

TURLOCK LAKE REHABILITATION PROJECT

Final Initial Study/Proposed Mitigated Negative Declaration

Prepared for
Turlock Irrigation District

February 2024



TURLOCK LAKE REHABILITATION PROJECT

Final Initial Study/Proposed Mitigated Negative Declaration

Prepared for
Turlock Irrigation District
333 East Canal Drive
P.O. Box 949
Turlock, CA 95381
(209) 883-8608 direct

February 2024

2600 Capitol Ave
Suite 200
Sacramento, CA 95816
916.564.4500
esassoc.com



Atlanta	Palm Beach County	San Diego
Bend	Pasadena	San Francisco
Irvine	Pensacola	San Jose
Los Angeles	Petaluma	Sarasota
Mobile	Portland	Seattle
Oakland	Rancho Cucamonga	Tampa
Orlando	Sacramento	Thousand Oaks

OUR COMMITMENT TO SUSTAINABILITY | ESA helps a variety of public and private sector clients plan and prepare for climate change and emerging regulations that limit GHG emissions. ESA is a registered assessor with the California Climate Action Registry, a Climate Leader, and founding reporter for the Climate Registry. ESA is also a corporate member of the U.S. Green Building Council and the Business Council on Climate Change (BC3). Internally, ESA has adopted a Sustainability Vision and Policy Statement and a plan to reduce waste and energy within our operations. This document was produced using recycled paper.

TABLE OF CONTENTS

Turlock Lake Rehabilitation Project Final Initial Study/Proposed Mitigated Negative Declaration

	<u>Page</u>
Chapter 1, Introduction	1
1.1 Purpose of the Partially Recirculated Initial Study	1
1.2 Public Review and Approval Process	2
1.3 Document Organization	2
1.4 Resources Not Considered in Detail	3
1.5 Summary of Findings.....	4
Chapter 2, Project Description	5
2.1 Introduction	5
2.2 Project Location	9
2.3 Description of the Proposed Project	11
2.4 Construction Process and Schedule.....	12
2.5 Project Operations and Maintenance.....	13
2.6 Responsible Agencies, Permits, and Approvals	14
2.7 References	14
Chapter 3, Environmental Checklist and Discussion	15
3.1 Aesthetics	15
3.2 Agriculture and Forestry Resources	18
3.3 Air Quality	22
3.4 Biological Resources	31
3.5 Cultural Resources	49
3.6 Energy	59
3.7 Geology and Soils.....	61
3.8 Greenhouse Gas Emissions	71
3.9 Hazards and Hazardous Materials.....	74
3.10 Hydrology and Water Quality	78
3.11 Noise	81
3.12 Recreation	86
3.13 Transportation	88
3.14 Utilities and Service Systems	92
3.15 Wildfire.....	94
3.16 Tribal Cultural Resources	96

List of Figures

Figure 2-1	Regional Project Setting	6
Figure 2-2	Project Location	7
Figure 2-3	Proposed Project Activities	10
Figure 3.2-1	FMMP Farmland	19

List of Tables

Table 2-1	Principal Observations during Dam Inspections	8
Table 2-2	Approximate Dimensions of Proposed Project Dams	9
Table 2-3	Construction Quantities for Dam Buttress at Dams C, H, J, L, Q, and S	13
Table 2-5	Regulatory Requirements, Permits, and Authorizations for Project Facilities.....	14
Table 3.3-1	Unmitigated Project Construction Emissions	27
Table 3.5-1	Test Trenching Summary	51
Table 3.11-1	Noise Levels from Construction	84

List of Appendices

Appendix A	CalEEMod Annual Emissions Report
Appendix B	Biological Resources Search Results
Appendix C	Special-Status Species Potential to Occur

Acronyms and Other Abbreviations

Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
DSOD	California Division of Safety of Dams
MND	Mitigated Negative Declaration
TID	Turlock Irrigation District
USGS	U.S. Geological Survey

CHAPTER 1

Introduction

NOTE TO READERS: This chapter (Chapter 1, *Introduction*) is considered a new chapter and not an update to the December 2022 Turlock Lake Rehabilitation Project Public Draft Initial Study. Section 1.1, *Purpose of the Partially Recirculated Initial Study*, summarizes the revisions made to the document and describes the intent of recirculating the Initial Study for public review and comment. Please see subsection 1.3, *Document Organization*, for a description of how the document is organized and how updates are presented in double underline for new text and ~~strikeout~~ for deleted text.

