</i>
SWRCB.....	State Water Resources Control Board
USACE.....	United States Army Corps of Engineers
USDA .....	United States Department of Agriculture
USFWS.....	United States Fish and Wildlife Service



USGS..... United States Geological Survey  
WDR ..... Waste Discharge Requirements  
WEAP..... Workers Environmental Awareness Program  
WOTUS..... Waters of the United States

# 1 INTRODUCTION

This Biological Evaluation, prepared by Provost & Pritchard Consulting Group (Provost & Pritchard) in compliance with the California Environmental Quality Act (CEQA), includes descriptions of the biological resources present or with potential to occur within the proposed Mathews Ditch Company (MDC) Mathews Basin Project (or “Project”), potential project-related impacts to those resources, and mitigation measures to reduce these impacts to a less-than-significant level under CEQA.

## 1.1 PROJECT DESCRIPTION

The Project site (or “site”) is located in the San Joaquin Valley, just north of the limits of the City of Visalia (City) in Tulare County, California (see [Figure 1](#) and [Figure 2](#)). The site includes approximately 113 acres and is comprised of a ruderal lot, which was previously a walnut orchard, a portion of the Saint John’s River (River) and its associated riparian zone, and a berm separating the River from the ruderal lot (see [Figure 3](#)). Surrounding lands to the north, south, and east are primarily residential, and a paved road runs adjacent to the east boundary. To the south and west sides of the site across the River is a farm facility with horse pastures, a large materials and equipment yard, and a small grape orchard.

The MDC is a private agricultural irrigation company located in Tulare County. MDC proposes to construct a turnout and pump structure facility on the bank of the River with a capacity to divert water at a rate of approximately 50 cubic feet per second (cfs). The proposed turnout facility would allow MDC to divert surface water from the River into a proposed multi-cell recharge basin to increase groundwater storage. The proposed facility would consist of a cast-in-place concrete structure, control gate(s), trash rack, and related appurtenances on the north bank of the River. The concrete turnout structure would connect to an inlet structure approximately 300 linear feet from the River in a proposed distribution channel through reinforced concrete piping, equipped with a metered connection. The excavation depth for the structure would be up to 15 feet below ground surface. The Project would also include a conservation space area that would be pedestrian accessible. The proposed facilities would be owned and operated by MDC.

## 1.2 REPORT OBJECTIVES

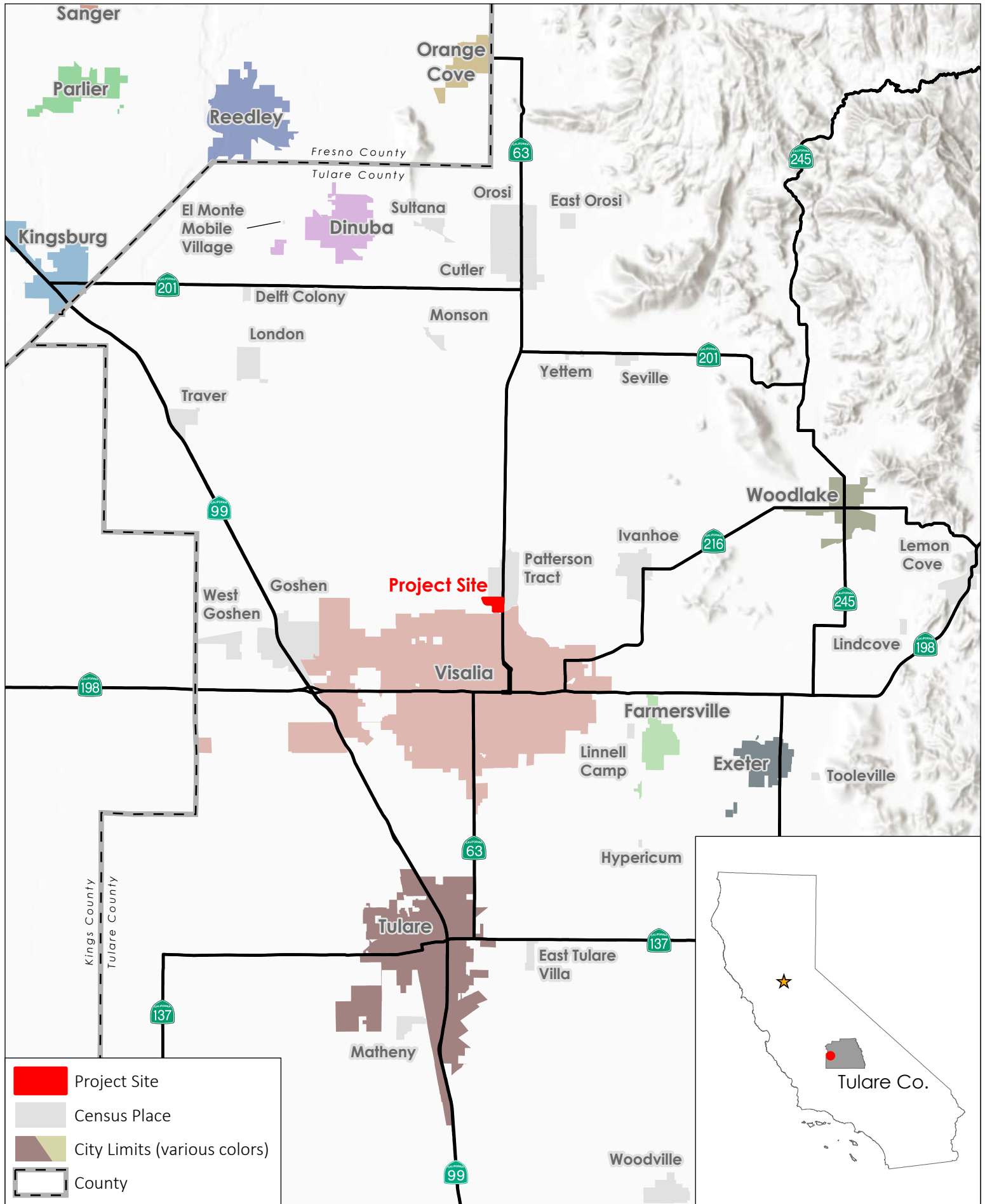
Construction activities such as those proposed by the Project could potentially damage biological resources or habitats that are critical for sensitive plant and wildlife species. In cases such as these, development may be regulated by state or federal agencies, and/or addressed by local regulatory agencies.

This report addresses issues related to the following:

- The presence of sensitive biological resources on the site, or with the potential to occur on the site.
- The federal, state, and local regulations regarding these resources.
- Mitigation measures that may 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 to:

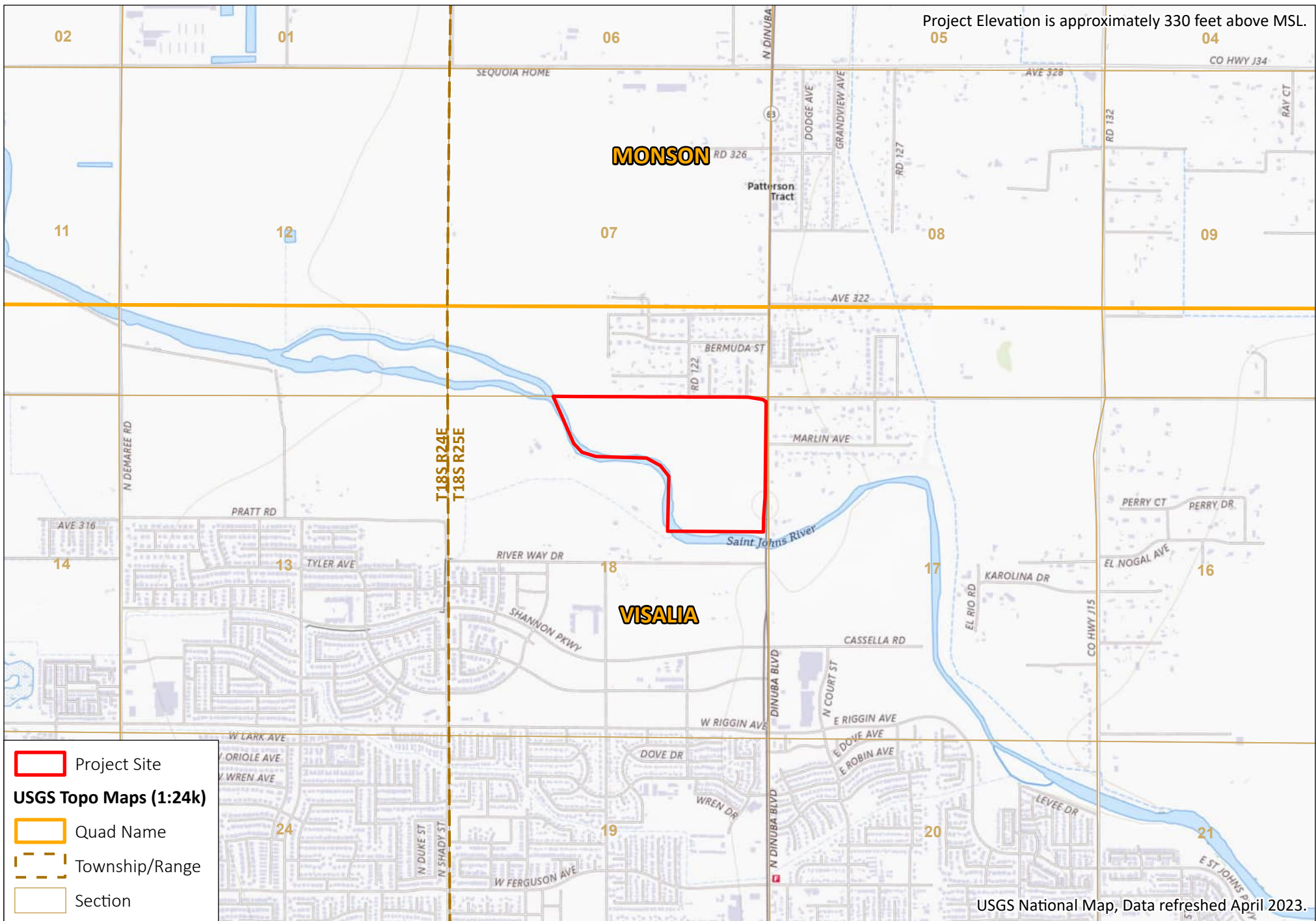
- Summarize all site-specific information related to existing biological resources.
- Make reasonable inferences about the biological resources that could occur on the site based on habitat suitability and the proximity of the site to a species’ known range.
- Summarize all state and federal natural resource protection laws that may be relevant to implementation of the Project.
- Identify and discuss Project impacts and effects to biological resources likely to occur onsite within the context of CEQA and/or state or federal laws.



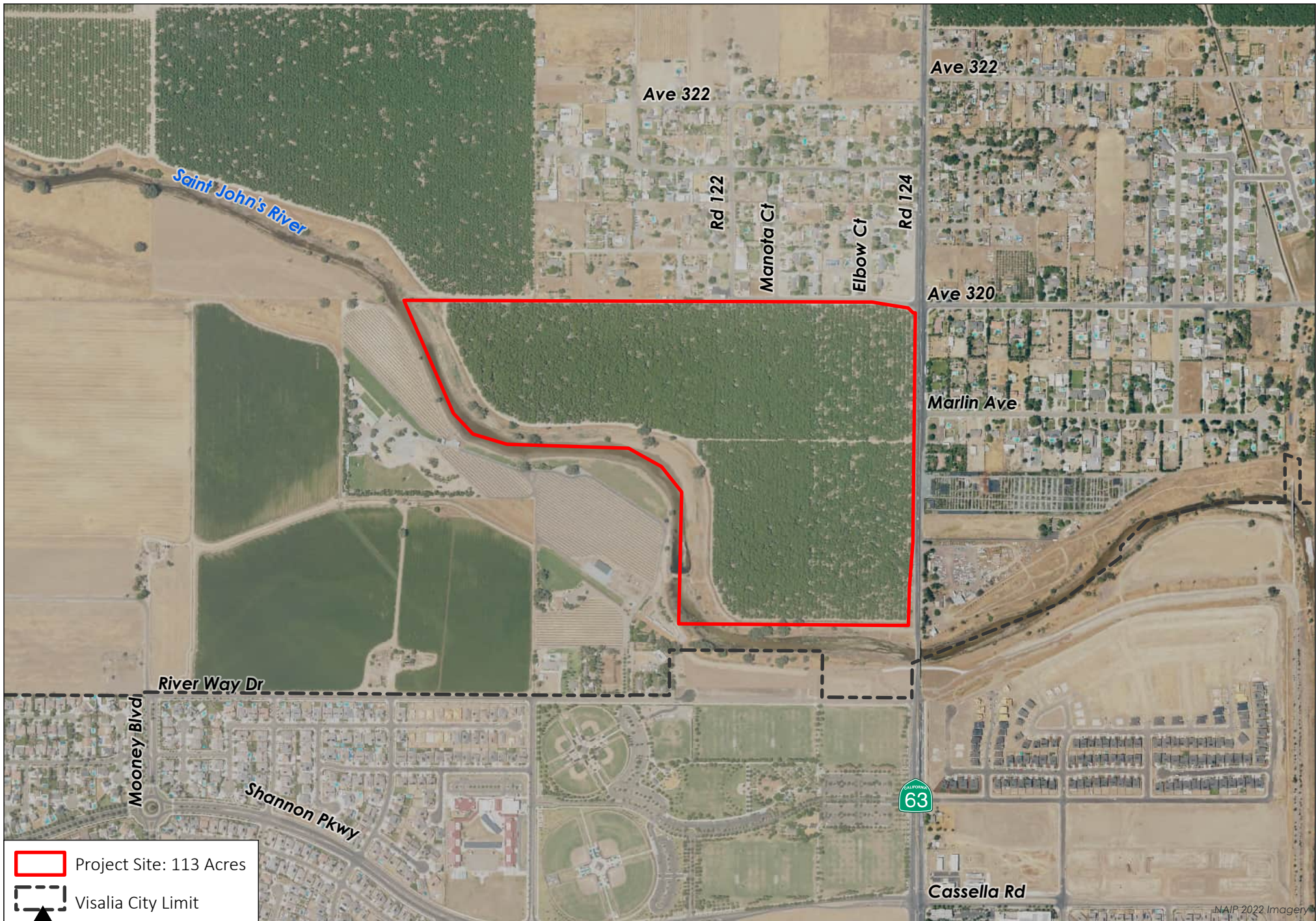
## Regional Vicinity Map

Consolidated Peoples Ditch Company - Mathews Basin Project

**PROVOST & PRITCHARD**  
Fig 1. Page 1-2







- Identify and prescribe a set of avoidance and minimization measures that would reduce impacts to a less-than-significant level (as identified by CEQA) and are generally consistent with recommendations of the resource agencies for affected biological resources.

### 1.3 STUDY METHODOLOGY

A reconnaissance-level field survey of the site was conducted on May 13, 2024, by Provost & Pritchard biologist/environmental specialist, Kira McCall. The survey consisted of walking and driving throughout the site while identifying and noting land uses, biological habitats and communities, and plant and animal species encountered. Habitats were also assessed to help with determining if they could be suitable for various rare or protected plant and animal species. Representative photographs of the site were taken and are presented in [Appendix A](#).

Miss McCall then utilized the results of the field survey to conduct an analysis of potential project-related impacts to biological resources based on the resources known to occur or with the potential to occur within the site. Sources of information used in preparation of this analysis included: California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB; see [Appendix B](#) for the species list) and California Wildlife Habitat Relationships 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 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).



## 2 EXISTING CONDITIONS

### 2.1 REGIONAL SETTINGS

#### 2.1.1 TOPOGRAPHY

The site is located within the *Visalia* U. S. Geological Survey (USGS) 7.5-minute topographic quadrangle in the northeast corner of *Section 18, Township 18 South, Range 25 East*, and the topography of the site is relatively flat with elevations around 330 feet above mean sea level (see [Figure 2](#)).

#### 2.1.2 CLIMATE

Like most of California, the Project site experiences a Mediterranean climate. Warm, dry summers are followed by cool, moist winters. Over the course of the year, the temperature typically varies from 38°F to 96°F and is rarely below 30°F or above 103°F. The hottest month of the year in Visalia is July, with an average high of 96°F and low of 65°F. The coldest month of the year in Visalia is December, with an average low of 39°F and high of 57°F. On average, the City receives approximately 10 inches annual precipitation in the form of rain, falling mainly from December to March (Time and Date 2024) and the site would be expected to receive similar amounts of rain.

#### 2.1.3 SOILS

Three soil mapping units representing two soil types were identified within the Project site and are listed with their core properties according to the Major Land Resource Area of California in [Table 1](#), below (see [Appendix D](#) for the Web Soil Survey Report). The Flamen and Grangeville soils are considered prime for agriculture when irrigated. Riverwash is a subcategory of barren land often found in floodplains and the bed of streams with little to no vegetation and a substrate of mainly sand.

**Table 1: List of Soils Located on the Project Site and Their Basic Properties**

Soil	Soil Map Unit	Percent of Site	Hydric Soil Category	Drainage	Permeability	Runoff
<i>Flamen</i>	Loam, 0 to 2 percent slopes	39.5%	Predominantly Nonhydric	Moderately well drained	Moderately low to moderately high	Low
<i>Grangeville</i>	Sandy loam, drained, 0 to 2 percent slopes	47.1%	Predominantly hydric	Somewhat poorly drained	High	Negligible
<i>Riverwash</i>	-	13.4%	Predominantly hydric	-	-	-

Hydric soil ratings are derived from specific soil properties as well as climate, parent material, vegetation, landform type, and biological activity of a certain location. Soils that are considered predominantly hydric make up 60.5% of the Project site and correspond with the River, the portion of the Project site dedicated to agriculture, and the berm that separates the two. The Flamen soil is considered predominantly nonhydric and was only found to be associated with the remaining agricultural portion of the Project site.

### 2.2 BIOTIC HABITATS

Three biotic habitats were observed within the site and included ruderal, riverine/riparian, and oak grassland (see [Figure 4](#)). These habitats and their constituent plant and animal species are described in more detail in the following sections.

### 2.2.1 RUDERAL

The Project site was primarily made up of a large ruderal field that had at one time supported an orchard of walnut trees. This habitat was bordered on the east side by California State Route 63, a busy, main roadway that runs north/south through the center of the City. The majority of this habitat was vegetated with great brome (*Bromus diandrus*) and wall barley (*Hordeum murinum*). However, there were some bare dirt access roads running through the field. In addition, large pits had been excavated within portions of the field and the excavated soil had been piled in mounds adjacent to each pit. Other vegetation species observed within this habitat included flatspine bur ragweed (*Ambrosia acanthicarpa*), Menzie's fiddleneck (*Amsinckia menziesii*), asthmaweed (*Conyza bonariensis*), poison hemlock (*Conium maculatum*), mustard sp., prickly lettuce (*Lactuca serriola*), Canada horseweed (*Conyza canadensis*), black nightshade (*Solanum nigrum*), dwarf nettle (*Urtica urens*), two English walnut trees (*Juglans regia*), and milk thistle (*Silybum marianum*).

The survey of the ruderal habitat resulted in the observation of wildlife species including mourning dove (*Zenaida macroura*), California ground squirrel (*Otospermophilus beecheyi*), cliff swallow (*Petrochelidon pyrrhonota*), and lesser goldfinch (*Spinus psaltria*). A berm had been constructed along the east side of the field and numerous small mammal burrows were observed within this berm. Only California ground squirrels were seen using these burrows.

The ruderal habitat was highly disturbed and located next to a main roadway for the City. This habitat was actively being excavated at the time of the survey.

### 2.2.2 OAK GRASSLAND

A large berm within the oak grassland habitat separated the ruderal habitat from the riverine/riparian habitat associated with the Saint John's River. The oak grassland habitat was vegetated with non-native grasses, including johnsongrass (*Sorghum halepense*), great brome, and wall barley, tree tobacco (*Nicotianus glauca*), sacred datura (*Datura wrightii*), curly dock (*Rumex crispus*), blessed milkthistle (*Silybum marianum*) and Jersey cudweed (*Pseudognaphalium luteoalbum*), and valley oak trees (*Quercus lobata*) were sparsely growing. An unmaintained access road was observed along the crest of the berm, and tents, camp stoves, and chairs were present.

California scrub jay (*Aphelocoma californica*) and California ground squirrel were observed, and an unidentified woodpecker was heard in this habitat.

The oak grassland within the Project site is moderately disturbed but can provide valuable habitat to a variety of wildlife, year-round. A dead tree was standing along the slope of the berm, which could be used by foraging birds and raptors for perching and hunting prey.

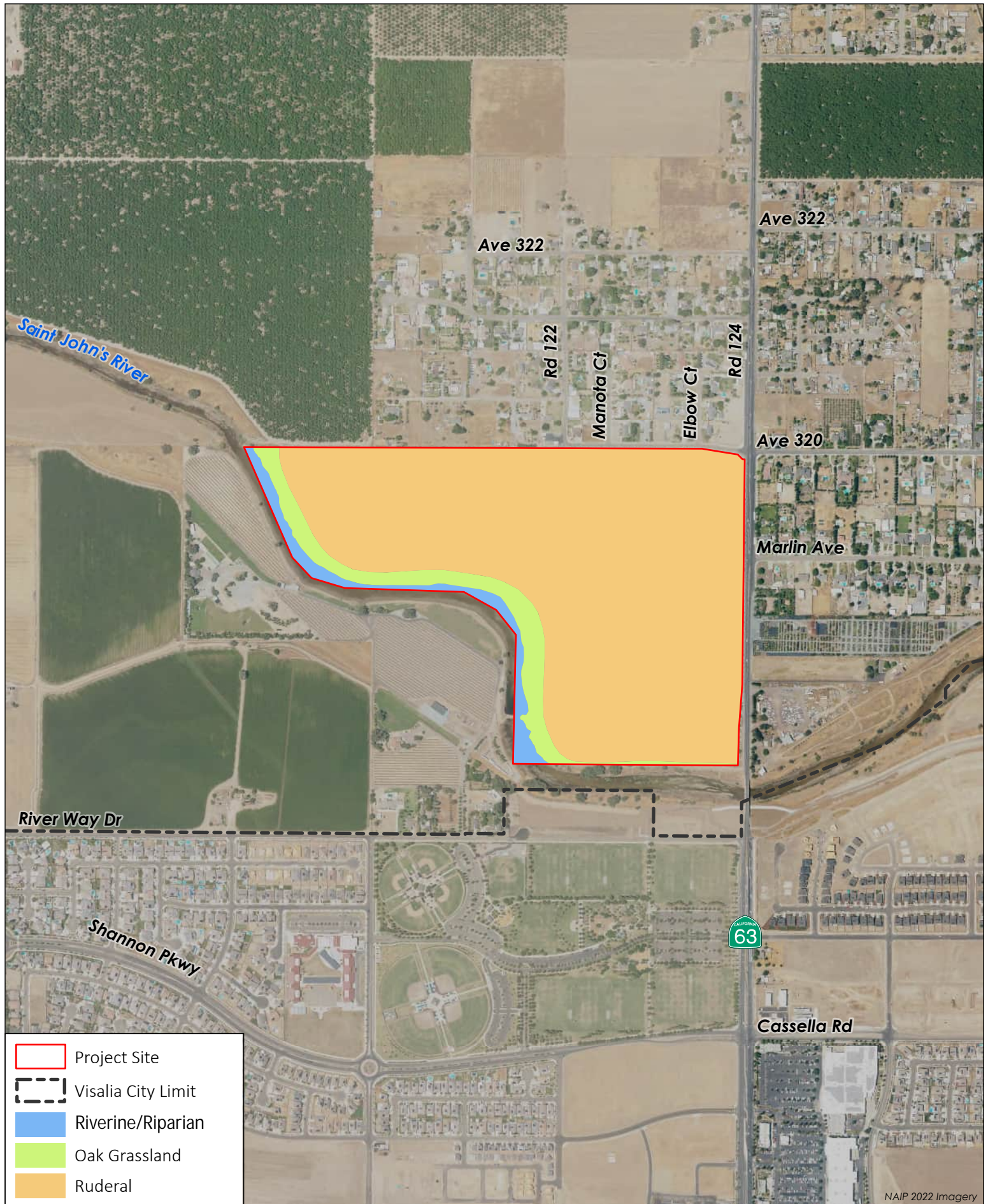
### 2.2.3 RIVERINE/RIPARIAN

The riverine/riparian habitat included an approximately 0.9-mile-long portion of the Saint John's River, which contained water at the time of the survey. The River exhibited a bed, banks, and an ordinary high-water mark (OHWM). Vegetation species associated with the River included tall flatsedge (*Cyperus eragrostis*), bearded rabbitsfoot grass (*Polypogon viridis*), barnyardgrass (*Echinochloa crus-galli*), water pepper (*Polygonum hydropiper*), and seep monkeyflower (*Mimulus guttatus*), dwarf nettle (*Urtica urens*), johnsongrass, blessed milkthistle, and curly dock.