1.1 Purpose of the Partially Recirculated Initial Study

Turlock Irrigation District (TID), as lead agency under the California Environmental Quality Act (CEQA), prepared the December 2022 Turlock Lake Rehabilitation Project Public Draft Initial Study (2022 Public Draft Initial Study) in accordance with Public Resources Code Section 21000 et seq. (CEQA) and Title 14, Section 15000 et seq. of the California Code of Regulations (the State CEQA Guidelines). The purpose of the 2022 Public Draft Initial Study was to address the environmental consequences of the proposed Turlock Lake Rehabilitation Project (proposed project), specifically to: (1) determine whether implementing the proposed project would result in potentially significant or significant effects on the environment; and (2) incorporate mitigation measures into the proposed project's design, as necessary, to eliminate the project's potentially significant or significant effects or reduce them to a less-than-significant level.

TID circulated the 2022 Public Draft Initial Study for a 30-day public review period from December 12, 2022 through January 11, 2023. Two comment letters were received during the review period: one from the Central Valley Regional Water Quality Control Board (RWQCB) and one from the California Department of Fish and Wildlife (CDFW). The RWQCB letter described the regulatory setting and the agency's permitting authority over the proposed project. The CDFW letter outlined potential impacts and recommendations related to California tiger salamander (CTS), Swainson's hawk, and nesting birds, some of which were not fully addressed in the 2022 Draft Initial Study. The comment specifically noted the presence of California Natural Diversity Database (CNDDDB) records of CTS in the vicinity of the project site, the presence of suitable CTS breeding and upland habitat, and recommended avoidance for CTS to include a minimum 50-foot no disturbance buffer around all small mammal burrows.

In response to CDFW's comments, a field review of the proposed project site was conducted on February 13, 2023 to determine habitat suitability for CTS. During the field review, potentially suitable CTS breeding habitat was found, and unidentified vernal pool branchiopods were observed in a ponded feature in the project site as well. In order to incorporate this new

information, as well as to address CDFW’s comments related to Swainsons’s hawk and nesting birds, TID has updated Section 3.4, *Biological Resources*, of this Initial Study and added mitigation measures to reduce any potentially significant effect to a less-than-significant level.

The proposed revisions in this document would not result in an impact that cannot be mitigated or avoided; therefore, in accordance with CEQA Guidelines Section 15073.5, preparation of an Environmental Impact Report is not required and it is appropriate to revise and partially recirculate the Initial Study.

1.2 Public Review and Approval Process

Only Section 3.4, *Biological Resources*, has been revised and therefore this is the only section of the Initial Study being recirculated for public review and comment. This Partially Recirculated Draft Initial Study will be recirculated to the public from January 2, 2024 through February 4, 2024. After completion of the 30-day public comment period, and before approving the proposed project, TID will consider the Mitigated Negative Declaration (MND) together with any comments provided during the public comment period.

TID will adopt the MND if, based on the whole of the record, (1) there is no substantial evidence that the proposed project will have a significant effect on the environment; and (2) it represents TID’s independent judgment and analysis.

As part of the approval process, TID will also prepare and adopt a mitigation monitoring and reporting program for mitigation measures identified in the MND, as required under Public Resources Code Section 21081.6(c).

1.3 Document Organization

The following presents the organization of the Partially Recirculated Draft Initial Study and summarizes the updates to the 2022 Public Draft Initial Study that are included in each chapter/section. Revisions in updated chapters/sections are shown in double underline for new text and ~~strikeout~~ for deleted text.

- **Chapter 1, *Introduction***, describes the reasons for recirculating the 2022 Public Draft Initial Study, the approval process, the organization of this Partially Recirculated Draft Initial Study, and presents a summary of findings. As previously stated, this chapter is considered a new chapter and not an update to the 2022 Public Draft Initial Study.
- **Chapter 2, *Project Description***, describes the proposed project, including the proposed project location, proposed project objectives, activities to be conducted under the proposed project, and permits and/or approvals that may be required before implementation of the proposed project. No revisions have been made to Chapter 2 for the Partially Recirculated Draft Initial Study.
- **Chapter 3, *Initial Study Environmental Checklist***, presents an analysis of potential impacts of the proposed project for the resource topics included in the CEQA Environmental Checklist (Appendix G of the State CEQA Guidelines). As stated previously, TID has

updated Section 3.4, *Biological Resources*, in order to respond to comments received on the 2022 Public Draft Initial Study, incorporate new information collected about the proposed project site, address potential impacts, and add mitigation measures to reduce any potentially significant effect to a less-than-significant level. No revisions have been made to other sections in Chapter 3 for the Partially Recirculated Draft Initial Study.

1.4 Resources Not Considered in Detail

The following resource topics were not considered in detail because no impact would occur under any of these categories.

1.4.1 Land Use and Planning

The proposed project site includes 8 dams located around the perimeter of Turlock Lake in unincorporated Stanislaus County. The proposed project is not located within a city or community and would be consistent with existing land uses, plans, policies, or regulations. Therefore, no impacts related to land use and planning would occur.

1.4.2 Mineral Resources

The proposed project requires remediation of 6 dams and best management practice maintenance (i.e., vegetation clearing) of 2 more dams around the perimeter of Turlock Lake. Construction activity would occur largely within the footprint of existing dams and would not result in the loss of availability of a known mineral resource or affect a locally important mineral resource recovery site delineated on a local General Plan, Specific Plan, or other land use plan. Further, development of the proposed project would not preclude future excavation of a mineral resource should such extraction become viable. There would be no impact to mineral resources.

1.4.3 Population and Housing

The proposed project would result in the rehabilitation and maintenance of existing dams, returning operation of the Turlock Lake reservoir to the current California Department of Water Resources (DWR) Division of Safety of Dams (DSOD)-certified elevation levels. The proposed project does not involve new homes. Construction would be short-term and would not require additional workers outside of the existing workforce. Operation of the proposed project would be accomplished by existing TID workers. The proposed project is located directly on the perimeter of Turlock Lake and would not displace any housing or people. Therefore, no impacts related to population and housing would occur.

1.4.4 Public Services

The proposed project would not result in the construction of any new facilities or population that would generate a need for new or physically altered government facilities. Therefore, there would be no change in the demand for police, fire protection, or community amenities such as schools and parks compared to that which currently exists, and no impact would occur.

1.5 Summary of Findings

Based on the analysis in Chapter 3, implementing the proposed project would result in less-than-significant impacts on the following resource topics:

- Aesthetics
- Agricultural and Forestry Resources
- Energy
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Noise
- Utilities
- Wildfire
- Recreation
- Transportation

The proposed project would result in less-than-significant impacts on the following resource topics after incorporation of mitigation measures into the proposed project:

- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Greenhouse Gas Emissions
- Tribal Cultural Resources

CHAPTER 2

Project Description

2.1 Introduction

The following discussion summarizes the background of the Turlock Lake Rehabilitation Project (proposed project) and provides relevant construction information for the project.

2.1.1 Background

Davis Reservoir, later renamed Owens Reservoir and now called Turlock Lake, was constructed in 1913. Turlock Lake served as TID’s main storage reservoir until completion of the original Don Pedro Dam and Reservoir in 1923 (TID 2021). Turlock Lake is an off-stream reservoir in unincorporated Stanislaus County that receives water from the Tuolumne River via the Upper Main Canal and from McDonald Creek (**Figure 2-1**). Construction of the reservoir was completed by impounding the lake with 18 dams that enclose topographic saddles¹ around the reservoir’s perimeter. Seventeen of the dams at Turlock Lake are earthen, identified as Dams B–S (there is no Dam I), some of which contain buried concrete wave walls or retaining/splash walls on the upstream side (i.e., Dams B, C, D, E, H, J, L, and S). Dam A is a combined earthen and concrete dam, which includes a concrete powerhouse and outlet works structure in addition to an embankment saddle dam.