Wildlife observed within this habitat included mallard ducks (*Anas platyrhynchos*), cliff swallow, lesser goldfinch, and red shouldered hawk (*Buteo lineatus*), and raccoon (*Procyon lotor*) tracks were identified along the banks of the River.



Within the River were partially vegetated islands which could serve as basking sites during low-flow periods for various amphibians and reptiles. The riverine/riparian habitat within the site could offer high-quality habitat to a variety of amphibian, reptile, and avian species. A vehicular bridge crossed over the River outside of the Project site and cliff swallow nests and nesting activity was observed.



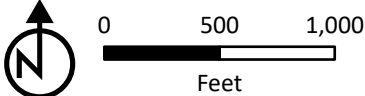
Project Site

Visalia City Limit

Riverine/Riparian

Oak Grassland

Ruderal



## 2.3 NATURAL COMMUNITIES OF SPECIAL CONCERN AND RIPARIAN HABITAT

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 (see [Section 2.6](#)), these natural communities of special concern can be found within the CNDDDB.

According to CNDDDB, there are no recorded observations of natural communities of special concern mapped within, or adjacent to, the site and there were none observed during the field survey. Natural communities of special concern, including Valley Sacaton Grassland, Northern Hardpan Vernal Pool, Northern Claypan Vernal Pool, and Great Valley Valley Oak Riparian Forest, were recorded in the region, but all occurrences have been mapped greater than five miles from the Project site.

Riparian habitat is composed of plant communities that occur along the banks, and sometimes past the banks, of most waterways and is important for numerous wildlife species. CDFW has jurisdiction over most riparian habitats in California. Riparian habitat was observed within the site and was composed of the River and riverine/riparian habitat.

## 2.4 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 was absent from the site and vicinity.

## 2.5 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 riverine/riparian habitat within the Project site likely function as wildlife movement corridor. Aquatic species may use the River to travel, and wildlife tracks, including raccoon, were observed during the field survey.

Native wildlife nursery sites are areas where a species or group of similar species raise their young in a concentrated place. No potential native wildlife nursery sites were observed within the site. However, under the vehicular bridge over the River that was located approximately 250 feet southeast of the Project site, a dense concentration of active cliff swallow (*Petrochelidon pyrrhonota*) nests was observed during the field on the bridge. This bridge would be considered a wildlife nursery area for not only cliff swallows but can also be a roosting site for some bat species that can be found in this region.

## 2.6 SPECIAL STATUS PLANTS AND ANIMALS

California contains several rare plant and animal species. In this context, “rare” is defined as a species known to have low populations or limited distributions. Conversion of habitats to accommodate human population growth in turn reduces the already-limited suitable habitat for rare species. This results in rare and sensitive species becoming increasingly more vulnerable to extirpation. State and federal regulations have provided the CDFW and USFWS with mechanisms 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 animals and plants are referred to as “special status species.”

A query of the CNDDDB for occurrences of special status plant and animal species was conducted for the Visalia USGS 7.5-minute quadrangle that contains the site, and for the eight surrounding USGS quadrangles (*Cairns Corner, Exeter, Goshen, Ivanhoe, Monson, Paige, Traver, and Tulare*; see [Appendix B](#)). A query of the IPaC was also completed for the site (see [Appendix C](#)). These species, and their potential to occur within the APE, are listed in [Table 2](#) and [Table 3](#), below. Other special status species that did not show up in the CNDDDB query, but have the potential to occur in the vicinity, are also included in [Table 3](#). 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 have the potential to occur within the site.

**Table 2: List of Special Status Plants with Potential to Occur Onsite and/or in the Vicinity**

Species	Status*	Habitat	Occurrence within the Project Site
<b>Alkali-sink goldfields</b> ( <i>Lasthenia chrysantha</i> )	CNPS 1B	Found in vernal pool and wet saline flat habitats in the San Joaquin Valley region at elevations below 700 feet. Blooms February – April.	<b>Absent.</b> Habitats required by this species were absent from the site.
<b>Brittlescale</b> ( <i>Atriplex depressa</i> )	CNPS 1B	Found in the Central Valley in alkaline or clay soils, typically in meadows or annual grasslands at elevations below 1,100 feet. Sometimes associated with vernal pools. Blooms June – October.	<b>Absent.</b> Soils required for this species were absent from the site.
<b>California alkali grass</b> ( <i>Puccinellia simplex</i> )	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 3,000 feet. Blooms March – May.	<b>Absent.</b> Habitats required by this species were not observed on site.
<b>California jewelflower</b> ( <i>Caulanthus californicus</i> )	FE, CE, CNPS 1B	Found in the San Joaquin Valley and western Transverse Ranges in sandy soils. Occurs on flats and slopes, generally in non-alkaline grassland at elevations between 200 and 6,100 feet. Blooms February – May.	<b>Unlikely.</b> The site does offer grassland habitat and loamy sandy soils which have the potential to support this species. However, the survey was completed at the end of the blooming period and this species was not observed. Further, recent reports of this species have cited that historical populations in Tulare County have been extirpated (U.S. Fish and Wildlife Service 2013).
<b>California satintail</b> ( <i>Imperata brevifolia</i> )	CNPS 2B	Often found in wet springs, meadows, streambanks, and floodplains, and can also be found in coastal scrub, riparian scrub, Mojavean desert scrub, chaparral, and alkali seeps at elevations below 1,600 feet. Blooms September – May.	<b>Unlikely.</b> The site included streambanks, which are suitable for this species, within the riverine/riparian habitat. However, the last occurrence of this species was recorded as a best guess in the vicinity of the City of Visalia in 1895. Further, there were no observations

Species	Status*	Habitat	Occurrence within the Project Site
			of similar looking species during the field survey. Due to the extent of agricultural disturbance and development within and around the site since then, it is unlikely that the species would be observed within the site.
<b>Coulter's goldfields</b> ( <i>Lasthenia glabrata</i> <i>ssp. coulteri</i> )	CNPS 1B	Found on alkaline and saline soils in vernal pools and playas in grassland at elevations below 4,500 feet. Blooms April – May.	<b>Absent.</b> Soils required by this species were absent from the Project site.
<b>Earlimart orache</b> ( <i>Atriplex cordulata</i> <i>var. erecticaulis</i> )	CNPS 1B	Found in the San Joaquin Valley in saline and alkaline soils, typically within valley grasslands at elevations below 400 feet. Blooms August – September.	<b>Absent.</b> Soils required by this species were absent from the Project site.
<b>Heartscale</b> ( <i>Atriplex cordulata</i> <i>var. cordulata</i> )	CNPS 1B	Found in the Central Valley in saline or alkaline soils within shadscale scrub, valley grassland, and wetland-riparian communities at elevations below 250 feet. Blooms June – July.	<b>Absent.</b> Soils required by this species were absent from the Project site.
<b>Hoover's spurge</b> ( <i>Euphorbia hooveri</i> )	FT, CNPS 1B	Found in vernal pools within valley grassland, freshwater wetland, and riparian communities at elevations below 800 feet. Blooms July – September.	<b>Absent.</b> Habitats required by this species were absent from the Project site.
<b>Lassics lupine</b> ( <i>Lupinus constancei</i> )	FE	Only found near the summits of remote mountains in northern California called the Lassics in Humboldt and Trinity Counties, which have unique serpentine-influenced soils. Occurs at elevations between 5,200 and 5,700 feet. Blooms May-June.	<b>Absent.</b> The site is well outside of the current range and typical elevational range of this species.
<b>Lesser saltscale</b> ( <i>Atriplex minuscula</i> )	CNPS 1B	Found in the San Joaquin Valley in sandy, alkaline soils in alkali scrub, valley and foothill grassland, and alkali sink communities at elevations below 750 feet. Blooms April – October.	<b>Absent.</b> Soils required by this species were absent from the Project site.
<b>Recurved larkspur</b> ( <i>Delphinium recurvatum</i> )	CNPS 1B	Occurs in chenopod scrub, cismontane woodland, and grassland habitats on poorly drained, fine, alkaline soils; often in valley saltbush or valley chenopod scrub communities at elevations between 100 and 2,600 feet. Blooms March – June.	<b>Absent.</b> Soils required by this species were absent from the Project site.

Species	Status*	Habitat	Occurrence within the Project Site
San Joaquin adobe sunburst ( <i>Pseudobahia peirsonii</i> )	FT, CE, CNPS 1B	Found in the San Joaquin Valley and the Sierra Nevada foothills in bare, dark clay soils in valley and foothill grassland and cismontane woodland communities at elevations between 300 and 3,000 feet. Blooms March – May.	<b>Absent.</b> Soils required by this species were absent from the Project site.
San Joaquin Valley Orcutt grass ( <i>Orcuttia inaequalis</i> )	FT, CE, CNPS 1B	Found in the eastern San Joaquin Valley and the Sierra Nevada foothills in vernal pools within valley grassland, freshwater wetland, and wetland-riparian communities at elevations below 2,600 feet. Blooms April – September.	<b>Absent.</b> Habitats required by this species were absent from the Project site.
Sanford’s arrowhead ( <i>Sagittaria sanfordii</i> )	CNPS 1B	This species is an aquatic plant and is found in the San Joaquin Valley and other parts of California in freshwater marshes, ponds, canals, and ditches at elevations below 1,000 feet. Blooms May – October.	<b>Possible.</b> The riverine/riparian habitat included a portion of the Saint John’s River, which could provide the required freshwater habitat. There are no recorded observations within the Saint John’s River, but an observation of this species occurred in 2018 approximately 5 miles north of the site within an irrigation ditch.
Spiny-sepaed button-celery ( <i>Eryngium spinosepalum</i> )	CNPS 1B	Found in the Sierra Nevada foothills and the San Joaquin Valley in vernal pools, swales, and roadside ditches. Often associated with clay soils in vernal pools within grassland communities. Occurs at elevations between 50 and 4,200 feet. Blooms April – July.	<b>Absent.</b> Habitats required by this species were absent from the Project site.
Subtle orache ( <i>Atriplex subtilis</i> )	CNPS 1B	Found in the San Joaquin Valley in saline depressions in alkaline soils within valley and foothill grassland communities at elevations below 300 feet. Blooms June – October.	<b>Absent.</b> Soils required by this species were absent from the Project site.
Vernal pool smallscale ( <i>Atriplex persistens</i> )	CNPS 1B	Occurs in the Central Valley in alkaline vernal pools at elevations below 400 feet. Blooms June – September.	<b>Absent.</b> Habitats required by this species were absent from the Project site.
Winter’s sunflower ( <i>Helianthus winteri</i> )	CNPS 1B	Found in the Sierra Nevada foothills on steep, south-facing grassy slopes, rock outcrops, and road-cuts at elevations ranging from 600 to 1,500 feet. Blooms year-round.	<b>Absent.</b> The Project site is outside of the range and typical elevational range for this species.

**Table 3: List of Special Status Animals with Potential to Occur Onsite and/or in the Vicinity**

Species	Status*	Habitat	Occurrence within the Project Site
<b>American badger</b> <i>(Taxidea taxus)</i>	CSSC	Prefers drier open stages of shrub, forest, and herbaceous habitats with friable soils to burrow, but can be found within numerous habitats throughout California, including the margins of agricultural lands. Needs a sufficient prey base of burrowing rodents.	<b>Possible.</b> The site is surrounded by frequently cultivated agricultural lands and busy residential areas, however the ruderal habitat and oak woodland habitat within the site could provide a suitable prey base as well as small mammal burrows for this species. In addition, the riverine/riparian habitat could be used as a wildlife movement corridor, as it would connect the Sierra Nevada foothills directly with the Project site. The nearest recorded observation of this species was approximately 5 miles southeast of the site in 1994.
<b>Burrowing owl</b> <i>(Athene cunicularia)</i>	CSSC	Resides in open, dry grasslands, deserts, scrublands, and other areas with low growing vegetation. Nests and roosts underground in existing burrows created by mammals, most often by ground squirrels, and human-made structures.	<b>Possible.</b> Nesting habitat is present within the ground squirrel burrows in the ruderal habitat of the site. The most recent occurrence according to CNDDB was recorded approximately 4.5 miles north of the site in 2017.
<b>California condor</b> <i>(Gymnogyps californianus)</i>	FE, CE, CFP	Typically nests in cavities in canyon or cliff faces but has also been recorded nesting in giant sequoias in Tulare County. Requires vast expanses of open savannah, grassland, and/or foothill chaparral in mountain ranges of moderate altitude. Forages for carrion up to 100 miles from their roost/nest sites.	<b>Absent.</b> Suitable foraging and nesting habitats were absent from the site.
<b>California tiger salamander – central California DPS</b> <i>(Ambystoma californiense)</i>	FT, CT	Requires vernal pools or seasonal ponds for breeding and small mammal burrows for aestivation. Generally found in grassland and oak savannah plant communities in central California from sea level to 1,500 feet in elevation. Can migrate up to 1.3 miles to breed.	<b>Unlikely.</b> The site does not offer suitable breeding pools or aquatic habitat to support this species. Small mammal burrows were observed in the upland oak grassland habitat, but there are no past observations of this species within 1.3 miles of the site. The closest observation of this species to the site is approximately 4.5 miles north, so migration to the site is unlikely.
<b>Crotch's bumble bee</b> <i>(Bombus crotchii)</i>	CCE	Occurs throughout coastal California, as well as east to the Sierra Nevada-Cascade crest, and south into Mexico. Food plant genera include snapdragons, scorpionweeds,	<b>Absent.</b> Food plants required by this species were absent from the site. Therefore, it is unlikely they would nest within any of the small mammal burrows observed in the site.

Species	Status*	Habitat	Occurrence within the Project Site
		primroses, poppies, and buckwheats.	
<b>Loggerhead shrike</b> <i>(Lanius ludovicianus)</i>	CSSC	Frequents open habitats with sparse shrubs and trees, other suitable perches, bare ground, and low herbaceous cover. In the Central Valley, this species nests in riparian areas, desert scrub, and agricultural hedgerows.	<b>Possible.</b> The habitats within the Project site provide ample resources which could support this species. The riverine/riparian habitat included large valley oak trees for nesting and snags for perching. The oak woodland and ruderal habitats provided both bare ground and low herbaceous cover for foraging. This species was recorded approximately 7 miles northwest in 1992 along Cottonwood Creek in similar habitat.
<b>Monarch butterfly</b> <i>(Danaus plexippus)</i>	FC	Roosts in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby. Larval host plants consist of milkweeds. Winter roost sites extend along the Pacific Coast from northern Mendocino to Baja California, Mexico.	<b>Absent.</b> Suitable wind-protected tree groves and larval host plants were absent from the Project site. This species may pass through the site in route to more suitable habitats.
<b>Northern California legless lizard</b> <i>(Anniella pulchra)</i>	CSSC	Moisture is essential for this species and it is found in moist warm loose soil with plant cover. Occurs in sparsely vegetated areas in beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces with sycamores, cottonwoods, or oaks. Suitable habitat often includes leaf litter under trees and bushes in sunny areas and dunes stabilized with bush lupine and mock heather. Occurs in scattered locations in the San Joaquin Valley, along the southern Sierra Nevada mountains, and on the desert side of Tehachapi Mountains and part of the San Gabriel Mountains.	<b>Possible.</b> The ruderal portion of the site experiences frequent disturbance due to agricultural activities and the entire site is surrounded by commercial and residential development, however the oak woodland habitat contains sandy, loamy soils and loose leaf litter which could be suitable for this species when the soils are moist. The species was last observed in 2015 within the protected Kaweah Oaks Preserve approximately 7.5 miles southeast of the site where there is little to no disturbance.
<b>Northern leopard frog</b> <i>(Lithobates pipiens)</i>	CSSC	Inhabits grassland, wet meadows, potholes, forests, woodland, brushlands, springs, canals, bogs, marshes, and reservoirs in scattered locations in California. Generally, prefers permanent water with abundant riparian vegetation.	<b>Absent.</b> The site offers an intermittent water source via the Saint John's River, and the submerged riparian vegetation on the fringes of the River could provide suitable habitat for this species when water is present. However, due to habitat loss and degradation, the species has



Species	Status*	Habitat	Occurrence within the Project Site
			declined significantly in its western range. In California, the species only exists in scattered populations (McKercher and Gregoire 2024). The last recorded observation of this species was approximately 7 miles north of the site in 1961. Based on the disturbance and extent of development within and around the site and no known introductions of this species in the area, the species can be considered absent in the Project site.
<b>Northwestern pond turtle</b> ( <i>Actinemys marmorata</i> )	FPT, 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.	<b>Possible.</b> The Saint John's River within the site could provide suitable aquatic habitat and vegetation for this species as well as a wildlife movement corridor. The oak woodland habitat within the site would also be suitable for nesting. Potential basking sites were also observed within the riverine/riparian habitat.
<b>Pallid bat</b> ( <i>Antrozous pallidus</i> )	CSSC	Found in grasslands, chaparral, and woodlands, where it feeds on ground- and vegetation-dwelling arthropods, and occasionally takes insects in flight. Prefers to roost in rock crevices, but may also use tree cavities, caves, bridges, and other human-made structures.	<b>Unlikely.</b> The site and surrounding areas include oak woodland habitat adjacent to the Saint John's River and agricultural/farmland areas which could provide foraging opportunities. A vehicular bridge is located approximately 250 south of the site which could provide suitable roosting habitat, but there are no resources for roosting within the site. At most, the species could be seen foraging within the site.
<b>San Joaquin kit fox</b> ( <i>Vulpes macrotis mutica</i> )	FE, CT	Opportunistically forages in a variety of habitats. Dens in burrows within alkali sink, valley grassland, and woodland habitats in valleys and adjacent foothills and in human-made structures in cities, rangeland, and agricultural areas.	<b>Possible.</b> The ruderal habitat of the site offers burrowing potential, and the site itself is located within an agricultural/residential region in which this species is known to occur. The most recent observation of this species was five miles west of the site in 2003.
<b>Swainson's hawk</b> ( <i>Buteo swainsoni</i> )	CT	Nests in large trees in open areas adjacent to grasslands, grain or alfalfa fields, or livestock pastures suitable for supporting rodent populations.	<b>Possible.</b> The site included suitable grassland habitat with scattered trees and snags for perching and nesting, and ruderal habitat which appeared to support a large rodent population. Several recorded observations have occurred within a 10-mile radius in similar habitats.
<b>Tipton kangaroo rat</b>	FE, CE	Inhabits saltbush scrub and sink scrub communities in the Tulare	<b>Absent.</b> Habitats required by this species were absent from the site.

Species	Status*	Habitat	Occurrence within the Project Site
<i>(Dipodomys nitratoide nitratoide)</i>		Lake Basin of the southern San Joaquin Valley. This species needs soft friable soils to burrow.	
Tricolored blackbird ( <i>Agelaius tricolor</i> )	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 foraging in dairy farm feed fields.	<b>Unlikely.</b> Suitable nesting habitat was absent from the site. This species could forage within the oak grassland of the site.
Valley elderberry longhorn beetle ( <i>Desmocerus californicus dimorphus</i> )	FT	Lives in mature elderberry shrubs in the Central Valley and adjacent foothills from Tehama County south through Merced and Mariposa Counties with two scattered populations in Madera and Fresno Counties. Adults are active from March to June.	<b>Absent.</b> Elderberry shrubs were absent from the site and immediate vicinity and the site is well south of the two scattered populations in Madera and Fresno Counties.
Vernal pool fairy shrimp ( <i>Branchinecta lynchi</i> )	FT	Occupies vernal and seasonal pools, with clear to tea-colored water, in grass or mud-bottomed swales, and basalt depression pools.	<b>Absent.</b> Habitats required by this species were absent from the site.
Vernal pool tadpole shrimp ( <i>Lepidurus packardii</i> )	FE	Occurs in vernal pools, clear to tea-colored water, in grass or mud-bottomed swales, and basalt depression pools.	<b>Absent.</b> Habitats required by this species were absent from the site.
Western mastiff bat ( <i>Eumops perotis californicus</i> )	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.	<b>Unlikely.</b> While the oak grassland habitat within the site and agricultural/farmland areas surrounding the site could provide prey for feeding, there are no resources to support roosting within the site. The most recent observation of this species was approximately 5 miles south of the site in 2002 adjacent to Packwood Creek.
Western spadefoot ( <i>Spea hammondi</i> )	FPT, CSSC	The majority of the time this species is terrestrial and occurs in small mammal burrows and soil cracks, sometimes in the bottom of dried pools. 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 or seasonal	<b>Possible.</b> The riverine/riparian habitat could provide the aquatic habitat needed for breeding. In addition, the oak grassland habitat directly adjacent to the River offered existing small mammal burrows within which this species could inhabit outside of the breeding season. The nearest recorded observation of this species was approximately 5 miles north of the site in 2012 within a vernal pool complex.

Species	Status*	Habitat	Occurrence within the Project Site
		pools, that hold water for a minimum of three weeks, are necessary for breeding.	
<b>Western yellow-billed cuckoo</b> <i>(Coccyzus americanus occidentalis)</i>	FT, CE	Suitable nesting habitat in California includes dense riparian willow-cottonwood and mesquite habitats along a perennial river. Once common in the California Central Valley, as well as coastal valleys and riparian habitats east of the Sierra Nevada, habitat loss now constrains the California breeding population to small numbers of birds.	<b>Absent.</b> Nesting habitats required by this species were absent from the site.

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

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

**STATUS CODES**

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

**CNPS LISTING**

1B	Plants rare, threatened, or endangered in California and elsewhere.
2B	Plants rare, threatened, or endangered in California but common elsewhere.

## 3 IMPACTS AND MITIGATION

### 3.1 SIGNIFICANCE CRITERIA

#### 3.1.1 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.”

### 3.2 RELEVANT GOALS, POLICIES, AND LAWS

#### 3.2.1 TULARE COUNTY ORDINANCE

The Tulare County General Plan contains the following goals and policies related to the Project:

#### 3.2.1.1.1 WATER RESOURCES

**Goal COS-1:** To preserve and enhance surface waterways and aquifers.

**Policy COS-P1.1:** Regional Groundwater Protection. The City shall work with Tulare County and special districts to help protect groundwater resources from overdraft by promoting water conservation and groundwater recharge efforts.