The reservoir regulates the supply of irrigation flows in TID’s system by releasing flows into the Turlock Main Canal through either the outlet works structure or the powerhouse within Dam A, on the west side of Turlock Lake. The other 17 dams are designated alphabetically in a clockwise direction around the lake, with 14 dams (Dams B–H and J–P) close to each other on the northwest and north sides of the lake, Dams Q and R located at the lake’s northeast corner, and Dam S situated on the lake’s west-southwest side, approximately 0.7 miles due south of Dam A. See **Figure 2-2** for the locations of the dams.

Turlock Lake currently has a DSOD-certified maximum reservoir elevation of 240.6 feet (U.S. Geological Survey [USGS] datum²), providing a maximum storage capacity of nearly 45,600 acre-feet. However, TID has been operating Turlock Lake 3 to 4 feet below this certified elevation because of concern about worsening seepage losses through the dams at higher pool elevations. For example, the historical cross section of Dam H indicates that additional fill was placed over the concrete facing on the upstream side of the dam in “1914 to 1918, to stop a seepage leak” (Stantec 2019). The first available document that addresses the seepage issue is a memorandum dated June 11, 1928, about 14 years after construction, that corroborates the placement

¹ A *topographic saddle* is a low point between two peaks.

² 238.6 feet based on the TID 1929 datum; 240.6 feet according to the USGS datum.