#### 3.2.1.1.2 BIOLOGICAL RESOURCES

**Goal COS-2:** To preserve and protect sensitive significant habitats, enhance biodiversity, and promote healthy ecosystems throughout the Urban Development Boundary (UDB).

**Policy COS-P2.1:** Protection of Rare and Endangered Species. The City shall support preservation, restoration, and enhancement of designated habitats of State or federally listed rare, threatened, endangered and/or other sensitive and special status species.

**Policy COS-P2.2:** Protection of Natural Areas. The City shall support preservation, maintenance, restoration, and enhancement of natural systems, waterways, and open space.

**Policy COS-P2.3:** Development in Environmentally Sensitive Areas. The City shall require careful planning of new development in environmentally sensitive habitat areas and to avoid or otherwise mitigate potential significant impacts whenever feasible. The focus of efforts shall be on Project design to avoid impacts whenever feasible. Environmentally sensitive habitat shall include, at a minimum, the following:

- Any habitat for a federally- or State-listed rare, threatened, or endangered animal or plant; and
- Identifiable wildlife movement corridors, including, but not limited to, non-fragmented stream environment zones, and avian and mammalian migratory routes.

### 3.2.2 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.

### 3.2.3 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.

### 3.2.4 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).

### 3.2.5 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.

### 3.2.6 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.

### 3.2.7 WETLANDS AND OTHER "JURISDICTIONAL WATERS"

The definition of "waters of the United States" (WOTUS) often changes from one presidential administration to the next and can also be affected by the outcomes of court cases involving federal jurisdiction of waters. The current definition (i.e. "Conforming Rule") was adopted under the Biden Administration in early 2023 and was subsequently revised in September 2023 to incorporate the U.S. Supreme Court's May 25, 2023, decision in the case of *Sackett v. Environmental Protection Agency* (EPA). The Conforming 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. 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) *Traditional Navigable Waters, the territorial seas, or interstate waters (not including interstate wetlands);*
- 2) *Impoundments of waters of the United States;*
- 3) *Tributaries of:*
  - a. *Traditional Navigable Waters, territorial seas, or interstate waters (not including interstate wetlands); or*
  - b. *Impoundments of water of the United States when the tributaries meet the relatively permanent standard.*
- 4) *Wetlands:*
  - a. *Adjacent to Traditional Navigable Waters, the territorial seas, or interstate waters;*
  - b. *Adjacent to and with a continuous surface connection to relatively permanent impoundments of waters of the United States*
  - c. *Adjacent to and with a continuous surface connection to relatively permanent jurisdictional tributaries.*

- 5) *Intrastate lakes and ponds not identified in items 1 through 4 of this section 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 above.*

Exclusions under the new definition include the following:

- 1) *Waste treatment systems, including treatment ponds or lagoons, designed to meet the requirements of the CWA;*
- 2) *Prior converted cropland designated by the Secretary of Agriculture. The exclusion would cease upon a change of use, which means that the area is no longer available for the production of agricultural commodities. Notwithstanding the determination of an area's status as prior converted cropland by any other Federal agency, for the purposes of the CWA, the final authority regarding CWA jurisdiction remains with United States EPA;*
- 3) *Ditches (including roadside ditches) excavated wholly in and draining only dry land and that do not carry a relatively permanent flow of water;*
- 4) *Artificially irrigated areas that would revert to dry land if the irrigation ceased;*
- 5) *Artificial lakes or ponds created by excavating or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;*
- 6) *Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating or diking dry land to retain water for primarily aesthetic reasons;*
- 7) *Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States; and*
- 8) *Swales and erosional features (e.g., gullies, small washes) characterized by low volume, infrequent, or short duration flow.*

The Conforming 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 a jurisdictional water. The Supreme Court heard *Sackett v. United States 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 was enacted in September 2023.

The USACE regulates the filling or grading of WOTUS 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 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 WOTUS 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 WOTUS, 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 WOTUS may require an 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 any material from their bed or bank, or deposits debris within them 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 avoidance and minimization measures will be implemented to protect the habitat values of the lake or drainage in question and the plant, fish, and wildlife species that may be present within these resources.

### 3.3 POTENTIALLY SIGNIFICANT PROJECT-RELATED IMPACTS AND MITIGATION

Species or groups of species protected by California Fish and Game Code, CDFW, USFWS, or CEQA that have the potential to be impacted by Project activities include: American badger, burrowing owl, loggerhead shrike, northern California legless lizard, northwestern pond turtle, Sanford’s arrowhead, San Joaquin kit fox, nesting Swainson’s hawk and other migratory birds, and western spadefoot. Other sensitive resources that have the potential to be impacted by Project activities include wildlife movement corridors and waters of the state or waters of the United States. Corresponding mitigation measures can be found below.

#### 3.3.1 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 would be a violation of state and federal laws or considered a potentially significant impact under CEQA. Implementation of the following measures will help reduce potential impacts to these resources to a less than significant level under CEQA and will help with complying with state and federal laws protecting these resources:

***Mitigation Measure BIO-1a (WEAP Training):*** Prior to initiating construction activities (including staging and mobilization), all personnel associated with project construction will attend a mandatory Worker Environmental Awareness Program (WEAP) training, conducted by a qualified biologist, to aid workers in identifying special status resources that may occur within the Project site. The specifics of this program will include identification of the sensitive species and suitable habitats with the potential to occur on the site, 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 that potentially occur 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 and sensitive habitats such as wetlands with potential to occur onsite, 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 (BMPs):** The Project proponent will ensure that all workers employ the following best management practices (BMPs) in order to avoid and minimize potential impacts to special status species:

- Vehicles will observe a 15-mph speed limit while on unpaved access routes.
- 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 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.
- 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 CDFW and/or USFWS.

### 3.3.2 PROJECT-RELATED IMPACTS TO SPECIAL STATUS PLANT SPECIES

Sanford’s arrowhead was the only special status plant species that was identified to potentially occur within or adjacent to the site. Projects that adversely affect special status plants or result in the mortality of special status plants would be considered a significant impact under CEQA.

Implementation of the following measures will reduce potential impacts to special status plants to a less than significant level under CEQA.

**Mitigation Measure BIO-2a (Focused Survey):** A qualified botanist/biologist (someone who is able to identify Sanford’s arrowhead) will conduct focused botanical surveys of aquatic areas during the appropriate blooming season for Sanford’s arrowhead (May-October), according to CDFW’s Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (2018) for areas where ground disturbance will occur and prior to the start of construction.

**Mitigation Measure BIO-2b (Avoidance):** If special status plants are identified during a survey, an avoidance buffer will be determined by the qualified botanist/biologist based on the proximity to construction activities and, if necessary, use of exclusion fencing, will be placed around the area to avoid disturbance to the plants and its root system.

**Mitigation Measure BIO-2c (Formal Consultation):** If rare plant individuals or populations or sensitive natural communities are detected within work areas during the focused botanical

survey(s), and the plants cannot be avoided, the Project proponent will determine next steps for relocation.

### **3.3.3 PROJECT-RELATED MORTALITY AND/OR DISTURBANCE TO AMERICAN BADGER**

The Project site contained oak grassland habitat and riverine/riparian habitat that could potentially be used by American badger. Multiple small mammal burrows were observed within the oak grassland habitat adjacent to the River. American badgers denning within the Project site during construction have the potential to be injured or killed by Project-related activities. Projects that result in the mortality of individuals would be considered a potentially significant impact under CEQA.

Implementation of the following measures will reduce potential impacts to American badgers to a less than significant level under CEQA. The following measures will be implemented prior to the start of construction:

***Mitigation Measure BIO-3a (Pre-construction Take Avoidance Survey):*** A qualified biologist (someone familiar with the identification and sign of this species) will conduct a pre-construction survey of the Project site within seven (7) days prior to vegetation clearing or ground disturbing activities. The goal of this survey is to search for potentially active badger dens.

***Mitigation Measure BIO-3b (Remote Cameras):*** If potential dens for American badger are detected during the pre-construction survey, each potential den will be monitored with remote cameras for a period of three consecutive nights. If there is no activity at the den location recorded for three consecutive nights, the den can be deemed “inactive” or “unoccupied” and closed or excavated.

***Mitigation Measure BIO-3c (Den Avoidance):*** If an American badger is denning on or within 50 feet of the Project site, the Project proponent shall avoid the den by a minimum 50-foot buffer.

***Mitigation Measure BIO-3d (Timed Den Excavation):*** If an American badger is denning on or within 50 feet of the Project site and it cannot be avoided, the badger may be evicted, and the den excavated outside of the natal season (generally March 15 – June 15) or if it is determined that there are no cubs in the den. Prior to the planned eviction and den excavation, a remote camera will be placed at the den entrance for a minimum of three consecutive nights to record the general time when the badger leaves the den. If it is outside of the natal season or it is determined by a qualified biologist that there are no cubs present in the den the badger will be evicted from the den and the den excavated by hand, with the assistance of machinery, after it has left the den for that night. Should any cubs be discovered during the excavation the work will stop and the crew will leave the site or borrow area immediately so the female can rescue her cubs and relocate them.

### **3.3.4 PROJECT-RELATED MORTALITY AND/OR DISTURBANCE TO SAN JOAQUIN KIT FOX**

The Project site contains ruderal and oak grassland habitat with existing small mammal burrows, which could be suitable denning and foraging habitat for San Joaquin kit fox (SJKF). SJKF denning within the Project site during construction have the potential to be injured or killed by Project-related activities. Projects that result in the mortality of individuals would be considered a violation of state and federal laws and considered a potentially significant impact under CEQA.

Implementation of the following measures will reduce potential impacts to SJKF to a less than significant level under CEQA and will ensure compliance with state and federal laws protecting this species.

***Mitigation Measure BIO-4a (Pre-Construction Survey):*** Within seven (7) days prior to the start of construction, a pre-construction survey for SJKF will be conducted on and within 200 feet of proposed work areas.

**Mitigation Measure BIO-4b (Establish Buffers):** On discovery of any SJKF dens near the Project site a qualified biologist will determine appropriate construction setback distances (buffer zones) based on applicable CDFW and/or USFWS guidelines (see below). If needed, construction buffers will be identified with flagging, fencing, or other easily visible means. They will be maintained until the biologist has determined that the den will no longer be impacted by construction.

- 1) *At least 100 feet around den(s);*
- 2) *At least 200 feet around natal dens (which SJKF young are reared); and*
- 3) *At least 500 feet around any natal dens with pups (except for any portions of the buffer zone that is already fully developed).*

**Mitigation Measure BIO-4c (Avoidance and Minimization):** The Project will observe all avoidance and minimization measures during construction and on-going operational activities as required by the qualified biologist and the USFWS's Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance (2011), including, but not limited to: maintaining buffer zones, construction speed limits, covering of pipes, installation of escape structures, restriction of herbicide and rodenticide use, proper disposal of food items and trash, prohibition of pets and firearms, and completion of an employee education program (see **BIO-1a**).

### **3.3.5 PROJECT-RELATED MORTALITY AND/OR NEST ABANDONMENT OF MIGRATORY BIRDS, RAPTORS, AND SPECIAL STATUS BIRDS, INCLUDING LOGGERHEAD SHRIKE AND SWAINSON'S HAWK**

The site contains suitable nesting and foraging habitat for a variety of protected bird species, such as migratory birds, raptors, and special status birds, including loggerhead shrike, burrowing owl, and Swainson's hawk. It is anticipated that during the nesting bird season, protected birds could forage and nest on the ground or in trees within the site. Protected birds nesting within or adjacent to the site during construction have the potential to be injured or killed by Project-related activities. In addition to the direct "take" of protected birds within the site or adjacent areas, these birds nesting in these areas could be disturbed by Project-related activities resulting in nest abandonment. Projects that adversely affect the nesting success of protected birds or result in the mortality of these birds would be a violation of state and federal laws and considered a significant impact under CEQA.

Implementation of the following measures will reduce potential impacts to protected nesting birds to a less than significant level under CEQA and will help the Project comply with state and federal laws protecting these bird species. Specific mitigation measures to protect burrowing owls are described in **Section 3.3.6**.

**Mitigation Measure BIO-5a (Avoidance):** The Project's construction activities will occur, if feasible, between September 16 and January 31 (outside of the nesting bird season) to avoid impacts to nesting birds.

**Mitigation Measure BIO-5b (Pre-construction Surveys):** If activities must occur within the nesting bird season (February 1 to September 15), a qualified biologist (someone familiar with the identification and sign of this species) will conduct a single pre-construction take avoidance survey for Swainson's hawk nests on the site and borrow area and within a 0.5-mile radius within five calendar days prior to the start of construction. The Swainson's hawk survey will not be completed between April 21 and June 10 due to the difficulty of identifying nests during this time of year. The survey would also include a single pre-construction take avoidance survey for song sparrow and tricolored blackbird and other nesting migratory birds within and up to 100 feet outside of the site and borrow area and for other nesting raptors within and up to 500 feet outside of the site and

borrow area. All raptor nests would be considered “active” upon the nest-building stage. If work stops for more than 7 days during nesting bird season a follow-up nesting bird survey will be conducted. If no active nests are observed, no further mitigation is required.

**Mitigation Measure BIO-5c (Avoidance Buffers):** On discovery of any active nests or breeding colonies near work areas, 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 nest(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.

### 3.3.6 PROJECT-RELATED MORTALITY AND/OR DISTURBANCE TO BURROWING OWL

The site contained suitable nesting, roosting, and foraging habitat for burrowing owl (BUOW). Small mammal burrows were observed within the ruderal habitat, which could be used by BUOW for nesting or roosting. Construction activities that adversely affect the nesting success of burrowing owls or result in the mortality of individuals constitute a violation of state and federal laws and would be considered a significant impact under CEQA.

Implementation of the following measures would reduce potential impacts to nesting or roosting BUOW to a less than significant level under CEQA and help the Project comply with state and federal laws protecting this avian species.

**Mitigation Measure BIO-6a (Pre-construction Take Avoidance Survey):** A qualified biologist (someone familiar with the identification and sign of this species) will conduct a pre-construction take avoidance survey for BUOW and suitable burrows, 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. If no BUOW individuals or active burrows are observed, no further mitigation is required.

**Mitigation Measure BIO-6b (Avoidance):** If an active BUOW burrow is detected avoidance buffers will be implemented. A qualified biologist will determine appropriate avoidance buffer distances based on applicable CDFW 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 site or borrow area.

**Mitigation Measure BIO-6c (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 will 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 (hand tools and machinery, if needed). Following completion of passive relocation, a report will be prepared that documents the methods and results of these efforts.

### 3.3.7 PROJECT-RELATED MORTALITY AND/OR DISTURBANCE TO NORTHERN CALIFORNIA LEGLESS LIZARD

The Project site contains oak grassland and riverine/riparian habitats with loose, sandy soil and leaf litter, which would support Northern California legless lizard foraging activities. Northern California legless lizards occurring within these areas of the Project site during construction have the potential to be injured or killed

by Project-related activities. Projects that adversely affect the success of Northern California legless lizards or result in the mortality of individuals would be considered a potentially significant impact under CEQA.

Implementation of the following measures prior to the start of construction will reduce potential impacts to Northern California legless lizards to a less than significant level under CEQA.

***Mitigation Measure BIO-7 (Pre-construction Surveys):*** If activities must occur in areas that contain loose soil and leaf litter within the oak grassland and riverine/riparian habitats, a qualified biologist will conduct pre-construction surveys within 48 hours prior to beginning any Project activities. Any loose substrate in which lizards could bury themselves will be gently raked with a hand tool (e.g., a garden rake) to a depth of two inches to locate any lizards that could be under the surface. Lizards that are detected will be allowed to leave the work area of their own volition or will be moved out of harm's way by a qualified biologist to suitable habitat at least 50 feet from the Project work site.

### **3.3.8 PROJECT-RELATED IMPACTS TO NORTHWESTERN POND TURTLE**

The riverine/riparian habitat within the site contained suitable habitat features for northwestern pond turtle (NPT) dispersal and basking, and the oak woodland habitat within the site would be suitable for nesting. NPT occurring within the Project site during construction have the potential to be injured or killed by Project-related activities. Projects that adversely affect the success of NPT or result in the mortality of individuals would be considered a potentially significant impact under CEQA.

Implementation of the following measures will reduce potential impacts to NPT 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 site, a qualified biologist (someone who is able to identify this species) will conduct a pre-construction survey for NPT within the site 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 NPTs 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 NPTs will be conducted. If the surveys result in the identification of a NPT, or an individual is found within the site during construction activities, it will be allowed to leave the site 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 NPTs are observed within the site, a qualified biologist will conduct a pre-activity clearance survey each day and remain onsite to oversee all vegetation clearing and ground disturbing activities until the individual(s) has vacated the work areas. If NPTs are detected, the biologist will stop work and allow the species to leave the site 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 site. "Take" of a state or federal special status (rare, California Species of Special Concern, threatened, or endangered) species is prohibited.

### **3.3.9 PROJECT-RELATED MORTALITY AND/OR DISTURBANCE TO WESTERN SPADEFOOT**

The riverine/riparian habitat could provide the aquatic habitat needed for breeding, and the existing small mammal burrows in the oak grassland habitat could be suitable for aestivation. Western spadefoot occurring within the Project site during construction have the potential to be injured or killed by Project-

related activities. Projects that adversely affect the success of western spadefoot or result in the mortality of individuals would be considered a potentially significant impact under CEQA.

Implementation of the following measures will reduce potential impacts to western spadefoot to a less than significant level under CEQA.

**Mitigation Measure BIO-9a (*Focused Survey*):** A qualified biologist (someone familiar with the identification and sign of this species) will conduct a focused survey prior to the start of construction. Transects will be walked throughout the site and surrounding lands within up to 50 feet. All waterways within the site will be visually surveyed for western spadefoot adults, eggs, and larvae. If no western spadefoot adults, eggs, or larvae are observed during these surveys, then construction activities may begin. If the survey results in the identification of this species monitoring will be required.

**Mitigation Measure BIO-9b (*Monitor*):** If western spadefoot is observed within the site or borrow 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 until the individual(s) have vacated the work areas. If western spadefoot is detected, the biologist will stop work and allow the species to leave the site 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.

### **3.3.10 PROJECT-RELATED IMPACTS TO WILDLIFE MOVEMENT CORRIDORS AND NATIVE WILDLIFE NURSERY SITES**

Most of the site does not contain features that would function as wildlife movement corridors, but the riverine/riparian and oak woodland habitats within and adjacent to the Project site could provide cover and a means for travel for wildlife species. Impacts to wildlife movement corridors as a result of Project activities would be considered a potentially significant impact under CEQA.

The bridge adjacent to the site was observed to be a native wildlife nursery for cliff swallows and could be used by other cliff-dwelling or colonially nesting birds or maternity roosting bats. This bridge is located outside of the site and would not be impacted by Project-related activities. Further, Project-related disturbances would likely be similar to daily vehicle traffic disturbances on the bridge, so mitigation for native wildlife nursery sites is not warranted.

The following mitigation measures would reduce impacts to wildlife movement corridors to a less than significant level under CEQA.

**Mitigation Measure BIO-10a (*Wildlife Access*):** Access should not be blocked during or outside of construction hours, including during overnight hours or weekends. If construction must block the riverine/riparian habitat, an alternative route through the construction area will be identified by a qualified biologist and maintained throughout the construction schedule timeframe.

**Mitigation Measure BIO-10b (*Cover Excavations*):** Pipeline/turnout excavations and vertical pipes shall be covered each night to prevent wildlife from falling in and becoming trapped or injured during migratory or dispersal movements.



### **3.3.11 PROJECT-RELATED IMPACTS TO REGULATED WATERS, WETLANDS, AND WATER QUALITY**

The Project involves the construction of a new turnout within the River. The River exhibited a bed, banks and OHWM, placing it under the jurisdiction of several state and federal agencies. An aquatic resources delineation was performed to map the extents of the jurisdictional waters within the Project site. Project-related impacts to this waterway would be considered a potentially significant impact under CEQA. Impacts to WOTUS and waters of the state are also subject to the permit requirements of Section 404 and Section 401 of the CWA and impacts to rivers and streams are subject to the permit requirements of Section 1602 of the California Fish and Game Code. The placement of fill within any wetlands or other jurisdictional aquatic features will likely require a Section 404 permit from the USACE, a Section 401 Water Quality Certification from the RWQCB, and a Lake or Streambed Alteration Agreement from CDFW.

Implementation of the following measures will reduce potential impacts to waters to a less than significant level under CEQA and will help the Project comply with state and federal laws protecting this habitat. There are no designated wild and scenic rivers within the Project site; therefore, the Project would not result in direct impacts to wild and scenic rivers. Additional mitigation measures are not warranted.

**Mitigation Measure BIO-11a (Permits):** If the River onsite cannot be avoided, permits, certifications, or agreements with USACE, RWQCB, CDFW, and any other regulating agency will be obtained, if needed. These permits, certifications, and agreements would ensure that direct or indirect impacts to jurisdictional waters are avoided or minimized to the extent possible, and any permanent impacts would be offset by compensatory mitigation plans.

## **3.4 LESS THAN SIGNIFICANT PROJECT-RELATED IMPACTS**

### **3.4.1 PROJECT-RELATED IMPACTS TO SPECIAL STATUS PLANT SPECIES ABSENT FROM, OR UNLIKELY TO OCCUR ON, THE PROJECT SITE**

Of the 19 regionally occurring special status plant species, 18 are considered absent from or unlikely to occur within the site due to past or ongoing disturbance and/or the absence of suitable habitat. These species include: alkali-sink goldfields, brittlescale, California alkali grass, California jewelflower, California satintail, Coulter's goldfields, Earlimart orache, heartscale, Hoover's spurge, Lassics lupine, lesser saltscale, recurved larkspur, San Joaquin adobe sunburst, San Joaquin Valley Orcutt grass, spiny-sealed button-celery, subtle orache, vernal pool smallscale, and winter's sunflower.

Since it is unlikely that these species would occur onsite, implementation of the project should have no impact on these 18 special status species through construction mortality, disturbance, or loss of habitat. Mitigation measures are not warranted.

### **3.4.2 PROJECT-RELATED IMPACTS TO SPECIAL STATUS ANIMAL SPECIES ABSENT FROM, OR UNLIKELY TO OCCUR ON, THE PROJECT SITE**

Of the 22 regionally occurring special status animal species, 13 are considered absent from or unlikely to occur within the site due to past or ongoing disturbance and/or the absence of suitable habitat. These species include: California condor, California tiger salamander, Crotch's bumble bee, monarch butterfly, northern leopard frog, pallid bat, Tipton kangaroo rat, tricolored blackbird, Valley elderberry longhorn beetle, vernal pool fairy shrimp, vernal pool tadpole shrimp, western mastiff bat, western yellow-billed cuckoo.

Since it is unlikely that these species would occur onsite, implementation of the project should have no impact on these 13 special status species through construction mortality, disturbance, or loss of habitat. Mitigation measures are not warranted.

### **3.4.3 PROJECT-RELATED IMPACTS TO RIPARIAN HABITAT AND NATURAL COMMUNITIES OF SPECIAL CONCERN**

There are no CNDDDB-designated “natural communities of special concern” recorded within the site or surrounding lands. Any riparian habitat removed temporarily as part of Project activities would be restored, and permanent impacts to riparian habitat and vegetation would be mitigated through compliance with compensatory mitigation requirements of regulating agencies. Additional mitigation is not warranted.

### **3.4.4 PROJECT-RELATED IMPACTS TO CRITICAL HABITAT**

Designated critical habitat is absent from the site and surrounding lands. Therefore, there would be no impact to critical habitat, and mitigation measures are not warranted.

### **3.4.5 LOCAL POLICIES OR HABITAT CONSERVATION PLANS**

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



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# **APPENDIX A: REPRESENTATIVE PHOTOS OF THE PROJECT SITE**

**Photograph 1**

*Overview of the Saint John's River representing the riverine/riparian habitat within the Project site.*

**Photograph 2**

*View of the riverine habitat of the Saint John's River and the associated riparian habitat within the Project site. Valley oak trees were also observed within the oak grassland habitat within the Project site and adjacent to the riverine/riparian habitat.*





**Photograph 3**

*View of the bridge over the Saint John's River just outside of the Project site. The bridge acts as a native wild-life nursery site for cliff swallows.*



**Photograph 4**

*Another view of the riverine/riparian habitat located at the proposed turnout within the Project site.*



**Photograph 5**

*Another view of the riverine/riparian habitat within the Project site. The Saint John's River included partially vegetated islands that could be used as basking sites for reptiles and amphibians.*

**Photograph 6**

*View of a dead tree within the oak grassland habitat of the Project site that could be used for perching and searching for prey by birds and raptors.*



**Photograph 7**

*Overview of the ruderal habitat within the Project site, which was vegetated with non-native grasses and included bare dirt access roads.*

**Photograph 8**

*Portions of the ruderal habitat within the Project site contained hundreds of small mammal burrows. Only California ground squirrel was observed using these burrows.*





**Photograph 9**

*Another view of the ruderal habitat within the Project site where the ground had been graded and excavated.*



**Photograph 10**

*View of the oak grassland habitat within the Project site. This area was primarily covered in non-native grasses and several valley oak trees were observed.*



**Photograph 11**

*View from the top of the berm where the oak grassland habitat was observed.*

**Photograph 12**

*View of the oak grassland habitat transitioning to the riverine/riparian habitat within the Project site. Also observed in the background is the farm facility outside of the Project boundary.*

## **APPENDIX B: CNDDDB 9-QUAD SPECIES LIST**



# Selected Elements by Common Name

## California Department of Fish and Wildlife

### California Natural Diversity Database



**Query Criteria:** Quad</span> IS </span>(Visalia (3611933)</span> OR </span>Paige (3611924)</span> OR </span>Goshen (3611934)</span> OR </span>Cairns Corner (3611922)</span> OR </span>Traver (3611944)</span> OR </span>Monson (3611943)</span> OR </span>Ivanhoe (3611942)</span> OR </span>Exeter (3611932)</span> OR </span>Tulare (3611923))

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<b>alkali-sink goldfields</b> <i>Lasthenia chrysantha</i>	PDAST5L030	None	None	G2	S2	1B.1
<b>American badger</b> <i>Taxidea taxus</i>	AMAJF04010	None	None	G5	S3	SSC
<b>American bumble bee</b> <i>Bombus pensylvanicus</i>	IIHYM24260	None	None	G3G4	S2	
<b>An andrenid bee</b> <i>Andrena macswaini</i>	IIHYM35130	None	None	G2	S2	
<b>brittlescale</b> <i>Atriplex depressa</i>	PDCHE042L0	None	None	G2	S2	1B.2
<b>burrowing owl</b> <i>Athene cunicularia</i>	ABNSB10010	None	None	G4	S2	SSC
<b>California alkali grass</b> <i>Puccinellia simplex</i>	PMPOA53110	None	None	G2	S2	1B.2
<b>California jewelflower</b> <i>Caulanthus californicus</i>	PDBRA31010	Endangered	Endangered	G1	S1	1B.1
<b>California linderiella</b> <i>Linderiella occidentalis</i>	ICBRA06010	None	None	G2G3	S2S3	
<b>California satintail</b> <i>Imperata brevifolia</i>	PMPOA3D020	None	None	G3	S3	2B.1
<b>California tiger salamander - central California DPS</b> <i>Ambystoma californiense pop. 1</i>	AAAAA01181	Threatened	Threatened	G2G3T3	S3	WL
<b>Coulter's goldfields</b> <i>Lasthenia glabrata ssp. coulteri</i>	PDAST5L0A1	None	None	G4T2	S2	1B.1
<b>Crotch's bumble bee</b> <i>Bombus crotchii</i>	IIHYM24480	None	Candidate Endangered	G2	S2	
<b>Earlimart orache</b> <i>Atriplex cordulata var. erecticaulis</i>	PDCHE042V0	None	None	G3T1	S1	1B.2
<b>Great Valley Valley Oak Riparian Forest</b> <i>Great Valley Valley Oak Riparian Forest</i>	CTT61430CA	None	None	G1	S1.1	
<b>heartscale</b> <i>Atriplex cordulata var. cordulata</i>	PDCHE040B0	None	None	G3T2	S2	1B.2
<b>Hoover's spurge</b> <i>Euphorbia hooveri</i>	PDEUP0D150	Threatened	None	G1	S1	1B.2
<b>Hopping's blister beetle</b> <i>Lytta hoppingi</i>	IICOL4C010	None	None	G1G2	S2	
<b>lesser saltscale</b> <i>Atriplex minuscula</i>	PDCHE042M0	None	None	G2	S2	1B.1



# Selected Elements by Common Name

## California Department of Fish and Wildlife

### California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<b>loggerhead shrike</b> <i>Lanius ludovicianus</i>	ABPBR01030	None	None	G4	S4	SSC
<b>Moody's gnaphosid spider</b> <i>Talanites moodyae</i>	ILARA98020	None	None	G2G3	S2S3	
<b>Northern California legless lizard</b> <i>Anniella pulchra</i>	ARACC01020	None	None	G3	S2S3	SSC
<b>Northern Claypan Vernal Pool</b> <i>Northern Claypan Vernal Pool</i>	CTT44120CA	None	None	G1	S1.1	
<b>Northern Hardpan Vernal Pool</b> <i>Northern Hardpan Vernal Pool</i>	CTT44110CA	None	None	G3	S3.1	
<b>northern leopard frog</b> <i>Lithobates pipiens</i>	AAABH01170	None	None	G5	S2	SSC
<b>pallid bat</b> <i>Antrozous pallidus</i>	AMACC10010	None	None	G4	S3	SSC
<b>recurved larkspur</b> <i>Delphinium recurvatum</i>	PDRAN0B1J0	None	None	G2?	S2	1B.2
<b>San Joaquin adobe sunburst</b> <i>Pseudobahia peirsonii</i>	PDAST7P030	Threatened	Endangered	G1	S1	1B.1
<b>San Joaquin kit fox</b> <i>Vulpes macrotis mutica</i>	AMAJA03041	Endangered	Threatened	G4T2	S3	
<b>San Joaquin Valley Orcutt grass</b> <i>Orcuttia inaequalis</i>	PMPOA4G060	Threatened	Endangered	G1	S1	1B.1
<b>Sanford's arrowhead</b> <i>Sagittaria sanfordii</i>	PMALI040Q0	None	None	G3	S3	1B.2
<b>spiny-sepaled button-celery</b> <i>Eryngium spinosepalum</i>	PDAP10Z0Y0	None	None	G2	S2	1B.2
<b>subtle orache</b> <i>Atriplex subtilis</i>	PDCHE042T0	None	None	G1	S1	1B.2
<b>Swainson's hawk</b> <i>Buteo swainsoni</i>	ABNKC19070	None	Threatened	G5	S4	
<b>Tipton kangaroo rat</b> <i>Dipodomys nitratoide nitratoide</i>	AMAFD03152	Endangered	Endangered	G3T1T2	S2	
<b>tricolored blackbird</b> <i>Agelaius tricolor</i>	ABPBXB0020	None	Threatened	G1G2	S2	SSC
<b>valley elderberry longhorn beetle</b> <i>Desmocerus californicus dimorphus</i>	IICOL48011	Threatened	None	G3T3	S3	
<b>Valley Sacaton Grassland</b> <i>Valley Sacaton Grassland</i>	CTT42120CA	None	None	G1	S1.1	
<b>vernal pool fairy shrimp</b> <i>Branchinecta lynchi</i>	ICBRA03030	Threatened	None	G3	S3	
<b>vernal pool smallscale</b> <i>Atriplex persistens</i>	PDCHE042P0	None	None	G2	S2	1B.2



Selected Elements by Common Name  
California Department of Fish and Wildlife  
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<b>vernal pool tadpole shrimp</b> <i>Lepidurus packardii</i>	ICBRA10010	Endangered	None	G3	S3	
<b>western mastiff bat</b> <i>Eumops perotis californicus</i>	AMACD02011	None	None	G4G5T4	S3S4	SSC
<b>western pond turtle</b> <i>Emys marmorata</i>	ARAAD02030	Proposed Threatened	None	G3G4	S3	SSC
<b>western spadefoot</b> <i>Spea hammondi</i>	AAABF02020	Proposed Threatened	None	G2G3	S3S4	SSC
<b>western yellow-billed cuckoo</b> <i>Coccyzus americanus occidentalis</i>	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
<b>Winter's sunflower</b> <i>Helianthus winteri</i>	PDAST4N260	None	None	G2?	S2?	1B.2

Record Count: 46

## **APPENDIX C: IPAC SPECIES LIST**



# 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:

05/10/2024 18:51:05 UTC

Project Code: 2024-0088982

Project Name: Mathews Basin Project

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 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 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:

<https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.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/program/migratory-bird-permit/what-we-do>.

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/library/collections/threats-birds>.

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/partner/council-conservation-migratory-birds>.

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: 2024-0088982

Project Name: Mathews Basin Project

Project Type: Water Supply Facility - Diversions

Project Description: Proposed turnout on the St. John's River to divert water into a new storage basin.

Project Location:

The approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@36.367730449999996,-119.29993588917827,14z>



Counties: Tulare County, California

## ENDANGERED SPECIES ACT SPECIES

There is a total of 9 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<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

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

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

## MAMMALS

NAME	STATUS
San Joaquin Kit Fox <i>Vulpes macrotis mutica</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/2873">https://ecos.fws.gov/ecp/species/2873</a>	Endangered
Tipton Kangaroo Rat <i>Dipodomys nitratoide nitratoide</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/7247">https://ecos.fws.gov/ecp/species/7247</a>	Endangered

## BIRDS

NAME	STATUS
California Condor <i>Gymnogyps californianus</i> Population: U.S.A. only, except where listed as an experimental population There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/8193">https://ecos.fws.gov/ecp/species/8193</a>	Endangered

## REPTILES

NAME	STATUS
Northwestern Pond Turtle <i>Actinemys marmorata</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/1111">https://ecos.fws.gov/ecp/species/1111</a>	Proposed Threatened

## AMPHIBIANS

NAME	STATUS
California Tiger Salamander <i>Ambystoma californiense</i> Population: U.S.A. (Central CA DPS) There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/2076">https://ecos.fws.gov/ecp/species/2076</a>	Threatened
Western Spadefoot <i>Spea hammondi</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/5425">https://ecos.fws.gov/ecp/species/5425</a>	Proposed Threatened

## INSECTS

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a>	Candidate

## CRUSTACEANS

NAME	STATUS
Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i> There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/498">https://ecos.fws.gov/ecp/species/498</a>	Threatened

## FLOWERING PLANTS

NAME	STATUS
Lassics Lupine <i>Lupinus constancei</i> Population: There is <b>final</b> critical habitat for this species. Your location does not overlap the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/7976">https://ecos.fws.gov/ecp/species/7976</a>	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 and Pritchard  
Name: Kira McCall  
Address: 1500 Mill Rock Way  
Address Line 2: Ste 100  
City: Bakersfield  
State: CA  
Zip: 93311  
Email: kmccall@ppeng.com  
Phone: 6616165900



# **APPENDIX D: NRCS WEB SOIL SURVEY REPORT**



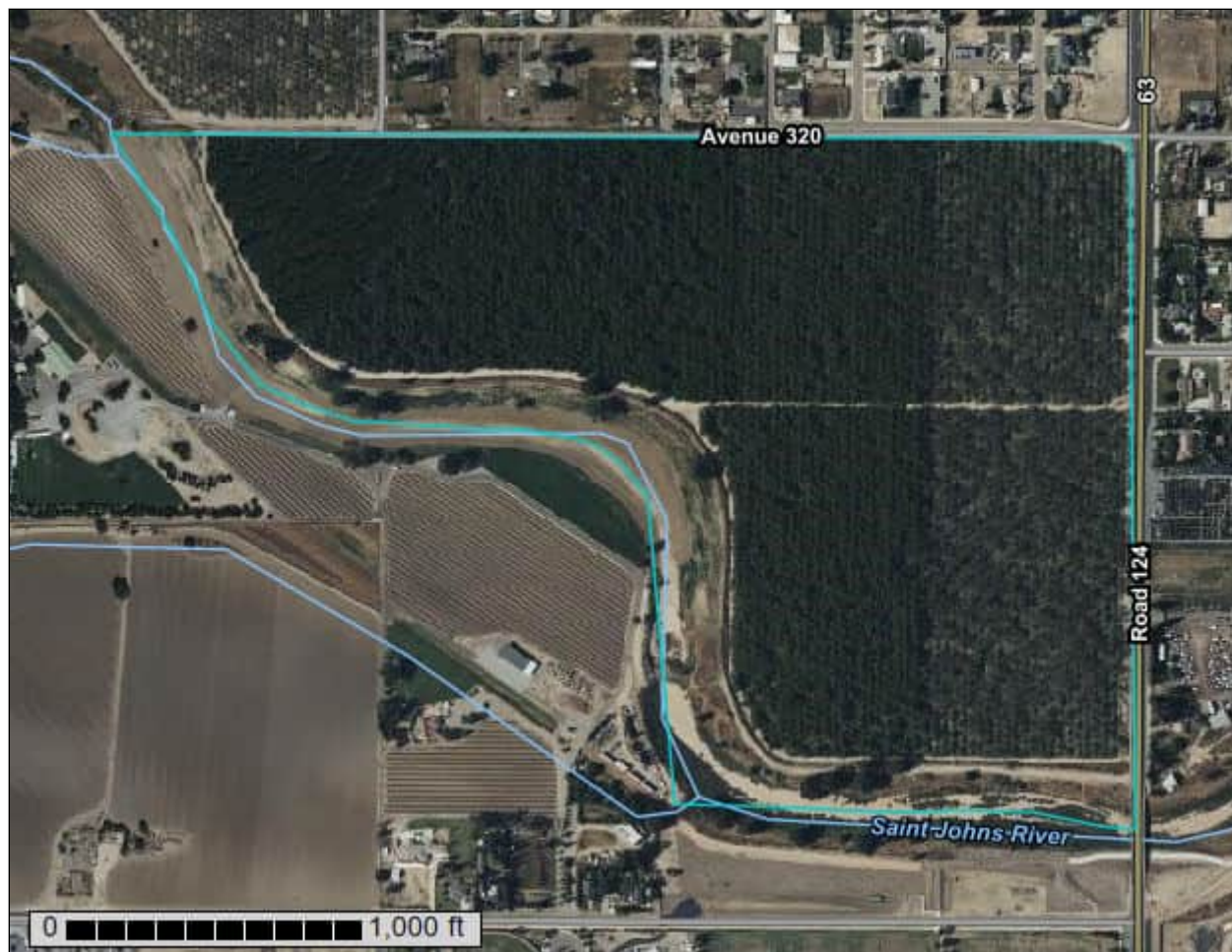
United States  
Department of  
Agriculture

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 Tulare County, Western Part, California



# Preface

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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](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.

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# 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



## Custom Soil Resource Report

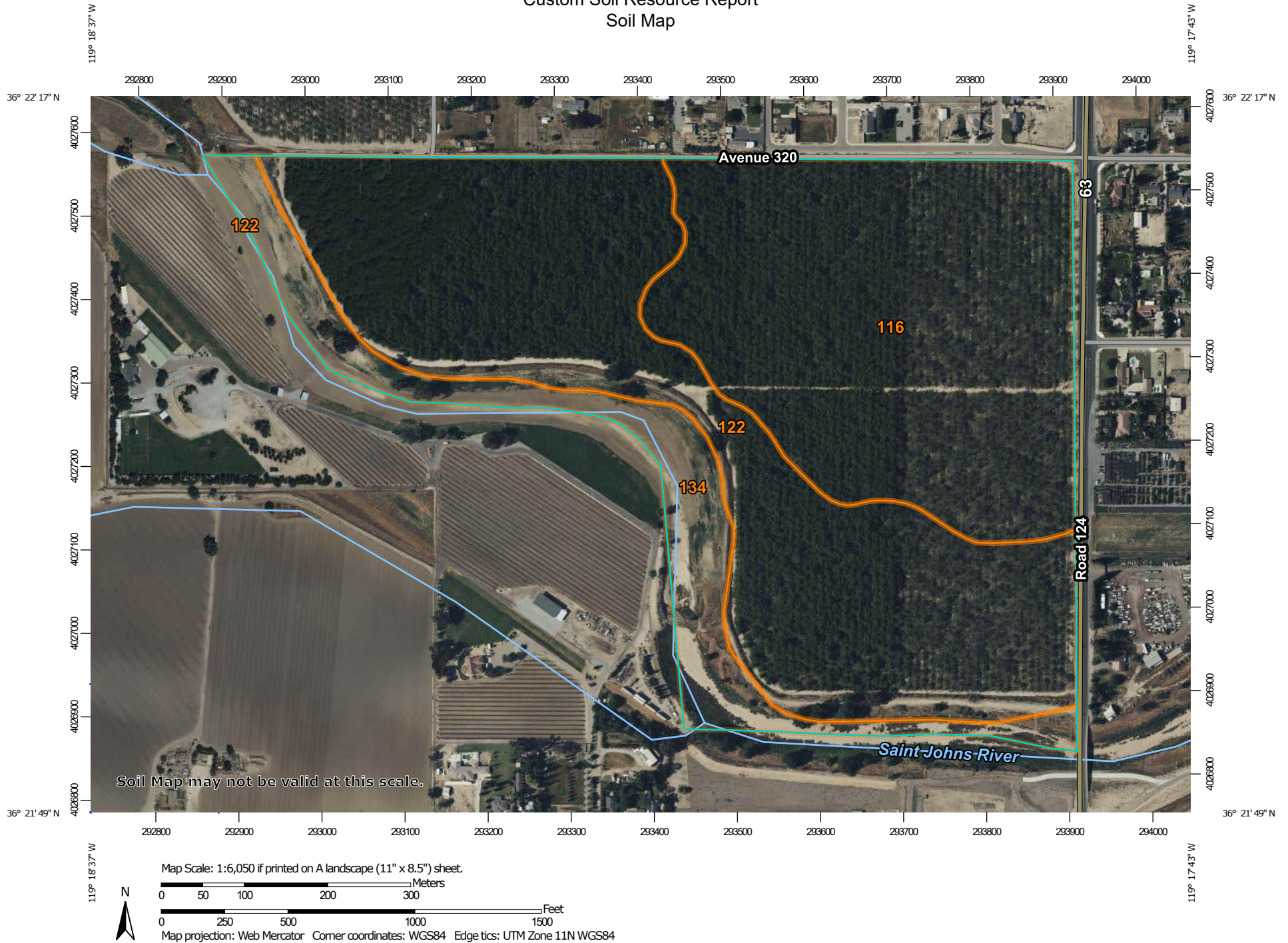
identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# 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



# Custom Soil Resource Report

## 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 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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: Tulare County, Western Part, California  
Survey Area Data: Version 17, Aug 31, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 16, 2022—May 30, 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
116	Flamen loam, 0 to 2 percent slopes	47.0	39.5%
122	Grangeville sandy loam, drained, 0 to 2 percent slopes	56.0	47.1%
134	Riverwash	16.0	13.4%
<b>Totals for Area of Interest</b>		<b>118.9</b>	<b>100.0%</b>

## 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.

## Tulare County, Western Part, California

### 116—Flamen loam, 0 to 2 percent slopes

#### Map Unit Setting

*National map unit symbol:* hp4l

*Elevation:* 260 to 550 feet

*Mean annual precipitation:* 8 to 12 inches

*Mean annual air temperature:* 63 to 64 degrees F

*Frost-free period:* 250 to 300 days

*Farmland classification:* Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season

#### Map Unit Composition

*Flamen and similar soils:* 85 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Flamen

##### Setting

*Landform:* Fan remnants

*Landform position (two-dimensional):* Shoulder

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Alluvium derived from granitic rock sources

##### Typical profile

*Ap1 - 0 to 17 inches:* loam

*Ap2 - 17 to 28 inches:* loam

*Btk - 28 to 43 inches:* loam

*2Btkqm - 43 to 72 inches:* cemented

##### Properties and qualities

*Slope:* 0 to 2 percent

*Depth to restrictive feature:* 40 to 60 inches to duripan

*Drainage class:* Moderately well drained

*Runoff class:* 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:* Very rare

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 2 percent

*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Sodium adsorption ratio, maximum:* 12.0

*Available water supply, 0 to 60 inches:* Moderate (about 6.6 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 2s

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* B

*Ecological site:* R017XY902CA - Duripan Vernal Pools

*Hydric soil rating:* No



**Minor Components**

**Exeter**

*Percent of map unit:* 3 percent  
*Landform:* Fan remnants  
*Hydric soil rating:* No

**San joaquin**

*Percent of map unit:* 3 percent  
*Landform:* Fan remnants  
*Hydric soil rating:* No

**Calgro**

*Percent of map unit:* 2 percent  
*Landform:* Fan remnants  
*Hydric soil rating:* No

**Centerville**

*Percent of map unit:* 2 percent  
*Landform:* Fan remnants  
*Hydric soil rating:* No

**Hanford**

*Percent of map unit:* 2 percent  
*Landform:* Alluvial fans, flood plains  
*Hydric soil rating:* No

**Colpien**

*Percent of map unit:* 2 percent  
*Landform:* Fan remnants  
*Hydric soil rating:* No

**Unnamed, ponded**

*Percent of map unit:* 1 percent  
*Landform:* Depressions  
*Hydric soil rating:* Yes

**122—Grangeville sandy loam, drained, 0 to 2 percent slopes**

**Map Unit Setting**

*National map unit symbol:* hp4s  
*Elevation:* 190 to 400 feet  
*Mean annual precipitation:* 8 to 12 inches  
*Mean annual air temperature:* 63 to 64 degrees F  
*Frost-free period:* 250 to 275 days  
*Farmland classification:* Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season

**Map Unit Composition**

*Grangeville and similar soils:* 90 percent  
*Minor components:* 10 percent

## Custom Soil Resource Report

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Grangeville

#### Setting

*Landform:* Alluvial fans, flood plains  
*Landform position (two-dimensional):* Footslope, toeslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex, linear  
*Parent material:* Alluvium derived from granitic rock sources

#### Typical profile

*Ap - 0 to 16 inches:* sandy loam  
*Bg - 16 to 27 inches:* sandy loam  
*2C - 27 to 67 inches:* stratified loamy sand to silt loam

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Somewhat poorly drained  
*Runoff class:* Negligible  
*Capacity of the most limiting layer to transmit water (Ksat):* High (2.00 to 6.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 5 percent  
*Gypsum, maximum content:* 1 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:* Moderate (about 6.6 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 1  
*Land capability classification (nonirrigated):* 4c  
*Hydrologic Soil Group:* A  
*Ecological site:* R017XY906CA - Non-Alkali San Joaquin Valley Desert  
*Hydric soil rating:* Yes

### Minor Components

#### Tujunga

*Percent of map unit:* 3 percent  
*Landform:* Flood plains  
*Ecological site:* R017XY904CA - Subirrigated Deep Alluvial Fans  
*Hydric soil rating:* No

#### Yettem

*Percent of map unit:* 3 percent  
*Landform:* Flood plains, alluvial fans  
*Ecological site:* R017XY904CA - Subirrigated Deep Alluvial Fans  
*Hydric soil rating:* No

#### Grangeville, saline-sodic

*Percent of map unit:* 2 percent  
*Landform:* Alluvial fans, flood plains  
*Ecological site:* R017XY904CA - Subirrigated Deep Alluvial Fans

## Custom Soil Resource Report

*Hydric soil rating: Yes*

### **Hanford**

*Percent of map unit: 1 percent*

*Landform: Alluvial fans, flood plains*

*Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans*

*Hydric soil rating: No*

### **Nord**

*Percent of map unit: 1 percent*

*Landform: Alluvial fans, flood plains*

*Ecological site: R017XY904CA - Subirrigated Deep Alluvial Fans*

*Hydric soil rating: No*

## **134—Riverwash**

### **Map Unit Composition**

*Riverwash: 100 percent*

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Riverwash**

#### **Setting**

*Landform: Flood plains*

*Down-slope shape: Linear*

*Across-slope shape: Linear*

*Parent material: Alluvium derived from granite*

#### **Properties and qualities**

*Slope: 0 to 2 percent*

*Frequency of flooding: Frequent*

#### **Interpretive groups**

*Land capability classification (irrigated): 8*

*Land capability classification (nonirrigated): 8*

*Ecological site: R017XY903CA - Stream Channels and Floodplains*

*Hydric soil rating: Yes*

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## Appendix C. Phase I Cultural Resources Assessment

# Phase I Cultural Resources Assessment for the Mathews Recharge Basin Project, Tulare County, California

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## EXECUTIVE SUMMARY

Taylorred Archaeology completed a Phase I Archaeological Survey Report for the Matthews Recharge Basin Project (Project) in Tulare County, California. The proposed Project involves developing a recharge basin with a delivery facility from the St. Johns River to recharge the basin within approximately 108 acres. The Kaweah Delta Water Conservation District is the local lead agency under the California Environmental Quality Act (CEQA). The Project would also affect waters of the United States; therefore, the Project proponent must meet requirements of Section 404 of the Clean Water Act and is therefore seeking authorization from the U.S. Army Corps of Engineers. Thus, the Project must also comply with Section 106 of the National Historic Preservation Act (NHPA). The U.S. Army Corps of Engineers is the lead federal agency for compliance with Section 106 of the NHPA.