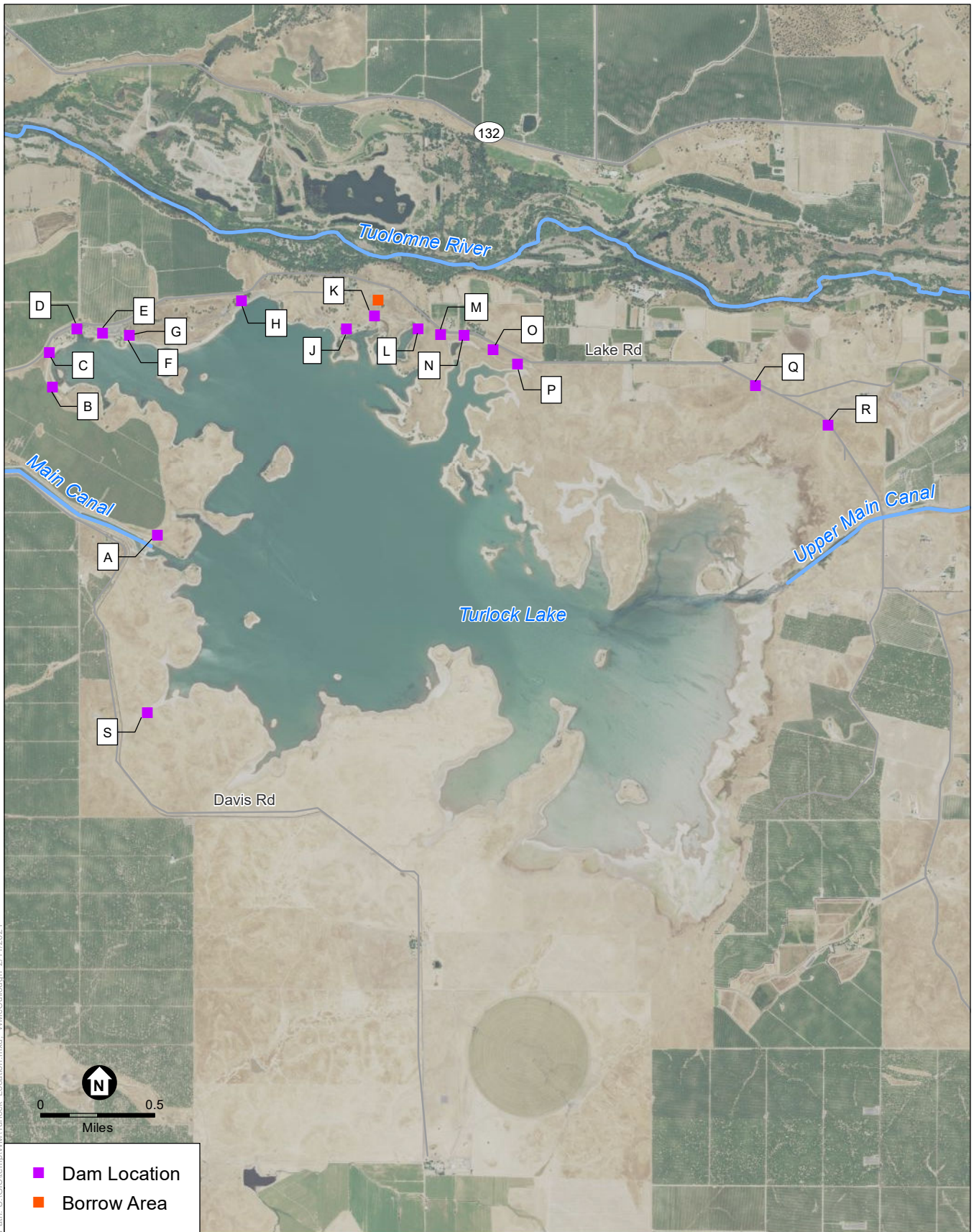


SOURCE: ESA, 2021

Turlock Lake Rehabilitation Project

Figure 2-1
Regional Project Setting





SOURCE: ESA, 2021

Turlock Lake Rehabilitation Project

Figure 2-2
Project Location



of the upstream fill and states that a small quantity of seepage was still evident (Perkins 1928). Besides the fill placed on the upstream side of Dam H before 1918, in the following decades (through 1932), fill was placed on the upstream concrete facing of the other larger dams (Hart 1932). The fill was dumped on the upper portions of the faces, allowing wave action to carry it down the slope.

Dam inspections by the California Department of Water Resources in the following years report varying amounts of seepage. An inspection report completed in 1939 indicates that during the winter of that year, Dams H and J were grouted, and the grouting was effective on Dam J but not Dam H. Another report, from 1946, indicates that remedial work was performed on Dams B, E, G, and H. The remedial work consisted of “excavating cutoff trenches at the upstream toes and backfilling with impervious material which has been carried up the face of the dams to their crests” (Engle 1946). Also in 1946, a large amount of select material was deposited as a “levee” on the faces of the reinforced concrete slope linings of Dams H and J.

2.1.2 Existing Facilities

In 2018 and 2019, TID evaluated all 18 of the dams around Turlock Lake (Dams A–H and J–S) for seepage issues and seismic stability and conducted visual inspections of the dams to locate possible indications of poor dam performance, such as areas of seepage, excessive vegetation, crack patterns in the asphalt pavement along the crest, activities by burrowing animals, and signs of instability. **Table 2-1** summarizes observations made during the dam inspections.

**TABLE 2-1
PRINCIPAL OBSERVATIONS DURING DAM INSPECTIONS**

Inspection Date	Dams Inspected ^a	Reservoir Level Elevation (USGS) ^b	Ground Surface Conditions	Rainfall Record
December 19, 2018	H, M, N, O, P, Q, R, S	234.4 feet	Generally moist	1.30 inches from December 2 to December 18, 2018
December 20, 2018	E, F, G, H, J	234.4 feet	Generally moist; wet at downstream toes of Dams O, R, and S; locally wet on downstream side of Dam J	1.30 inches from December 2 to December 18, 2018
February 7, 2019	A, B, C, D, K, L	233.07 feet	Generally moist; wet at downstream toes of Dams C, K, and L	1.57 inches from January 6 to February 6, 2019

NOTES: USGS = U.S. Geological Survey

a Inspection of Dam H started on December 19, 2018, and was completed on December 19, 2018. The embankments of Dam A are located at the outlet structure, as shown in Drawing No. 4-150 dated 1912.

b For reference, the contemporary “maximum high-water level” is at elevation 240.6 feet.

SOURCE: Stantec 2019.

The evaluation and inspections found that the elevations of the dam crests ranged from 243.6 feet to 247.2 feet (USGS datum). Reservoir levels on the days of the inspections varied from elevation 233.1 feet to elevation 234.4 feet, indicating that available freeboard ranged from about 9.2 feet to about 14.1 feet, depending on the dam.

As a result of the inspections, TID determined that Dams C, H, J, L, Q, and S should be retrofitted for seepage remediation and seismic stability (i.e., downstream buttress) and that vegetation clearing should take place (for dam safety purposes) at Dams C, D, E, H, J, and L. Work was deemed unnecessary at Dams A, B, F, G, K, M, N, O, P, and R. See **Figure 2-3** for the impact areas associated with the work described above.

The proposed project dams range from approximately 5.8 to 30.5 feet in height and from approximately 100 to 1,000 feet in length. Dams C, D, E, H, J, L, and S were constructed with an upstream reinforced concrete facing that includes a toe wall³ and a top parapet wall.⁴ **Table 2-2** shows the approximate dimensions and type of work proposed at each dam.

**TABLE 2-2
APPROXIMATE DIMENSIONS OF PROPOSED PROJECT DAMS**

Dam	Type of Work	Lowest Crest Elevation (ft) (USGS) ^a	Bottom Elevation (ft) (USGS) ^b	Approximate Maximum Height (ft)	Approximate Crest Length (ft)
C	Buttress, vegetation clearing	245.3	219.7	25.6	1,000
D	Vegetation clearing	245.9	224.5	21.4	200
E	Vegetation clearing	246.3	232.0	14.3	500
H	Buttress, vegetation clearing	247.2	216.7	30.5	900
J	Buttress, vegetation clearing	245.7	222.8	22.9	1,000
L	Buttress, vegetation clearing	245.9	225.6	20.3	400
Q	Buttress	244.0	238.2	5.8	100
S	Buttress	245.7	233.2	12.5	200

NOTES: ft = feet; USGS = U.S. Geological Survey

a Based on Drawing No. 253b dated April 27, 2007.

b Based on Historical Drawing No. 4-166.