To meet state and federal standards, Taylorred Archaeology performed a cultural resource study under contract to Provost & Pritchard Consulting Group to assess and identify whether cultural resources are present within the Area of Potential Effects (APE). The investigation included: (1) a records search from the Southern San Joaquin Valley Information Center (SSJVIC) of the California Historical Resources Information System (CHRIS); (2) a request of the Native American Heritage Commission's (NAHC) Sacred Lands File and tribal outreach; (3) archival research; and (4) archaeological pedestrian survey of the Area of Potential Effects (APE).

The SSJVIC reported no prior cultural resources studies conducted within the APE and no cultural resources recorded within the APE. The SSJVIC also reported 12 previous cultural resources studies were conducted, and five historical resources were recorded, within a 1-mile radius of the APE. The first resource, P-54-003602, is a segment of the Modoc Canal/Modoc Ditch. The second resource, P-54-004632, is a segment of the Burlington Northern Santa Fe Railway. The third and fourth resources (P-54-005612 and P-54-005613) are historic residences. The fifth resource, Bridge #46-100 (Caltrans Bridge Number 46 0100), is the St. Johns River bridge. None of these resources will be impacted by the proposed Project.

The NAHC's Sacred Lands File search and the nongovernmental outreach to the Native American representatives did not result in identification of sacred sites within the APE or surrounding area. No additional responses were received to the letters or emails.

No archaeological resources were found on the ground surface of the APE during the archaeological pedestrian survey. The absence of cultural material on the ground surface does not, however, preclude the possibility of Project construction unearthing buried archaeological deposits. As discussed in Section 4.4.1 of this report, there is a high possibility of encountering buried cultural resources within the APE during Project ground disturbing activities.

Taylorred Archaeology's study concludes that no historic properties will be affected by the proposed undertaking.

Based on the results of this investigation, including the high sensitivity for buried sites within the APE, Taylored Archaeology therefore recommends the following:

- An archaeological monitor shall be present on the Project site during ground disturbing activities within the APE. In the event of accidental discovery of unidentified archaeological remains during development or ground disturbing activities within any portion of the APE, all work shall be halted in the immediate vicinity (within a 100-foot radius) until a qualified archaeologist can identify the discovery and assess its significance.
- In the event that previously unidentified archaeological remains are encountered during development or ground-moving activities in the APE, all work should be halted until a qualified archaeologist can identify the discovery and assess its significance. In the event of accidental discovery of unidentified archaeological remains during development or ground-moving activities in the APE, all work shall be halted in the immediate vicinity until a qualified archaeologist can identify the discovery and assess its significance.
- If human remains are uncovered during construction, the Tulare County Coroner is to be notified to investigate the remains and arrange proper treatment and disposition. If the remains are identified on the basis of archaeological context, age, cultural associations, or biological traits to be those of a Native American, California Health and Safety Code 7050.5 and PRC 5097.98 require that the coroner notify the NAHC within 24 hours of discovery. The NAHC will then identify the Most Likely Descendent who will be afforded an opportunity to make recommendations regarding the treatment and disposition of the remains.

A copy of this report will be submitted to the SSJVIC for entry into the CHRIS database.



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# 1

## INTRODUCTION

Taylored Archaeology conducted a Phase I Cultural Resources Assessment for the Mathews Recharge Basin Project (Project) in Tulare County, California under contract to Provost & Pritchard Consulting Group. As part of the development approval process, this report has been prepared in compliance with the California Environmental Quality Act (CEQA) and documents the results of the cultural resources survey.

As part of the development approval process, the Kaweah Delta Water Conservation District as the local lead agency must comply with the California Environmental Quality Act (CEQA). Public Resources Code [PRC] 21000 [g] mandates that government agencies consider the impacts of a project on the environment, including cultural resources. The Project would also affect waters of the United States; therefore, the Project proponent must meet requirements of Section 404 of the Clean Water Act and is therefore seeking authorization from the U.S. Army Corps of Engineers. Thus, the Project must also comply with Section 106 of the National Historic Preservation Act (NHPA). The U.S. Army Corps of Engineers is the lead federal agency for compliance with Section 106 of the NHPA.

### 1.1 PROJECT LOCATION AND DESCRIPTION

The Project is north of the St. Johns River east of Highway 63, just north of the City of Visalia (Figure 1-1). The Project site is on the U.S. Geological Survey (USGS) 7.5-minute Visalia, California, topographic quadrangle in Section 18 of Township 18 South, Range 25 East, Mount Diablo Base and Meridian (Figure 1-2). The Project would include developing a groundwater recharge basin on a former walnut orchard of approximately 108 acres. The Project would also include a delivery facility from the St. Johns River to the proposed basin area for recharge. Multiple basin cells are anticipated to be developed on the 108-acre property to accommodate earthwork balance, maintenance roads, and conservation space. A turnout/pump structure will divert water from the St. Johns River to supply water to the recharge basins.

The Area of Potential Effects (APE) of an undertaking is defined in 36 CFR 800.16 (d) as the “geographic area or areas within an undertaking may directly or indirectly cause changes dimensional (depth, length, width) and includes all areas directly and indirectly affected by the proposed construction.” The total horizontal APE is estimated to be 108 acres and encompasses the footprint of the basin, the turnout/pump structure, and associated construction footprint. The vertical APE is anticipated to be up to 15 feet below ground surface for the turnout/pump structure, and 6 feet below ground surface for the recharge basin.



## 1.2 REGULATORY SETTING

In this report “cultural resources” are defined as prehistoric or historical archaeological sites as well as historical objects, buildings, or structures. In accordance with 30 Code of Federal Regulations (CFR) §60.4, “historical” in this report applies to cultural resources which are at least 50 years old. The significance or importance of a cultural resource is dependent upon whether the resource qualifies for inclusion at the local or state level in the California Register of Historical Resources (CRHR), or at the federal level in the National Register of Historic Places (NRHP). Cultural resources that are determined to be eligible for inclusion in the CRHR are called “historical resources” (California Code of Regulations [CCR] 15064.5[a]). Under this statute the determination of eligibility is partially based on the consideration of the criteria of significance as defined in 14 CCR 15064.5(a)(3). Cultural resources eligible for inclusion in the NRHP are deemed “historic properties”.

### 1.2.1 NATIONAL HISTORIC PRESERVATION ACT OF 1966

The National Historic Preservation Act (NHPA) (16 U.S.C. 470 ET SEQ.) was enacted in 1966 and created a national policy of historic preservation. The law established several programs, administered by the Secretary of the Interior, to encourage the achievement of preservation goals at local, state, and federal levels. The NHPA authorized the creation and expansion of the National Register of Historic Places (NRHP), formed the position of State Historic Preservation Officer (SHPO), allowed for the creation of State Review Boards to set up methods for local governments to enact the NHPA at a local level, assisted Native American tribes with preserving their heritage, and established the Advisory Council on Historic Preservation (ACHP).

The NHPA established criteria for determining if a historic property is eligible for inclusion in the NRHP. These criteria are set forth in 36 CFR 60.4 as follows:

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

*(a) that are associated with events that have made a significant contribution to the broad patterns of our history; or*

*(b) that are associated with the lives of persons significant in our past; or*

*(c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or*

*(d) that have yielded, or may be likely to yield, information important in prehistory or history.*

### 1.2.2 SECTION 106 NHPA

Section 106 of the NHPA states that any federal agency with direct or indirect jurisdiction over federally assisted or proposed federal action will take into account the effect the action will have on any historic property that is on, or eligible to be included in, the NRHP. The NHPA provides the Advisory Council on Historic Preservation and the relevant SHPO the opportunity to provide comments on the federal action in regard to potential impacts to historic properties.

### 1.2.3 CALIFORNIA ENVIRONMENTAL QUALITY ACT

Pursuant to CEQA, a historical resource is a resource listed in, or determined to be eligible for listing in, the CRHR. Historical resources may include, but are not limited to, “any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically or archaeologically significant” (PRC §5020.1[j]). In addition, a resource included in a local register of historical resources or identified as significant in a local survey conducted in accordance with the state guidelines are also considered historic resources under California Public Resources Code (PRC) Section 5020.1.

CEQA details appropriate measures for the evaluation and protection of cultural resources in §15064.5 of the CEQA Guidelines. According to CEQA guidelines §15064.5 (a)(3), criteria for listing on the CRHR includes the following:

- (A) Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage.*
- (B) Is associated with the lives of persons important in our past.*
- (C) 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.*
- (D) Has yielded, or may be likely to yield, information important in prehistory or history.*

According to CEQA guidelines §21074 (a)(1), criteria for tribal cultural resources includes the following:

- (1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:*
  - (A) included or determined to be eligible for inclusion in the California Register of Historical Resources.*
  - (B) included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.*

Protection of cultural resources within California is additionally regulated by PRC §5097.5, which prohibits destruction, defacing, or removal of any historic or prehistoric cultural features on land under the jurisdiction of State or local authorities.

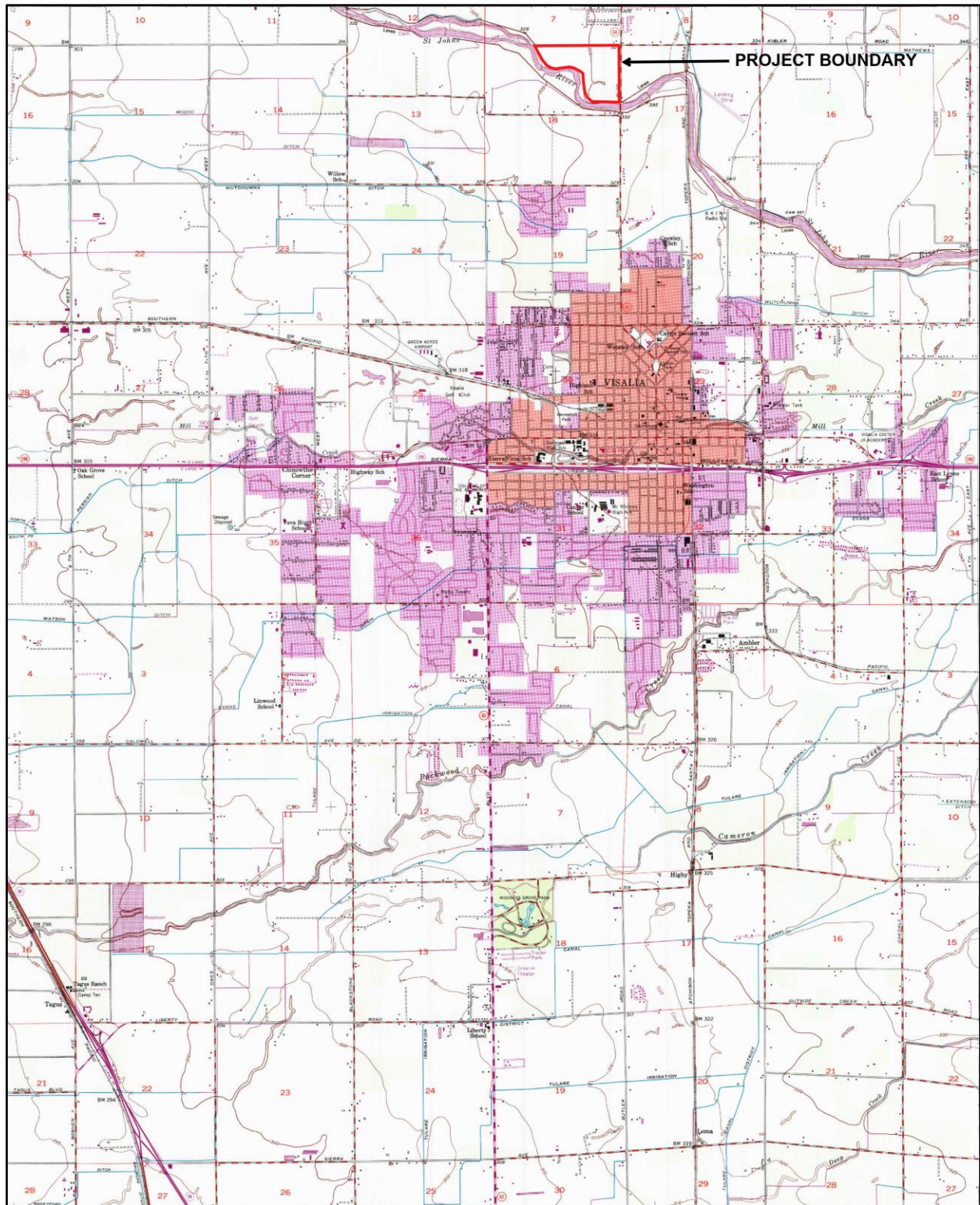
### **1.3 PROFESSIONAL QUALIFICATIONS**

Archaeologist Consuelo Y. Sauls (M.A.), a Registered Professional Archaeologist (RPA 41591505), served as project manager, providing technical and administrative oversight for all cultural resource tasks conducted, and as the report author for the Project study. Ms. Sauls additionally completed the archaeological pedestrian survey. Ms. Sauls meets the Secretary of the Interior's Standards for Professional Qualifications in Archaeology. Archaeologist Anthony Hartman, B.A., assisted with the archaeological pedestrian survey. Qualifications for key personnel are provided in Appendix A.



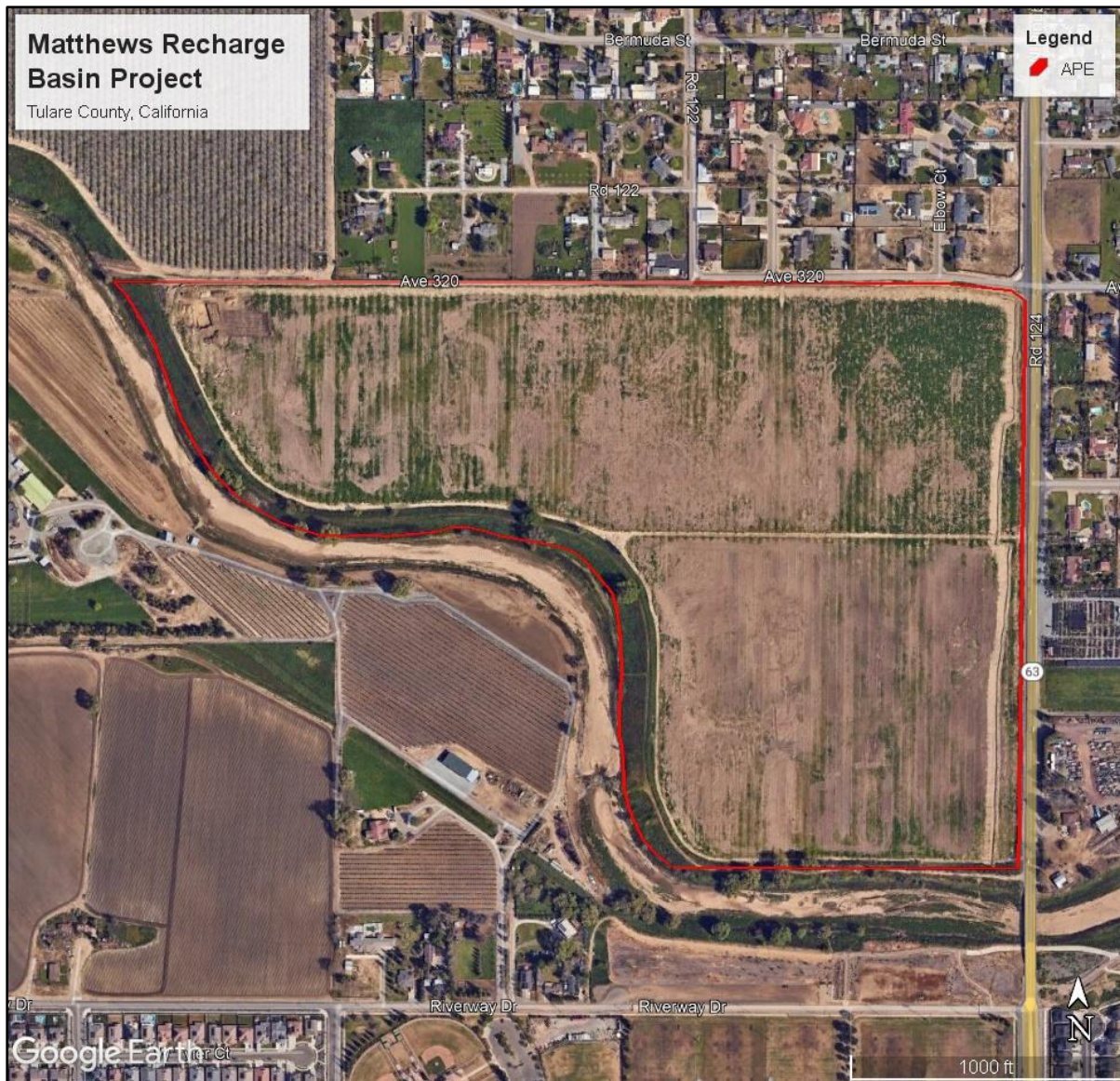
Figure 1-1 Project vicinity in Tulare County, California.





**Figure 1-2 Project location on the USGS Visalia, CA 7.5-minute quadrangle.**





**Figure 1-3 Aerial view of the APE.**

## 1.4 REPORT STRUCTURE

This report documents the results of a cultural resource assessment of the proposed Project area. In order to comply with California regulations for CEQA, the following specific tasks were completed: (1) requesting a records search from the Southern San Joaquin Information Center (SSJVIC) of the California Historical Resources Information System (CHRIS), at California State University, Bakersfield; (2) requesting a Sacred Lands File Search and list of interested parties from the Native American Heritage Commission (NAHC) and initiating outreach to local Native American individuals and tribal representatives; (3) conducting an archaeological pedestrian survey, and (4) preparing this technical report.

Taylor Archaeology prepared this report following the California Office of Historic Preservation standards in the 1990 Archaeological Resources Management Report Recommended Contents and Format. Chapter 1 describes the introduction of the Project and its location, and identifies the key personnel involved in this report. Chapter 2 summarizes the Project setting, including the natural, prehistoric ethnography, and historic background for the Project area and surrounding area. Chapter 3 details the methods used for cultural records searches, local Native American outreach, and archaeological pedestrian survey. Chapter 4 summarizes the results of the cultural resource investigation. Chapter 5 discusses the Project findings and offers management recommendations. Chapter 6 is a bibliography of references cited within this report. The report also contains the following appendices: qualifications of key personnel (Appendix A), the CHRIS records search results (Appendix B), and Taylor Archaeology's nongovernmental Native American outreach (Appendix C).

## 2 PROJECT SETTING

### 2.1 NATURAL ENVIRONMENT

The Project area lies in the Central Valley of California, which is approximately 450 miles from north to south, and ranges in width east to west from 40 to 60 miles (Prothero 2017). The Central Valley is divided into two subunits, the Sacramento Valley in the north and the San Joaquin Valley in the south, which are each named after the primary rivers within each valley (Madden 2020). The Project is located approximately 330 feet above sea level on the open flat plains of the Southern San Joaquin Valley. Climate within the San Joaquin valley is classified as a 'hot Mediterranean climate', with hot and dry summers, and cool damp winters characterized by periods of dense fog known as 'tule fog' (Prothero 2017).

The San Joaquin Valley is comprised of a structural trough created approximately 65 million years ago and is filled with nearly six miles of sediment (Bull 1964). The San Joaquin Valley ranges from Stockton and the San Joaquin-Sacramento River Delta in the north to Wheeler Ridge to the south, ranging nearly 60 miles wide at its widest (Zack 2017). It is split by late Pleistocene alluvial fans between the San Joaquin River hydrologic area in the north and the Tulare Lake Drainage Basin in the south (Rosenthal et al 2007). The Project site is located within the latter of the two hydrologic units. The Kaweah, Tule, Kern, and Kings rivers flowed into large inland lakes with no outflow except in high flood events, in which the lakes would flow through the Fresno Slough into the San Joaquin River. The largest of these inland lakes was Tulare Lake, which occupied a vast area of Tulare and Kings Counties and was the largest freshwater lake west of the Mississippi. These four rivers in the Tulare Lake Drainage Basin accounted for more than 95 percent of water discharged into Tulare Lake, with the remaining five percent sourced from small drainages originating in the Coast Ranges to the west (Adams et al. 2015).

The Project is in central western Tulare County on the valley floor of the San Joaquin Valley within the greater Kaweah River Delta alluvial fan. Specifically, the Project is located on the northern bank of the St. Johns River, which is a tributary of the Kaweah River (Thompson 1892).

Before the appearance of agriculture in the nineteenth century, the general Project location would have been comprised of prairie grasslands with scattered oak tree savannas near the foothills, and riparian forest along the various streams and drainages (Preston 1981).

Riparian environments would also have been present along various waterways, including drainages and marshes. Riparian forest vegetation would have been comprised of multiple layers of dense undergrowth. The upper canopy species would have consisted of Western sycamore (*Platanus racemosa*), willow (*Salix* spp.), valley oak (*Quercus lobata*), and Fremont cottonwood (*Populus fremonti*) (Katibah 1984). Intermediate layers were likely dominated by Oregon ash (*Fraxinus latifolia*), willow (*Salix* spp.), and California box elder (*Acer negundo* subsp. *californicum*), while riparian forest undergrowth would have included California wild grape (*Vitis californica*), poison oak (*Rhus diversiloba*), California mugwort (*Artemisia douglasiana*), California wild rose (*Rosa californica*), and blackberry (*Rubus* spp.) Drier portions of the southern end of the



San Joaquin Valley would have been dominated by saltbrush (*Atriplex* spp.) desert. (Katibah 1984).

The region around the Project site and the St. Johns River was largely dominated by annual grasslands in drier upland habitat, and riparian forest, rivers and marshland near the river. Historically, these habitats provided a lush environment for a variety of animals, including rodents, insects, reptiles, birds and other waterfowl, California grizzly bear (*Ursus arctos californicus*), tule elk (*Cervus canadensis nannodes*), pronghorn (*Antilocapra americana*), mule deer (*Odocoileus hemionus*), American black bear (*Ursus americanus*), and mountain lion (*Puma concolor*) (Preston 1981). Native trees and plants observed in the Project vicinity include various blue, live, and white oaks (*Quercus* spp.), cottonwood (*Populus* spp.), and willow (*Salix* spp.). The introduction of agriculture to the region resulted in large animals being forced out of their habitat. Common land mammals now include coyote (*Canis latrans*), bobcat (*Lynx rufus*), gray fox (*Urocyon cinereoargenteus*), kit fox (*Vulpes macrotis*), and rabbits (*Leporidae* spp.).

Rivers and lakes throughout the valley provide habitat for freshwater fish, including rainbow trout (*Oncorhynchus mykiss*), Sacramento sucker (*Catostomus occidentalis*), and Sacramento perch (*Archoplites interruptus*) (Preston 1981). Chinook salmon (*Oncorhynchus tshawytscha*) were also found throughout the valley, including as far south as the San Joaquin River, and occasionally the Kings River, though it is estimated that chinook salmon have lost as much as 72 percent of their original habitat throughout the Central Valley (Yoshiyama et al. 2001).

Current vegetation observed within the APE consisted primarily of annual grasses and ruderal vegetation. Specific species observed were foxtail barley (*Hordeum murinum*), common sowthistle (*Sonchus oleraceus*), shepherd's purse (*Capsella bursa-pastoris*), prickly lettuce (*Latuca serriola*), rescue grass (*Bromus catharticus*), bristly fiddleneck (*Amsinckia tessellata*), cheeseweed (*Malva parviflora*), lesser swine-cress (*Lepidium didymum*), bur clover (*Medicago polymorpha*), common knotgrass (*Polygonum aviculare*), annual yellow sweet clover (*Melilotus indicus*), great brome (*Juglans regia*), English walnut (*Juglans regia*), flatspine bur ragweed (*Ambrosia acanthicarpa*), common sunflower (*Helianthus annuus*), tree tobacco (*Nicotiana glauca*), Canadian horseweed (*Erigeron canadensis*), redstem stork's bill (*Eriodinium cicutarium*), chickweed (*Stellaria media*), red brome (*Bromus rubens*), Menzie's fiddleneck (*Amsinckia mezesii*), ivy-leaved morning glory (*Ipomoea hederacea*), Chinese thorn apple (*Datura quercifolia*), sacred datura (*Datura wrightii*), Russian thistle (*Salsola tragus*), milk thistle (*Silybum marianum*), and wild oats (*Avena fatua*).

## 2.2 PREHISTORIC SETTING

Research into San Joaquin Valley prehistory began in the early 1900s with several archaeological investigations (Rosenthal et al. 2007). The Southern San Joaquin Valley is one of the least understood areas within California due to a lack of well-grounded chronologies for large segments of the valley (Rosenthal et al. 2007). This is largely due to the valley floor being filled with thick alluvial deposits, and from human activity largely disturbing much of the valley floor due to a century and a half of agricultural use (Dillon 2002; Siefken 1999). Mound sites may have occurred as frequently as one every two or three miles along major waterways but studying such

mounded occupations sites is difficult as most surface sites have been destroyed (Schenck and Dawson 1929). Much of the early to middle Holocene archaeological sites may be buried as deep as 10 meters due to millennia of erosion and alluvial deposits from the western Sierras (Moratto 1984).

Mass agricultural development has heavily disturbed and changed the landscape of the Southern San Joaquin Valley, from the draining of marshes and the vanishing of the extensive Tulare Lake, known as “Pa’ashi” meaning “Big Water” in the Yokut language, to grading nearly the entire valley for agricultural operations (Garone 2011). These activities have impacted or scattered much of the shallow surface deposits and mounds throughout the valley (Rosenthal et al 2007). Some researchers have suggested that potentially as much as 90 percent of all Central California archaeological sites have been destroyed from these activities (Riddell 2002).

The cultural traits and chronologies which are summarized below are largely based upon information discussed in multiple sources, including Bennyhoff and Fredrickson (1973, 1974), Garfinkel (2015), McGuire and Garfinkel (1980), Moratto (1984), and Rosenthal et al. (2007). The most recent comprehensive approach to compiling a chronology of the Southern San Joaquin Valley prehistory is by Garfinkel in 2015, which builds off Rosenthal’s 2007 previous work. Both Garfinkel’s and Rosenthal’s chronologies are calculated in years B.C. In the interest of maintaining cohesiveness with modern anthropological research, the dates of these chronologies have been adapted into years before present (B.P.).

The Paleo-Indian Period (13,500-10,600 cal B.P.) was largely represented by ephemeral lake sites which were characterized by atlatl and spear projectile points. Around 14,000 years ago, California was largely a cooler and wetter place, but with the retreat of continental Pleistocene glaciers, California largely experienced a warming and drying period. Lakes filled with glacial meltwater were located in the valley floor and used by populations of now extinct large game animals. A few prehistoric sites were discovered near the southwestern shore of Tulare Lake (Garfinkel 2015). Foragers appear to have operated in small groups which migrated on a regular basis.

During the Lower Archaic Period (10,500-7450 cal B.P.), climate change created a largely different environment which led to the creation of larger alluvial fans and flood plains. Most of the archaeological records of the prior period wound up being buried by geological processes. During this time, cultural patterns appear to have emerged between the foothill and valley populations of the local people. The foothill sites were often categorized by dense flaked and ground stone assemblages, while the valley sites were instead characterized by a predominance of crescents and stemmed projectile points. Occupation within the area is represented mostly by isolated discoveries and along the former shoreline of Tulare Lake. Archaeological finds are typically characterized by chipped stone crescents, stemmed points, and other distinctive flakes stone artifacts (Rosenthal et al. 2007). Variations in consumption patterns emerged as well, with the valley sites more marked by consumption of waterfowl, mussels, and freshwater fish, while the foothills sites saw an increase in nuts, seeds, and a more narrowly focused diet than the valley sites.

The Middle Archaic (7450-2500 cal B.P.) saw an increase in semi-permanent villages along river and creek settings, with more permanent sites located along lakes with a more stable supply of water and wildlife. Due to the warmer and drier weather of this period, many lakes within the valley dramatically reduced in size, while some vanished completely (Garone 2011). Cultural patterns during this time saw an increase in stone tools, while a growth in shell beads, ornaments, and obsidian evidence an extensive and ever-growing long-distance trade network. Little is known of cultural patterns in the valley during the Upper Archaic (2500-850 B.P.), but large village structures appeared to be more common around local rivers. An overall reduction of projectile point size suggests changing bow and arrow technologies. Finally, the Emergent Period (850 cal B.P. - Historic Era) was generally marked by an ever-increasing specialization in tools, and the bow and arrow generally replaced the dominance of the dart and atlatl. Cultural traditions ancestral to those recorded during ethnographic research in the early 1900s are identifiable.

### 2.3 ETHNOGRAPHY

The Project's APE is in the Southern Valley Yokuts ethnographic territory of the San Joaquin Valley. Within California, the Yokuts were generally divided into three major groups, the Northern Valley Yokuts, the Southern Valley Yokuts, and the Foothill Yokuts. Linguistically, the Yokuts are a sub-group of the Penutian language that covers much of coastal and central California and Oregon (Callaghan 1958). The Yokuts language contained multiple dialects spoken throughout the region, though many of them were mutually understandable (Merriam 1904).

For the past 150 years Yokuts have been extensively researched and recorded by ethnographers, including Powers (1877), Kroeber (1925), Gifford and Schenck (1926, 1929), Gayton (1930, 1945), Driver (1937), Harrington (1957), Latta (1977), and Wallace (1978). Much of the research from these ethnographers focuses on the central Yokuts tribes due to the northernmost tribes being impacted by Euro-Americans during the California Gold Rush of the mid 1800s, and by the southernmost tribes often being removed and relocated by the Spanish to various Bay Area or coastal missions. The central Yokuts tribes, and especially the western Sierra Nevada foothill tribes, were the most intact at the time of ethnographic study.

The most detailed ethnographic information gathered regarding Native American group territories in Central California is located within maps prepared by Kroeber. The information presented in Kroeber's map of Southern and Central Yokuts shows the proposed Project APE is within the Telamni Yokuts territory (1925: Plate 47). The main ethnographic village for this area was *Waitatahulul*, which was approximately 5 miles to the south of the APE along Packwood Creek (Kroeber 1925). Primary Yokuts villages were typically located along lakeshores and major stream courses, with scattered secondary or temporary camps and settlements located near gathering areas in the foothills. Yokuts were organized into local tribes, with one or more linked villages and smaller settlements within a territory (Kroeber 1925).

Each local tribe was a land-owning group that was organized around a central village and shared common territory and ancestry. Most local tribe populations ranged from 150 to 500 people (Kroeber 1925). These local tribes were often led by a chief, who was often advised by a variety

of assistants including the winatum, who served as a messenger and assistant chief (Gayton 1930). Early studies by Kroeber (1925), Gifford and Schenck (1926), and Gayton (1930) concluded that social and political authority within local tribes was derived from male lineage and patriarchy. However, more recent reexaminations (Dick-Bissonnette 1998) argue that this assumption of patriarchal organization was based on male bias by early 20<sup>th</sup> century researchers, and instead Yokuts sociopolitical authority was matriarchal in nature and centered around matrilineal use-rights and women's work groups.

Prior to Euro-American contact, there was abundance of natural resources within the greater Tulare Lake area. Due to these resources, Yokuts maintained some of the largest populations in North America west of the continental divide (Cook 1955a).

## **2.4 HISTORIC SETTING**

### **2.4.1 California History**

European contact in modern-day California first occurred in 1542 with the arrival of a Spanish expedition lead by Juan Rodríguez Cabrillo into San Diego Bay (Engstrand 1997). Expeditions along the California coast continued throughout the sixteenth century and primarily focused on finding favorable harbors for further expansion and trade across the Pacific. However, rocky shorelines, unfavorable currents, and wind conditions made traveling north from New Spain to the upper California coast a difficult and time-consuming journey (Eifler 2017). The topography of California, with high mountains, large deserts, and few natural harbors lead to European expansion into California only starting in the 1760s. As British and Russian expansion through fur trading encroached on California from the north, Spain established a system of presidios, pueblos, and missions along the California coast to defend its claim, starting with Mission San Diego de Alcalá in 1769 (Engstrand 1997).

### **2.4.2 Central California History**

The San Joaquin Valley did not experience contact with Europeans until the late 1700s (Starr 2007). Life at the California missions was hard and brutal for Native Americans, with many dying of disease, poor conditions, and many fleeing to areas not under direct Spanish control (Jackson and Castillo 1995). The earliest exploration of the San Joaquin Valley by Europeans was likely by the Spaniards when in the fall of 1772 a group known as the Catalanian Volunteers entered the valley through Tejon Pass in search of deserters from the Southern California Missions (Zack 2017). However, the group only made it as far north as Buena Vista Lake in modern day Kern County before turning around due to the extensive swamps. Additional excursions to the valley were for exploration such as those led by Lieutenant Bariel Moraga in 1806, but also to find sites for suitable mission sites and to track down Native Americans fleeing the coastal missions (Cook 1958).

Subsequent expeditions were also sent to pursue outlaws from the coast who would often flee to the valley for safety. One of the subsequent explorations was an expedition in 1814 to 1815 with Sargent Juan Ortega and Father Juan Cabot, who left the Mission San Miguel with a company

of approximately 30 Spanish soldiers and explored the San Joaquin Valley (Smith 2004). This expedition passed through the Kaweah Delta and modern-day Visalia and made a recommendation to establish a mission near modern-day Visalia. However, with European contact also came European disease. Malaria and other new diseases were brought by Europeans, and in 1833 an epidemic of unknown origin traveled throughout the Central Valley. Some estimates place the Native American mortality of the epidemic as high as 75 percent (Cook 1955b). Combined with the rapid expansion of Americans into California in 1848 during the Gold Rush, Native American populations within the valley never fully recovered (Eifler 2017).

Initial settlement within the valley by Europeans in the 1830s was largely either by trappers or horse thieves (Clough and Secrest 1984). In fact, horse and other livestock theft was so rampant that ranching operations on the Rancho Laguna de Tache by the Kings River and Rancho del San Joaquin Rancho along the San Joaquin River could not be properly established (Cook 1962). With the end of the Mexican American War and the beginning of the gold rush in 1848, the San Joaquin Valley became more populated with ranchers and prospectors. Most prospectors traveled by sea to San Francisco and used rivers ranging from the Sacramento River to the San Joaquin River to access the California interior (Eifler 2017). Most areas south of the San Joaquin River were less settled simply because those rivers did not connect to the San Francisco Bay area except in wet flood years. By 1850, California became a state and Tulare County was established in 1853.

### **2.4.3 Local History**

The first county seat for Tulare County was Wood's Cabin but in 1852 the county seat relocated to the town of Visalia. In 1852 a group of settlers from Iowa and Texas located a few miles to the southwest of Woods Cabin. They erected a log fort on the north bank of Mill Creek and named it "Fort Visalia", probably after Visalia, Kentucky. Visalia was incorporated in 1874 and claims to be the oldest town in California between Stockton and Los Angeles (Hoover et al. 1990).

By the late 1850s the town of Visalia was a major station along the Butterfield Overland Mail stage route as it traveled north from Los Angeles to Stockton (Helmich 2008). During the first few decades, Visalia was a supply center for nearby gold rushes, served as the regional population center of Tulare County, and had an agricultural economy based on livestock and some agriculture (Dyett and Bhatia 2014). During the 1850s and 1860s roughly made earthen ditches and dams diverted stream water for irrigation, with the earliest ditches in the San Joaquin Valley being constructed in Visalia between 1852 to 1853 (Caltrans 2000).

The Southern Pacific Railroad was extended from Fresno into Tulare County in the early 1870s but bypassed the City of Visalia as it was located six miles to the east of the rail line (Small 1926). The construction of the rail line also brought an increase in agriculture and farms, which clashed with existing ranching operations in the local area. Escalating conflicts and livestock disputes between ranchers and farmers lead to the "No Fence Law" in 1874, which forced ranchers to pay for crop and property damage caused by their cattle (Ludeke 1980). With the passage of this law and the expansion of irrigation systems, predominant land use in the 1870s switched from grazing to farming (Mitchell 1974). This led to the beginning of the vast change of the San Joaquin Valley from native vegetation and grasslands to irrigated crops (Varner and Stuart 1975).

Water rights within California originally arose from the ‘first come first serve’ policy of the Gold Rush era. Diverting surface water to farms became big business but was a convoluted mess of customs, traditions, and conflicting claims (Zack 2017). Fed up with the situation, small farmers gathered behind Modesto lawyer C.C. Wright, who was elected to the California legislature in 1887 on the platform of taking water rights from large estates and putting it in the power of community-controlled irrigation districts (Hundley 1992). To solve this mess, the Wright Act of 1887 was passed that allowed residents to petition a local county board of supervisors to create irrigation districts that had the power to issue bonds, and tax land within the district boundaries to pay for the creation and maintenance of canals and ditches for irrigation purposes.

One of the first three districts created under the new act was the Tulare Irrigation District (TID), which was organized on September 21, 1889 (Caltrans 2000). The TID originally covered 219,000 acres from the foothills of the Sierra Nevada to the eastern boundary of Tulare Lake but was ultimately reduced to approximately 32,000 acres (Zack 2017).

At the same time as the Wright Act, an important step forward was made in ditch-digging technology that allowed irrigation systems to be built at a faster pace. From the 1840s to 1890s, farm ditches and canals were largely constructed through the use of buckboards and slip-scoops, which involved the use of a board pulled by horses in an upright position in order to level ground (Bulls 2010). Between 1883 and 1885, Scottish immigrant James Porteous had moved to Fresno and made significant improvements to the buckboard style scraper that allowed the new scraper to be pulled by two horses and scrape and move soil while dumping it at a controlled depth. This new design was patented and sold as the “Fresno Scraper”, which led to an explosion of ditch digging efforts within the San Joaquin Valley (Zack 2017).

Visalia was established within the center of the Kaweah River delta and flooding was a major threat in its early years. Two major floods from 1861 to 1862 and 1867 to 1868 completely rerouted the majority of the Kaweah River flow from the southern half of the Kaweah River Delta and instead created a brand-new channel now known as the Saint Johns River (Austin 2015). In 1891 the Levee Land District No. 1 was formed in order to create levees on the south bank of the Saint John’s River to protect Visalia from flooding along this new channel. The first levee was created in 33 days between November 2 and December 5, 1891 (Austin 2015). The levee ran 6.5 miles east to west on the south bank of the Saint John’s River from Cutler’s Bridge to Burrell’s bridge and was built up to three feet above the highest water mark. The levee failed in multiple places during the 1945 floods but remains to present day. Additionally, a levee was built on the north side of the St Johns River between 1906 and 1945, which may have helped contribute to the failure of the south-bank levee during the floods of 1945 by further restricting the flood channel (Austin 2015).

## **3 METHODS**

### **3.1 RECORDS SEARCH**

On April 30, 2024, Taylored Archaeology requested a cultural resource records search from the SSJVIC of the CHRIS at California State University in Bakersfield, California. The purpose of this request was to identify and review prior cultural resource studies and previously recorded cultural resources on or near the APE. The records search included prior cultural resources investigation reports conducted, previously recorded resources within the APE and the 1.0- mile radius around the APE (Appendix B). Also included in research were cultural resource records (DPR forms) as well as the Historic Properties Directory of the Office of Historic Preservation list, General Land Office Maps, Archaeological Determinations of Eligibility list, and the California Inventory of Historic Resources list.

### **3.2 ARCHIVAL RESEARCH**

As part of the cultural resources assessment, Taylored Archaeology examined historical aerial photographs, historical USGS topographic maps, Google Street View photos, books, scholarly articles, and other records to obtain information on the history of land use and to identify potential historical structures or buildings within the Project boundary. Research data was used from California State University, Fresno's database (<http://malt.lib.csufresno.edu/MALT/>), Google Earth and historicaerials.com. The results of this research are presented in Chapter 4.

### **3.3 NATIVE AMERICAN OUTREACH**

Taylored Archaeology requested a Sacred Lands File (SLF) search from the NAHC on April 30, 2024. The objective of the SLF search was to identify any known places of spiritual, sacred activity or traditional use or other resources of importance. The NAHC also included contact information of local Native American representatives who may have knowledge or interest in sharing information of resources of sacred significance present in or near the APE. Each individual listed was sent a nongovernmental outreach letter and a map notifying them of the Project and asking if they had any knowledge of the Project area or surrounding vicinity. Follow-up communication was performed via email and phone calls, as appropriate. The SLF results are in Chapter 4.

### **3.4 ARCHAEOLOGICAL PEDESTRIAN SURVEY**

On May 18, 2024, Archaeologists Consuelo Sauls and Anthony Hartman conducted an archaeological pedestrian survey of the entire Project's APE. The survey method varied based on the specific conditions within the APE. The survey began in the northeast corner of the APE and was completed from east to west along transects oriented north to south using parallel transects spaced 15-20 meters apart. Areas with slopes greater than 20 percent, with thick vegetation, or active earth moving activities were subject to an opportunistic survey. All areas of the APE were



accessible and surveyed. The archaeologists carefully inspected exposed ground surface and rodent burrow back-dirt piles and other areas of bare earth for soil changes and artifacts.

The APE was checked for both prehistoric deposits and historic-age features, structures, and artifacts more than 50 years old that may be present on the ground surface. The archaeologists photographed portions of the APE using digital cameras. A survey plan map of the site boundary was used to see vegetation, structures, map out transects and surveyed, and recorded observations on field notes, and collected locational data on a Gaia Global Positioning System application.

## 4 RESULTS

### 4.1 RECORDS SEARCH

The SSJVIC provided the records search results in a letter dated May 13, 2024 (Appendix B). A list of previous cultural resources studies recorded in the APE is included in Table 4-1. The table describes these studies and neither of these studies are surveys of the APE. TU-00041 is a literature review that describes the overview of different regions of Fresno, Tulare and Kern counties for a pipeline project and contains an inventory of all recorded resources within potential pipeline routes. This study does not intersect the APE. TU-01190 is a narrative book of the 1851 Mariposa War and is not relevant to the APE. There are 12 cultural resources studies previously recorded within a 1.0-mile radius of the APE. None of the studies intersect the APE (Table 4-2).

The records search results indicate that there are no cultural resources previously recorded within the APE. However, five cultural resources have been previously recorded within a 1.0-mile radius of the APE (Table 4-3).

**Table 4-1 Previous Cultural Resource Studies within the Project APE**

Report Number	Author(s)	Date	Report Title	Study
<b>TU-00041</b>	William Self	1995	Class I Overview, Santa Fe Pacific Pipeline Partners, L.P., Proposed Concord to Colton Pipeline Project	Archaeological Literature Review
<b>TU-01190</b>	Annie R. Mitchell	1957	Jim Savage and the Tulareño Indians	Book; No survey of Project area

**Table 4-2 Previous Cultural Resources Studies within 1.0-mile radius of the APE**

Report Number	Author(s)	Date	Report Title	Study
<b>TU-00103</b>	Brian Wickstrom and Emily Anderson	1997	Cultural Resource Survey for the Selma to Bakersfield Fiberoptic Line, Southern San Joaquin Valley, California	Archaeological Field Survey

Report Number	Author(s)	Date	Report Title	Study
<b>TU-00141</b>	R.J. Cantwell	1976	Archaeological Survey Report for Summers Park at Terminal End of Perez Lane	Archaeological Field Survey
<b>TU-00624</b>	Charlotte Williams	1973	The Archaeological Section of the Environmental Report for the 580 Acres North of the St. Johns River Along Both Sides of Ben Maddox Way	Archaeological Field Survey
<b>TU-01111</b>	Nikki Cherry	2001	Section 106 Review for the Cricket Telecommunications Site, Mohamed, Located at 2411 North Dinuba Blvd., Visalia, California	Archaeological Field Survey
<b>TU-01299</b>	Lorna Billat	2006	Collocation Submission Packet, FCC Form 621, for Visalia North, SC-10580	Archaeological Field Survey
<b>TU-01499</b>	Rebecca S. Orfila	2010	Re: Archaeological Survey for the Southern California Edison Company: Replacement of Fourteen Deteriorated Power Poles on the Garcia 12 kV, Gill 12 kV, Linnell 12 kV, Merryman 12 kV, Mississippi 12 kV, Roeding 12 kV, Tarusa 12 kV, Viento 12 kV, Virgil 12 kV, and Wells 12 kV Circuits In Kern and Tulare Counties, California	Archaeological Field Survey
<b>TU-01623</b>	Dudley M. Varner	2013	A Cultural Resource Study for the Self-Help Enterprises Housing Project in the City of Visalia, Tulare County, California	Archaeological Field Survey
<b>TU-01644</b>	Lorna Billat	2013	New Tower Submission Packet, FCC Form 620, for the Riverway Sports Park, CV2954	Archaeological Field Survey
<b>TU-01738</b>	Johni Etheridge and MacKensie Cornelius	2015	Archaeological Survey Report Orchard Walk East/Ensite #25350 (285505) 3611 North Dinuba Boulevard, Visalia, Tulare County, California	Archaeological Field Study

Report Number	Author(s)	Date	Report Title	Study
<b>TU-01778</b>	Andrew Nuss and Matthew Beazley	2016	Archaeological Assessment TCNS ID #140292, American Towers, LLC, Visalia, Tulare County, California	Archaeological Field Survey
<b>TU-01890</b>	Jessica Jones and Diana T. Dyste	2018	Historic Property Identification Report for the Patterson Tract Community Services District Water Upgrade Project, Tulare County, California	Archaeological and Architectural/Historical Field Survey
<b>TU-01941</b>	Scott M. Hudlow	2021	A Phase I Cultural Resource Survey for Self-Help Enterprises, Colegio Project, City of Visalia, CA	Archaeological and Architectural/Historical Field Survey

**Table 4-3 Previous Recorded Cultural Resources within 1.0-mile radius of the Project APE**

Resource Number	Age Association	Resource Type	NRHP/CRHR Eligibility Status	Year Recorded	Distance from APE
<b>P-54-003602</b>	Historic	Structure; Modoc Canal or Modoc Ditch	Not eligible for CRHR	2021 (ASM Affiliates)	0.92 miles south
<b>P-54-004632</b>	Historic	Structure; Railroad (Burlington Northern and Santa Fe Railway)	Not eligible for NRHP and CRHR	2019 (ASM Affiliates)	0.47 miles east
<b>P-54-005612</b>	Historic	Building; R-1 Single Family Property	Not evaluated	2021 (Hudlow Cultural Resource Associates)	0.27 miles south
<b>P-54-005613</b>	Historic	Building; R-2 Single Family Property	Not evaluated	2021 (Hudlow Cultural Resource Associates)	0.24 miles south
<b>Bridge 46-100</b>	Historic	Bridge (St. Johns River)	Not eligible for NRHP	Built in 1931. Widen/extended in 1969	0.02 miles south

## 4.2 ARCHIVAL RESEARCH

Historic map coverage of the APE began in 1885. A review of an 1885 irrigation map of Fresno to Porterville shows the northeastern quarter of Township 18 South, Range 25 East, Section 18, including the APE, as owned by a “Robinson”. Additionally, the St. John’s River is identified immediately south of the APE as the “St. John’s Channel”. This channel of the Kaweah River was created in the floods of 1862 and 1867, as previously discussed in Section 2.4.3 of this report (Hammond 1885; Austin 2015).

Available topographic map coverage of the APE begins in 1927. The USGS topographic map of the APE depicts the APE bordered by State Route 63 on the east, and the St. Johns River on the south (NETROnline 2024). Additionally, a single structure is depicted on the east border of the APE along the west side of State Route 63. A 1950 USGS topographic map depicts a levee along the southern boundary of the APE on the north bank of the St Johns River. Aerial photography of the APE begins in 1956 shows the APE as an agricultural field, with the levee along the north bank of the St Johns River, State Route 63 on the east boundary of the APE, and a rural residence along State Route 63 within the central eastern APE boundary. By 1969 the rural residence appears to have been demolished, and no other structures appear present within the APE. The APE appears to have been utilized as an agricultural field until sometime between 1994 and 2005 when the field was turned into an orchard. The orchard appears to have been removed sometime between May 2023 and March 2024 (Google Earth 2024). An earthen berm along the eastern boundary of the APE appears after the removal of the orchard by March 2024.

## 4.3 NATIVE AMERICAN OUTREACH

The NAHC responded on May 15, 2024, via letter regarding Taylored Archaeology’s request. The SLF search did not identify the presence of cultural resources in the proposed Project APE. The NAHC supplied a list of Native American representatives to contact for information or knowledge of cultural resources in the APE and the surrounding area (Appendix C).

The following Native American organizations/individuals were contacted from the list provided by NAHC below:

1. Chairperson Robert Ledger of the Dumna Wo-Wah Tribal Government
2. Chairperson Delia Dominguez of Kitanemuk and Yowlumne Tejon Indians
3. Cultural Specialist I Nichole Escalon of the Santa Rosa Rancheria Tachi Yokut Tribe
4. Cultural Specialist II Samantha McCarty of the Santa Rosa Rancheria Tachi Yokut Tribe
5. Tribal Historic Preservation Officer Shana Powers of the Santa Rosa Rancheria Tachi Tribe
6. Cultural Resource Director Bob Pennell of Table Mountain Rancheria
7. Chairperson Michelle Heredia-Cordova of Table Mountain Rancheria
8. Chairperson David Alvarez of Traditional Choinumni Tribe
9. Chairperson Neil Peyron of the Tule River Indian Tribe
10. Tribal Archaeologist Joey Garfield of the Tule River Indian Tribe
11. Environmental Department Director Kerri Vera of the Tule River Tribe
12. Chairperson Kenneth Woodrow of the Wuksache Indian Tribe/Eshom Valley Band

Each individual on the contact list was contacted on May 22, 2024 (Appendix C). The letters included a description of the proposed Project and a topographic map of the location. Follow-up by emails were sent on June 3, 2024. Environmental Department Director Kerri Vera of the Tule River Tribe state that the letter was received and thank you.

As of the date of this report, Taylored Archaeology has not received any responses to the Native American outreach letters and emails pertaining to the APE.

#### **4.4 ARCHAEOLOGICAL PEDESTRIAN SURVEY RESULTS**

Taylored Archaeology's intensive pedestrian survey of the APE covered a total of 108 acres. The majority of the landscape within the APE is heavily disturbed by previous agricultural uses (former orchard) as evidenced by woodchips and pecans scattering the ground (Figure 4-1). Ground visibility ranged from 100 percent in areas of bare soil to 0 percent in areas of heavy vegetative cover. An earthen berm was observed along the eastern boundary of the APE running north to south (Figure 4-2). A levee along the north bank of the St Johns River was observed at the southern boundary of the APE covered in grasses (Figure 4-3).

Multiple portions of the APE totaling approximately 15 acres were highly disturbed. Active earth moving operations were observed during the time of the survey in the northeastern portion of the APE, consisting of massive grading and soil piles being moved by a wheel loader with dust control from a water truck (Figure 4-4). Recently moved soil piles were additionally observed at the northwestern end of the APE, near a parked motor grader and excavator (Figures 4-5 and 4-6). Additionally, excavations were observed along the central northern portion of the APE consisting of grading approximately two meters deep by thirty meters wide (Figure 4-7). The rest of the APE consisted of thistle and ruderal grass (Figure 4-8). Along the levee of St. Johns River, there was a small dirt path along the southern boundary of the APE and a few modern debris such as unidentified metal scraps and blue plastic chairs within the APE.

Soils observed in the APE consisted of a grayish brown fine loam consistent with Flamen and Grangeville soil series as reported by the Natural Resources Conservation Service Web Soil Survey to be within the APE (NRCS 2024).

No archaeological sites, isolated artifacts, buildings or features were encountered within the Project's APE during the survey. While past agricultural and development activities may have potentially destroyed or obscured ground surface evidence of archaeological resources within the APE, intact archaeological resources may potentially exist below the ground surface.





**Figure 4-1** Woodchips of former orchard.



**Figure 4-2** Eastern portion of APE with earthen berm on right and levee in background, view south.





**Figure 4-3** St. Johns River at southern boundary within APE, atop levee, view southeast.



**Figure 4-4** Active wheel loader and water truck in northeast portion of APE, view northwest.





**Figure 4-5** Ground disturbance and motor grader in northwest portion of APE, view east.



**Figure 4-6** Ground disturbance and excavator in northwest portion of APE, view south.



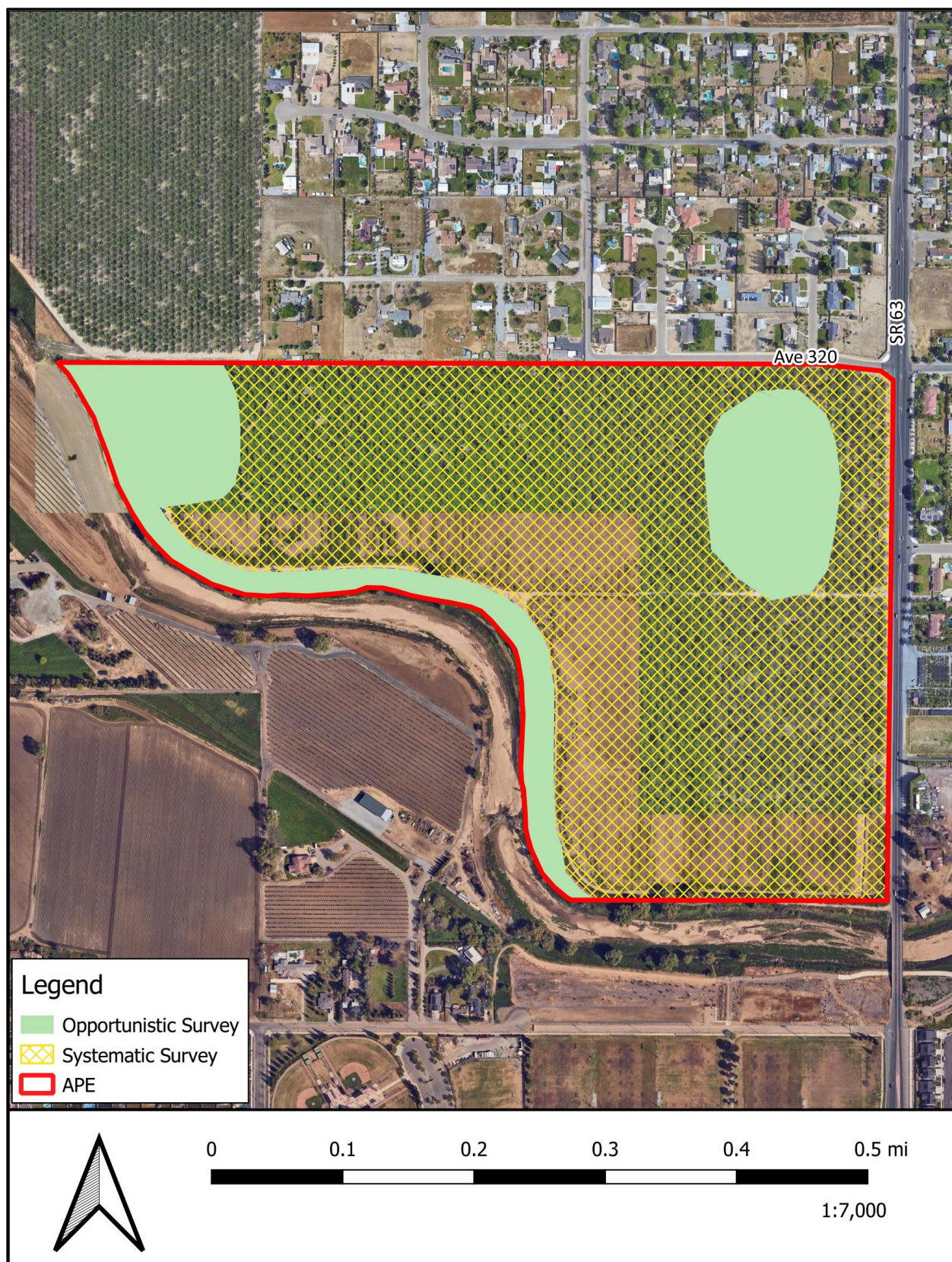


**Figure 4-7** Large excavation in north central portion of APE, view southwest.



**Figure 4-8** Overview of southeastern portion of APE, facing north.





**Figure 4-9 Survey coverage within the APE.**



#### 4.4.1 Potential for Buried Sites

As discussed in Section 2.1, Natural Environment, of this report, much of the archaeological record in the San Joaquin Valley is buried from floodplains, lake sediments, and alluvial fans and cultural resources are not always visible on the ground surface. Therefore, it is important that archaeological investigations consider the sensitivity of the vertical Project impact to contain potential intact buried cultural resources. By understanding changes in the history of the landscape and natural hydrology, as well as the age of the soil, depositional setting, and general environmental conditions, predictions regarding the potential for the Project to impact cultural resources lying below the ground surface can be made.

The Project site is located within the central portion of the southern San Joaquin Valley within the Kaweah River alluvial fan, which is part of a series of alluvial fans formed by erosion from the main hydrological systems originating in the Sierra Nevada mountains. The Kaweah River alluvial fan is a stream-dominated fan covering more than 400 square miles and lies within the general vicinity of Visalia, the City of Tulare, and Hanford (Weissmann et al. 2002; White 2016). The fan has a low gradient due to the flat valley topography, with stream flow trending towards the west and southwest. The lower Kaweah River fan surrounding the general Project site is comprised of Holocene era deposits as indicated by the presence of well-developed soils (Meyer and Brandy 2019). As discussed in Section 4.2, Archival Research, detailed irrigation and GLO maps from 1885, 1892, and USGS topographic maps from 1927 to 2021, depict the Project site as located within the lower Kaweah River alluvial fan adjacent to the St Johns River, a distributary of the Kaweah River (Hammond 1885, Thompson 1892, USGS 1927-2021).

A previous geoarchaeological sensitivity model for the San Joaquin Valley was conducted by Far Western Anthropological Research Group in 2019, which analyzed sensitivity based on various geographic factors such as water proximity, slope, soil type, and landform (Meyer and Brandy 2019). According to this model, the Project site and the surrounding Kaweah River alluvial fan is located within an area of very high sensitivity for the potential presence of buried prehistoric archaeological deposits. Additionally, as discussed in Section 2.3, Ethnography, the lower Kaweah River alluvial fan was a heavily occupied area prior to European contact, with three documented villages and four tribes within a ten-mile radius of the Project site (Kroeber 1925, Latta 1977).

Based upon ethnographic data, historical maps, and archaeological sensitivity models, the Project area was dominated by natural watercourses and likely contained a rich supply of natural resources for indigenous populations. Thus, there is a high possibility of encountering buried cultural resources during Project ground disturbing activities.

## CONCLUSIONS AND RECOMMENDATION

Taylorred Archaeology performed a Phase I Cultural Resources Assessment for the Mathews Recharge Basin Project. The Project involves developing a recharge basin with a delivery facility from the St. Johns River to recharge the basin. Taylorred Archaeology's assessment consisted of a records search from the SSJVIC, archival research to gather background information on the site, nongovernmental Native American outreach, and a pedestrian survey. Taylorred Archaeology did not observe evidence of prehistoric and historic cultural resources on the ground surface within the APE. The absence of cultural material on the ground surface does not, however, preclude the possibility of Project construction unearthing buried archaeological deposits. As discussed in Section 4.4.1, there is a high possibility of encountering buried cultural resources within the APE during Project ground disturbing activities.

The SSJVIC reported no prior cultural resources studies conducted within the APE and no cultural resources recorded within the APE. The SSJVIC also reported that 12 previous cultural resources studies were conducted, and five historical resources were recorded, within a 1-mile radius of the APE. The first resource, P-54-003602, is a segment of the Modoc Canal/Modoc Ditch. The second resource, P-54-004632, is a segment of the Burlington Northern Santa Fe Railway. The third and fourth resources (P-54-005612 and P-54-005613) are historic residences. The fifth resource, Bridge #46-100 (Caltrans Bridge Number 46 0100), is the St. Johns River bridge. None of these resources will be impacted by the proposed Project.

The NAHC's Sacred Lands File search and the nongovernmental outreach to the Native American representatives did not result in identification of sacred sites within the APE or surrounding area. No additional responses were received to the letters or emails.

The archaeological pedestrian survey results did not identify any prehistoric or historic-period cultural resources within the APE. Thus, Taylorred Archaeology's study concludes that no historic properties will be affected by the proposed undertaking.

Based on the results of this investigation, including the high sensitivity for buried sites within the APE, Taylorred Archaeology therefore recommends the following:

- An archaeological monitor shall be present on the Project site during ground disturbing activities within the APE. In the event of accidental discovery of unidentified archaeological remains during development or ground disturbing activities within any portion of the APE, all work shall be halted in the immediate vicinity (within a 100-foot radius) until a qualified archaeologist can identify the discovery and assess its significance.
- In the event that previously unidentified archaeological remains are encountered during development or ground-moving activities in the APE, all work should be halted until a qualified archaeologist can identify the discovery and assess its significance. In the event

of accidental discovery of unidentified archaeological remains during development or ground-moving activities in the APE, all work shall be halted in the immediate vicinity until a qualified archaeologist can identify the discovery and assess its significance.

- If human remains are uncovered during construction, the Tulare County Coroner is to be notified to investigate the remains and arrange proper treatment and disposition. If the remains are identified on the basis of archaeological context, age, cultural associations, or biological traits to be those of a Native American, California Health and Safety Code 7050.5 and PRC 5097.98 require that the coroner notify the NAHC within 24 hours of discovery. The NAHC will then identify the Most Likely Descendent who will be afforded an opportunity to make recommendations regarding the treatment and disposition of the remains.



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## **APPENDIX A**

### **Personnel Qualifications**



**Consuelo Sauls, M.A., RPA 41591505** meets the Secretary of the Interior's Guidelines for archaeology. Ms. Sauls holds a B.A. in Anthropology from California State University, Fresno and an M.A. in Archaeology from Durham University. She has 16 years' experience as an archaeologist in California, New Jersey, and England. She has conducted pedestrian surveys, supervised Phase I and II surveys, authored technical reports, and completed the Section 106 process with the State Historic Preservation Officer and Tribal Historic Preservation Officer. Her experience includes data recovery excavation at Western Mono sites and processing recovered artifacts in the laboratory as well as conducting archival research about prehistory and ethnography of Central California. Ms. Sauls has authored and contributed to technical and letter reports in compliance with of the National Historical Preservation Act (NHPA) Section 106 and the California Environmental Quality Act (CEQA). She also supported NHPA tribal consultation and responded to Assembly Bill 52 tribal comments. Ms. Sauls also has an extensive background supervising laboratory processing, cataloging, and conservation of prehistoric and historical archaeological collections.

**Anthony Hartman, B.A.,** has six years of archaeological survey experience in California. He has participated in numerous archaeological surveys, excavations, and construction monitoring of cultural resources throughout California, including the Central Valley and the Sierra Nevada. Mr. Hartman holds a B.A. in Anthropology at the State University of New York, College at Buffalo.

## **APPENDIX B**

### **Records Search Results**



5/13/2024

Consuelo Sauls  
Tailored Archaeology  
6083 N. Figarden Drive, Suite 616  
Fresno, CA 93722

Re: Mathews Recharge Basin  
Records Search File No.: 24-201

The Southern San Joaquin Valley Information Center received your record search request for the project area referenced above, located on Monson & Visalia USGS 7.5' quads. The following reflects the results of the records search for the project area and the 1.0 mile radius:

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

Resources within project area:	None
Resources within 1.0 mile radius:	P-54-003602, 004632, 005612, 005613, Bridge 46-100
Reports within project area:	TU-00041, 01190
Reports within 1.0 mile radius:	TU-00103, 00141, 00624, 01111, 01299, 01499, 01623, 01644, 01738, 01778, 01890, 01941

**Resource Database Printout (list):**

☒ enclosed ☐ not requested ☐ nothing listed

**Resource Database Printout (details):**

☒ enclosed ☐ not requested ☐ nothing listed

**Resource Digital Database Records:**

☒ enclosed ☐ not requested ☐ nothing listed

**Report Database Printout (list):**

☒ enclosed ☐ not requested ☐ nothing listed

**Report Database Printout (details):**

☒ enclosed ☐ not requested ☐ nothing listed

**Report Digital Database Records:**

☒ enclosed ☐ not requested ☐ nothing listed

**Resource Record Copies:**

☒ enclosed ☐ not requested ☐ nothing listed

**Report Copies:**

☒ enclosed ☐ not requested ☐ nothing listed

**OHP Built Environment Resources Directory:**

☐ enclosed ☐ not requested ☒ nothing listed

**Archaeological Determinations of Eligibility:**

☐ enclosed ☐ not requested ☒ nothing listed

**CA Inventory of Historic Resources (1976):**

☐ enclosed ☐ not requested ☒ nothing listed

**Caltrans Bridge Survey:** Not available at SSJVIC; please see  
<https://dot.ca.gov/programs/environmental-analysis/cultural-studies/california-historical-bridges-tunnels>

**Ethnographic Information:** Not available at SSJVIC

**Historical Literature:** Not available at SSJVIC

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

**Local Inventories:** Not available at SSJVIC

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

**Shipwreck Inventory:** Not available at SSJVIC; please see  
<https://www.slc.ca.gov/shipwrecks/>

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

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

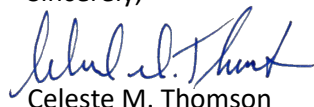
The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained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

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

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

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

Sincerely,



Celeste M. Thomson  
Coordinator

## **APPENDIX C**

### **Native American Outreach**



## NATIVE AMERICAN HERITAGE COMMISSION

May 15, 2024

Consuelo Sauls  
Taylored ArchaeologyVia Email to: [csaulsarchaeo@gmail.com](mailto:csaulsarchaeo@gmail.com)

Re: Mathews Recharge Basin Project, Tulare County

To Whom It May Concern:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: [Murphy.Donahue@NAHC.ca.gov](mailto:Murphy.Donahue@NAHC.ca.gov)

Sincerely,

Murphy Donahue  
Cultural Resources Analyst

Attachment

CHAIRPERSON  
**Reginald Pagaling**  
ChumashVICE-CHAIRPERSON  
**Buffy McQuillen**  
Yokayo Pomo, Yuki,  
NomlakiSECRETARY  
**Sara Dutschke**  
MiwokPARLIAMENTARIAN  
**Wayne Nelson**  
LuiseñoCOMMISSIONER  
**Isaac Bojorquez**  
Ohlone-CostanoanCOMMISSIONER  
**Stanley Rodriguez**  
KumeyaayCOMMISSIONER  
**Laurena Bolden**  
SerranoCOMMISSIONER  
**Reid Milanovich**  
CahuillaCOMMISSIONER  
**Bennae Calac**  
Pauma-Yuima Band of  
Luiseño IndiansEXECUTIVE SECRETARY  
**Raymond C.  
Hitchcock**  
Miwok, NisenanNAHC HEADQUARTERS  
1550 Harbor Boulevard  
Suite 100  
West Sacramento,  
California 95691  
(916) 373-3710  
[nahc@nahc.ca.gov](mailto:nahc@nahc.ca.gov)

**Native American Heritage Commission**

County	Tribe Name	Fed (F) Non-Fed (N)	Contact Person	Contact Address	Phone #	Email Address	Cultural Affiliation	Counties	Last Updated
Tulare	Dumna Wo-Wah Tribal Government	N	Robert Ledger, Chairperson	2191 West Pico Ave. Fresno, CA, 93705	(559) 540-6346	ledgerrobert@ymail.com	Foothill Yokut Mono	Fresno,Kern,Madera, Tulare	
	Kitanemuk & Yowlumne Tejon Indians	N	Delia Dominguez, Chairperson	115 Radio Street Bakersfield, CA, 93305	(626) 339-6785	2deedominguez@gmail.com	Kitanemuk Southern Valley Yokut	Fresno,Kern,Kings,Los Angeles,Madera,Monterey,San Benito,San Luis Obispo,Tulare	
	Santa Rosa Rancheria Tachi Yokut Tribe	F	Nichole Escalon, Cultural Specialist I	P.O. Box 8 Lemoore, CA, 93245	(559) 924-1278	nescalone@tachi-yokut-nsn.gov	Southern Valley Yokut	Fresno,Kern,Kings,Merced,Monterey,San Benito,San Luis Obispo,Tulare	10/3/2023
	Santa Rosa Rancheria Tachi Yokut Tribe	F	Samantha McCarty, Cultural Specialist II	P.O. Box 8 Lemoore, CA, 93245	(559) 633-3440	smccarty@tachi-yokut-nsn.gov	Southern Valley Yokut	Fresno,Kern,Kings,Merced,Monterey,San Benito,San Luis Obispo,Tulare	10/3/2023
	Santa Rosa Rancheria Tachi Yokut Tribe	F	Shana Powers, THPO	P.O. Box 8 Lemoore, CA, 93245	(559) 423-3900	spowers@tachi-yokut-nsn.gov	Southern Valley Yokut	Fresno,Kern,Kings,Merced,Monterey,San Benito,San Luis Obispo,Tulare	10/3/2023
	Table Mountain Rancheria	F	Bob Pennell, Cultural Resource Director	P.O. Box 410 Friant, CA, 93626	(559) 325-0351	rpennell@tmr.org	Yokut	Fresno,Kern,Kings,Madera,Monterey,San Benito,San Luis Obispo,Tulare	
	Table Mountain Rancheria	F	Michelle Heredia-Cordova, Chairperson	P.O. Box 410 Friant, CA, 93626	(559) 822-2587	mhcordova@tmr.org	Yokut	Fresno,Kern,Kings,Madera,Monterey,San Benito,San Luis Obispo,Tulare	12/21/2023
	Traditional Choinumni Tribe	N	David Alvarez, Chairperson	2415 E. Houston Avenue Fresno, CA, 93720	(559) 217-0396	davealvarez@sbcglobal.net	Foothill Yokut	Fresno,Kern,Madera, Tulare	
	Tule River Indian Tribe	F	Neil Peyron, Chairperson	P.O. Box 589 Porterville, CA, 93258	(559) 781-4271	neil.peyron@tulerivertribe-nsn.gov	Yokut	Alameda,Amador,Calaveras,Contra Costa,Fresno,Inyo,Kern,Kings,Madera,Mariposa,Merced,Monterey,Sacramento,San	
	Tule River Indian Tribe	F	Joey Garfield, Tribal Archaeologist	P. O. Box 589 Porterville, CA, 93258	(559) 783-8892	joey.garfield@tulerivertribe-nsn.gov	Yokut	Alameda,Amador,Calaveras,Contra Costa,Fresno,Inyo,Kern,Kings,Madera,Mariposa,Merced,Monterey,Sacramento,San	7/22/2016
	Tule River Indian Tribe	F	Kerri Vera, Environmental Department	P. O. Box 589 Porterville, CA, 93258	(559) 783-8892	kerri.vera@tulerivertribe-nsn.gov	Yokut	Alameda,Amador,Calaveras,Contra Costa,Fresno,Inyo,Kern,Kings,Madera,Mariposa,Merced,Monterey,Sacramento,San	7/22/2016
	Wuksachi Indian Tribe/Eshom Valley Band	N	Kenneth Woodrow, Chairperson	1179 Rock Haven Ct. Salinas, CA, 93906	(831) 443-9702	kwood8934@aol.com	Foothill Yokut Mono	Alameda,Calaveras,Contra Costa,Fresno,Inyo,Kings,Madera,Marin,Mariposa,Merced,Mono,Monterey,San Benito,San	6/19/2023

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Mathews Recharge Basin Project, Tulare County.

Record: PROJ-2024-002597  
Report Type: List of Tribes  
Counties: Tulare  
NAHC Group: All



Native American Outreach Log								
Mathews Recharge Basin Project, Tulare County, California								
Organization	Name	Position	Address	Phone Number	Email Address	Letter	E-Mail	Summary of Contact
Native American Heritage Commission	Murphy Donahue	Culutral Resources Analyst	1550 Harbor Boulevard Suite 100 West Sacramento, California 95691	(916) 373-3710	nahc@nahc.ca.gov		4/30/2024	In a letter dated May 15, 2024, the NAHC stated that the results were negative and suggested to contact the local Native American representatives on the list provided.
Dumna Wo-Wah Tribal Government	Robert Ledger	Chairperson	2191 West Pico Ave. Fresno, CA 93705	(559) 540-6346	ledgerrobert@ymail.com	5/22/2024	6/3/2024	No response.
Kitanemuk & Yowlumne Tejon Indians	Delia Dominguez	Chairperson	115 Radio Street Bakersfield, CA 93305	(626) 339-6785	2deedominguez@gmail.com	5/22/2024	6/3/2024	No response.
Santa Rosa Rancheria Tachi Yokut Tribe	Nichole Escalon	Cultural Specialist I	P.O. Box 8 Lemoore, CA 93245	(559) 924-1278	nescalone@tachi-yokut-nsn.gov	5/22/2024	6/3/2024	No response.
Santa Rosa Rancheria Tachi Yokut Tribe	Samantha McCarty	Cultural Specialist II	P.O. Box 8 Lemoore, CA 93245	(559) 633-3440	smccarty@tachi-yokut-nsn.gov	5/22/2024	6/3/2024	No response.
Santa Rosa Rancheria Tachi Yokut Tribe	Shana Powers	THPO	P.O. Box 8 Lemoore, CA 93245	(559) 423-3900	spowers@tachi-yokut-nsn.gov	5/22/2024	6/3/2024	No response.
Table Mountain Rancheria	Bob Pennell	Cultural Resource Dire	P.O. Box 410 Friant, CA, 93626	(559) 325-0351	rpennell@tmr.org	5/22/2024	6/3/2024	No response.
Table Mountain Rancheria	Michelle Heredia-Cordova	Chairperson	P.O. Box 410 Friant, CA 93626	(559) 822-2587	mhcordova@tmr.org	5/22/2024	6/3/2024	No response.
Traditional Choinumni Tribe	David Alvarez	Chairperson	2415 E. Houston Avenue Fresno, CA 93720	(559) 217-0396	davealvarez@sbcglobal.net	5/22/2024	6/3/2024	No response.
Tule River Indian Tribe	Neil Peyron	Chairperson	P.O. Box 589 Porterville, CA 93258	(559) 781-4271	neil.peyron@tulrivertribe-nsn.gov	5/22/2024	6/3/2024	No response.
Tule River Indian Tribe	Joey Garfield	Tribal Archaeologist	P.O. Box 589 Porterville, CA 93258	(559) 783-8892	joey.garfield@tulerivertribe-nsn.gov	5/22/2024	6/3/2024	No response.
Tule River Indian Tribe	Kerri Vera	Environmental Department Director	P.O. Box 589 Porterville, CA 93258	(559) 783-8892	kerri.vera@tulerivertribe-nsn.gov	5/22/2024	6/3/2024	Kerri Vera replied via email that she received the letter and thank you.
Wuksache Indian Tribe/Eshom Valley Band	Kenneth Woodrow	Chairperson	1179 Rock Haven Ct. Salinas, CA 93906	(831) 443-9702	kwood8934@aol.com	5/22/2024	6/3/2024	No response.



EXAMPLE

May 22, 2024

Kerri Vera, Environmental Department Director  
Tule River Indian Tribe  
P.O. Box 589  
Porterville, CA 93258

**RE: Mathews Recharge Basin, Tulare County, California**

Dear Kerri Vera,

Taylored Archaeology, under contract to Provost & Pritchard Consulting Group, is providing cultural resource services for the proposed Mathews Recharge Basin Project (project) in Tulare County, California. The proposed project will include developing a recharge basin on a former walnut orchard of approximately 100 acres. The project would also include a delivery facility from the St. Johns River to the proposed basin area for groundwater recharge. The project is subject to Section 106 of the National Historic Preservation Act and the California Environmental Quality Act. The project site is located next to the St. John's River, west of Highway 63 and north of the City of Visalia. The project's Area of Potential Effects (APE) is in Section 18, Township 18 South, Range 25 East, Mount Diablo Meridian of the Visalia, California 7.5-minute USGS quadrangle (see attached map).

A search of the Native American Heritage Commission's (NAHC) Sacred Lands File did not indicate the presence of tribal or cultural resources in the immediate project area. Taylored Archaeology also requested a records search of the APE at the California Historic Resources Information System (CHRIS), Southern San Joaquin Valley Information Center (SSJVIC) located at the California State University, Bakersfield. The records search results did not identify any cultural resources within the APE. The SSJVIC identified two previously completed survey reports in the APE, and 12 within the surrounding 1.0-mile radius. On May 18, 2024, Taylored Archaeology completed an intensive pedestrian survey of the APE to identify and record cultural resources present at the ground surface level. No archaeological resources were encountered during the pedestrian survey.

The NAHC provided your name and address as someone who may have interest in sharing information regarding sacred sites, tribal cultural resources, or other resources of importance in the project area. Please note this outreach letter is research for a cultural resources investigation and is not government-to-government consultation under Section 106 or AB 52. Taylored Archaeology understands and takes measures to protect the confidentiality of archaeological site locations, cemeteries, or sacred places, as required by law. Taylored Archaeology will not disclose locational information in any document available to the general public.



If you have information that you would like to share, have questions, or would like more information about the project, please contact me by email at [csaulsarchaeo@gmail.com](mailto:csaulsarchaeo@gmail.com), or send a letter to my attention at 6083 N. Figarden Dr., Ste. 616, Fresno, CA 93722. Any response by June 5, 2024, would be greatly appreciated.

Sincerely,

A handwritten signature in blue ink that reads "Consuelo Y. Sauls".

Consuelo Y. Sauls, M.A., RPA # 41591505  
Archaeologist



Consuelo Sauls &lt;csaulsarchaeo@gmail.com&gt;

---

**Native American Outreach Letter - Mathews Recharge Basin Project, Tulare County**

3 messages

**Consuelo Sauls** <csaulsarchaeo@gmail.com>

Wed, May 22, 2024 at 8:00 AM

To: Kerri Vera &lt;kerri.vera@tulerivertribe-nsn.gov&gt;, Kerri Vera &lt;tuleriverenv@yahoo.com&gt;

Dear Kerri Vera,

Please find attached a letter and a map addressed to the Tule River Indian Tribe for Native American outreach regarding the Mathews Recharge Basin Project in Tulare County. The project is located in Tulare County next to the St. John's River west of Highway 63. Attached is an outreach letter with a project description and topographic map for more details.

The NAHC provided your name and address as someone who may have interest in sharing information regarding sacred sites, tribal cultural resources, or other resources of importance in the project area. Taylored Archaeology is conducting this outreach for research as part of the cultural resources investigation. Your response is greatly appreciated.

Kind regards,

Consuelo Sauls

--

**Consuelo Sauls, M.A., RPA 41591505****Archaeologist****Taylored Archaeology****6083 N. Figarden Dr., Ste. 616****Fresno, CA 93722**[csaulsarchaeo@gmail.com](mailto:csaulsarchaeo@gmail.com)

559.797.1572

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**2 attachments****Kerri Vera Outreach Letter- Mathews Recharge Basin Project.pdf**

114K

**Mathews Recharge Topo Map.pdf**

1907K

**Kerri Vera** <Kerri.Vera@tulerivertribe-nsn.gov>

Wed, May 22, 2024 at 8:05 AM

To: Consuelo Sauls &lt;csaulsarchaeo@gmail.com&gt;

Received. Thanks.

**Kerri Vera - Director****Department of Environmental Protection****Tule River Tribe**

POB 589, Porterville CA 93258

ph: 559/781-4271 ext: 5041

email(1): [tuleriverenv@yahoo.com](mailto:tuleriverenv@yahoo.com)email(2): [kerri.vera@tulerivertribe-nsn.gov](mailto:kerri.vera@tulerivertribe-nsn.gov)

---

**From:** Consuelo Sauls <csaulsarchaeo@gmail.com>**Sent:** Wednesday, May 22, 2024 8:00 AM

**To:** Kerri Vera <[Kerri.Vera@tulerivertribe-nsn.gov](mailto:Kerri.Vera@tulerivertribe-nsn.gov)>; [tuleriverenv@yahoo.com](mailto:tuleriverenv@yahoo.com) <[tuleriverenv@yahoo.com](mailto:tuleriverenv@yahoo.com)>

**Subject:** Native American Outreach Letter - Mathews Recharge Basin Project, Tulare County

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

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**Consuelo Sauls** <[csaulsarchaeo@gmail.com](mailto:csaulsarchaeo@gmail.com)>

Mon, Jun 3, 2024 at 8:00 AM

To: Kerri Vera <[Kerri.Vera@tulerivertribe-nsn.gov](mailto:Kerri.Vera@tulerivertribe-nsn.gov)>

Dear Kerri Vera,

This email is a follow-up to my outreach letter I previously sent to you via email on May 22, 2024. I am conducting a cultural resources assessment for the Mathews Recharge Basin Project in Tulare County, California. The project is north of the city of Visalia and is on the Visalia USGS 7.5' Quad; T 18S, R 25E Section 18 (see attached map). The project proposes to construct a recharge basin on a former walnut orchard along the St. Johns River adjacent to Highway 63.

I want to confirm my letter was received and to offer you the opportunity to share any information regarding the presence of sensitive cultural resources within the project area. Your response is greatly appreciated. Thank you for your time.

Consuelo Sauls

[Quoted text hidden]



**Mathews Recharge Topo Map.pdf**

1907K

## Appendix D. Kaweah MLRP Vegetation Outline

# Kaweah MLRP Vegetation Outline

To be used and adapted for all sites

This document was created by Valley Eco to be a vegetation guide for projects under the Kaweah Multi-Benefit Land Repurposing Program (MLRP). This guide is broken down by recommended tree species, seeded species, and what species are recommended to be plug planted, as well as what habitat types they should be used in. These species were chosen due to their habitat benefits. It should be noted that a few species have a “preferred” or “to be discussed” status, these species should be carefully considered for each individual project to determine if their use is appropriate. The recommended PLS lbs/Acre and plugs per linear foot will be determined project by project based on availability, cost, and funding.

## 1. Recommended Tree Species (Table 1) <sup>1</sup>

- i. Cottonwoods
  - 1. Fremont cottonwood (*Poplar fremontii*)
  - 2. Shed limbs - keep in Conservation area
- ii. Willows
  - 1. *Salix gooddingii* (Goodding’s Willow)
  - 2. *Salix laevigata*
  - 3. *Salix exigua* (*Salix hendersoniana*, potential sub-species)
- iii. *Rosa californica* (California wildrose)
- iv. *Acer negundo* (Box Elder)
- v. *Fraxinus latifolia* (Oregon Ash)
- vi. Valley Oak (*Quercus lobata*, if possible) \*Preferred\*
  - 1. *Toxicodendron diversilobum* (Poison Oak) should be planted with it \*To be discussed\*
  - 2. *Vitis californica* (Wild Grape)
- vii. Blue Oak (*Quercus douglasii*)
  - 1. Only if necessary

## 2. Recommended Vegetation Species and Density (Table 2)

- i. Seeded Species
  - 1. *Elymus Triticoides* (Creeping Wildrye)
    - a. Erosion control and stability of levees
    - b. Will help with weed competition
    - c. Focus mainly on edges of levees
  - 2. *Achillea millefolium* (Common Yarrow)
    - a. Flowering perennial

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<sup>1</sup> All tree species plans will be subject to availability, irrigation capabilities during the implementation and planning processes.





- b. Pollinator benefits
- 3. *Grindelia camporum* (Great Valley Gumplant)
  - a. Flowering perennial
  - b. Strong establishment, will help with non-native weed competition
- 4. *Eschscholzia californica* (California Poppy)
  - a. Early emerging annual
  - b. Will help with establishment of the site
  - c. Beneficial for pollinators
- 5. *Salvia columbariae* (Chia sage)
  - a. Early season annual that will help with establishment
  - b. Many flowers present for pollinators
  - c. Produces many seeds that will aid in continued recruitment year to year
- 6. *Clarkia unguiculata* (Elegant Clarkia)
  - a. Mid-season annual that provides pollinator benefits
- 7. *Frankenia salina* (Alkali Heath)
  - a. If we can find seed with high enough quality.
  - b. Based on previous experience it may be mixed with pickle weed.
- 8. *Sporobolus airoides* (Alkali Sacaton)
  - a. Tolerates alkaline soils well, prefers wetter areas
  - b. Perennial Bunch grass that will provide habitat protection for smaller species that need habitat more sporadically
- 9. *Poa secunda* (One-sided Bluegrass)
  - a. Native perennial grass
- 10. *Urtica dioica* (Common Stinging nettle)
  - a. Benefits to pollinators
  - b. Riparian understory plant
- 11. *Toxicodendron diversilobum* (Poison Oak)
  - a. Restoration “nurse” plant
  - b. Densely planted adjacent to valley oak saplings
- ii. Plugs/treeband transplants<sup>2</sup>
  - 1. *Asclepias fas.* (Narrowleaf Milkweed)
    - a. Monarch host
    - b. Status Review listing decision posted for public comment Dec 2024
  - 2. *Baccharis glutinosa* (Saltmarsh Baccharis)
    - a. Smaller shrub, does well in riparian areas, perennial so plant will remain over many years
    - b. Late flowering season providing flowers for insects late into the year
  - 3. *Baccharis salicifolia* (Mulefat)
    - a. Large shrub, provides protection for terrestrial animals, long bloom window allowing for insect forage

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<sup>2</sup> All plugs and transplant vegetation plans will be subject to availability, irrigation capabilities during the implementation and planning processes.



- b. Should be focused around the “Escapement areas” for animals to leave the islands
- 4. *Atriplex polycarpa* (Allscale Saltbrush)
  - a. Shrub species
  - b. Tolerates alkali soils
- 5. *Eleocharis macrostachya* (Spikerush)
  - a. Planted densely in sections
  - b. Perennial sedge species that should promote strong wetland establishment
- 6. *Dipterostemon capitatus* (Blue dicks)
  - a. Bulbous species that will attract pollinators
  - b. Will likely establish well after construction disturbance
  - c. Establishment will likely be in pockets around the parent plant - spread by corm and/or seed.

### 3. Marsh/Wetland Areas

- i. Recommended Vegetation Species & Density (x to be determined on a site-by-site basis; PLS = Pure Live Seed, ac = acres, LF = linear feet)
  - 1. *Elymus Triticoides* (X PLS/ac)
  - 2. *Sporobolus airoides* (X PLS/ac)
  - 3. *Eleocharis macrostachya* (X plugs/LF)
    - a. Planted in patches
  - 4. *Dipterostemon captatus* (X plugs/LF)
    - a. Planted in patches

### 4. Wetland Seasonal Riparian Areas

- i. Recommended Vegetation Species and Density
  - 1. *Elymus triticoides* (X PLS/ac)
  - 2. *Sporobolus airoides* (X PLS/ac)
  - 3. *Dipterostemon capitatus* (X plugs/LF)
    - a. Planted in patches
  - 4. *Baccharis salicifolia* (X plugs/LF)
    - a. Planted in patches
  - 5. *Baccharis glutinosa* (X plugs/LF)
  - 6. *Asclepias fascicularis* (X PLS/ac & X plugs/LF)
  - 7. *Frankenia salina* (X PLS/ac)
    - a. Not at Flying Dragon
  - 8. *Utica diocia* (X PLS/ac)

### 5. Dry Seasonal Riparian Areas

- i. Recommended Vegetation Species and Density
  - 1. *Elymus triticoides* (X PLS/ac)
  - 2. *Baccharis glutinosa* (X plugs/LF)
  - 3. *Achillea millefolium* (X PLS/ac)



4. *Eschscholzia californica* (X PLS/ac)
5. *Salvia columbariae* (X PLS/ac)
6. *Asclepias fascicularis* (X PLS/ac & X plugs/LF)
7. *Clarkia unguiculata* (X PLS/ac)
8. *Acer negundo* (Gallon size, X stems/ac)
9. *Fraxinus latifolia* (Gallon size, X stems/ac)

## 6. Upland

### i. Recommended Vegetation Species and Density

1. *Asclepias fascicularis* (X PLS/ac)
2. *Poa secunda* (X PLS/ac)
3. *Eschscholzia californica* (X PLS/ac)
4. *Achillea millefolium* (X PLS/ac)
5. *Savia columbariae* (X PLS/ac)
6. *Clarkia unguiculata* (X PLS/ac)
7. *Atriplex polycarpa* (X PLS/ac)
8. *Acer negundo* (Gallon size, X stems/ac)
  - a. Prefers slight shade
9. *Fraxinus latifolia* (Gallon size, X stems/ac)
  - a. Prefers slight shade
10. *Sambucus mexicana* (Blue Elderberry)
  - a. Discuss inclusion for each project individually (Beetle presence)

## 7. Pollinator Friendly Erosion Mix

### i. Recommended Vegetation Species Density

1. *Elymus triticoides* (X PLS/ac)
2. *Asclepias fascicularis* (X PLS/ac)
3. *Grindelia camporum* (X PLS/ac)

## 8. Inappropriate Species for Regional or Local Habitat

1. *Atriplex lentiformis* (Big saltbush)
2. *Juglans hindsii* (Black walnut)



Table 1: Tree Heights

Species	Common Name	Max Height (ft)**	Powerline approved (Small Zone)***	Powerline approved (Medium Zone)***
Populus fremontii	Fremont Cottonwood	115	N/A	
Salix gooddingii	Black Willow	40	N/A	<b>X</b>
Salix lasiolepis	Arroyo Willow	35	N/A	<b>X</b>
Salix laevigata	Red Willow	50	N/A	
Salix exigua	Sandbar Willow	23	N/A	<b>X</b>
Rosa californica	California Wildrose	10	<b>X</b>	<b>X</b>
Acer negundo	Box Elder	66	N/A	
Fraxinus latifolia	Oregon Ash	82	N/A	
Quercus lobata*	Valley Oak	100	N/A	
Vitis californica	California Grape	40	N/A	<b>X</b>
Quercus douglasii	Blue Oak	82	N/A	

\*Preferred Oak Species

\*\*Heights from Calscape

\*\*\*PG&E Tree and shrubs for powerline-friendly landscaping (small zone = up to 10' within 15' of wires, medium zone = up to 15' within 15-50')

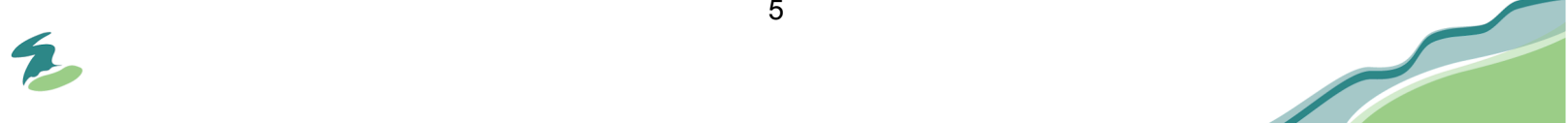


Table 2: Bloom Windows

Species <sup>3</sup>	Common Name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Atriplex polycarpa	Allscale saltbrush												
Sporobolus airoides	Alkali Sacaton												
Clarkia unguiculata	elegant clarkia												
Elymus triticoides	Creeping Wildrye												
Baccharis glutinosa	Saltmarsh baccharis												
Asclepias fascicularis	Narrowleaf Milkweed												
Eleocharis macrostachya	Spike rush												
Poa secunda	One-sided Bluegrass												
Urtica dioica	Stinging Nettle												
Frankenia salina	Alkali Heath												
Achillea millefolium	yarrow												
Grindelia camporum	gumplant												
Phacelia tanacetifolia	Lacy phacelia												
Toxicodendron diversilobum	Poison Oak												
Salvia columbariae	Chia sage												
Eschscholzia californica	California poppy												
Dipterostemmon capitatus	Blue Dicks												
Baccharis salicifolia	Mule fat												

<sup>3</sup> Bloom windows for each species were pulled from the CalFlora database (<https://www.calflora.org/search.html>)