SOURCE: Stantec 2019

2.2 Project Location

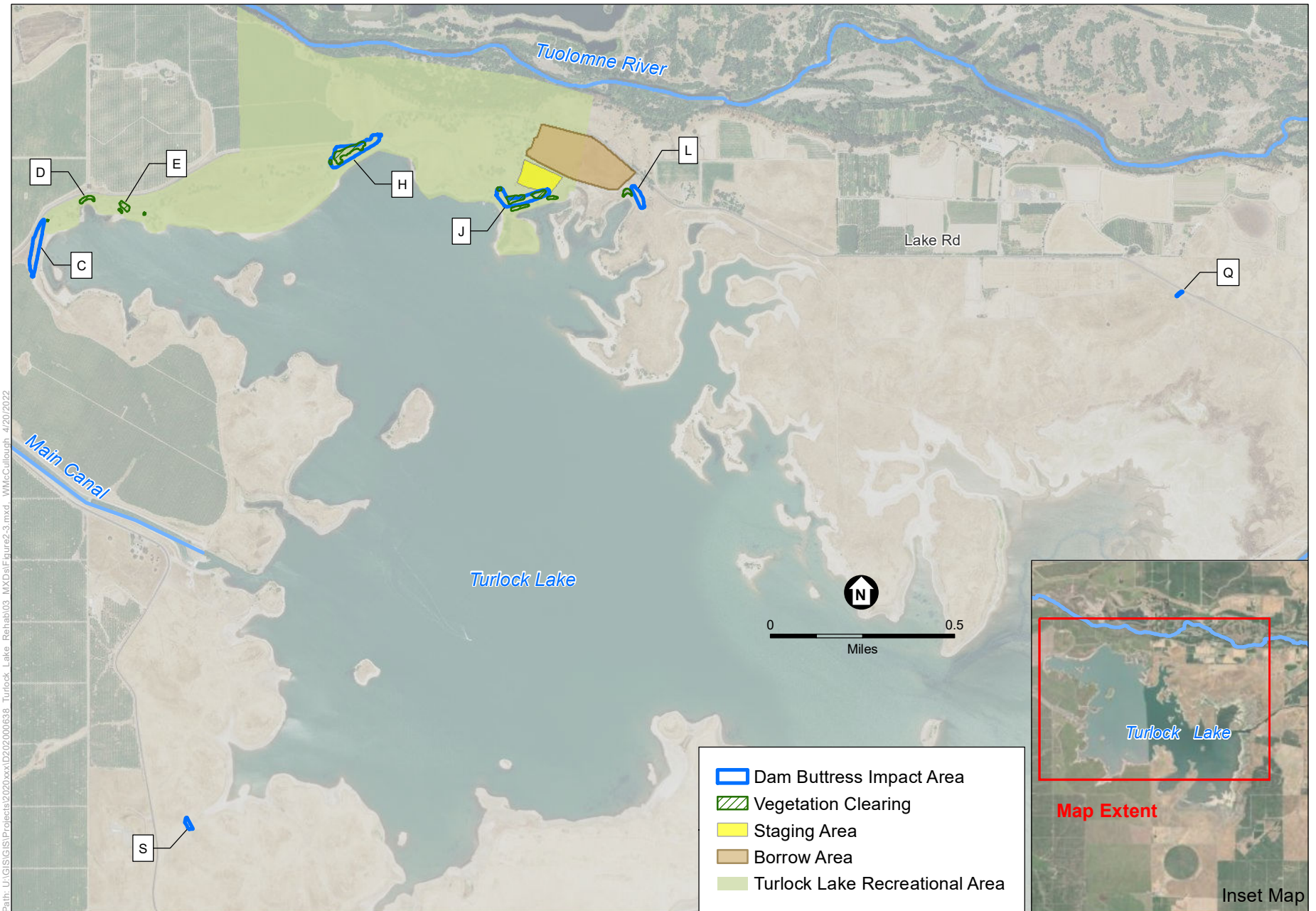
The proposed project includes eight of the 18 dams located around the reservoir perimeter of Turlock Lake, as shown in Figures 2-1 and 2-2. It is located in the eastern corner of Stanislaus County, approximately 1 mile from the county's border with Merced County.

2.2.1 Surrounding Land Uses and Setting

The project site is located within the Tuolumne River watershed, adjacent to and south of the Tuolumne River. The surrounding land use is agricultural and open space, with the Turlock Lake State Recreation Area positioned along the northern edge of Turlock Lake, surrounding Dams D

³ A *toe wall* is a low wall constructed at the bottom of an embankment to prevent slippage or spreading of the soil.

⁴ A *parapet wall* is typically a barrier that is an extension of the wall at the edge of a structure (i.e., dam, roof, terrace, balcony, walkway, or other structure).



SOURCE: ESA, 20210

Turlock Lake Rehab Project

Figure 2-3
Proposed Project Activities

through K (Figure 2-3). State Route (SR) 132, approximately 1 mile north of the proposed project site, runs directly west approximately 8.5 miles to the city of Waterford and approximately 7.5 miles east-northeast to the rural community of La Grange.

2.2.2 General Plan Designation and Zoning District

The project site is zoned as Agriculture 20 Acre (A-2-40). As defined in the Stanislaus County Code, Chapter 21.20, *General Agriculture District (A-2)*, Section 21.20.020, *Permitted Uses*, the A-2-40 district classification is intended to support and enhance agriculture as the predominant land use in the county's unincorporated areas. The Stanislaus County General Plan (2016) designates the area as agriculture.

2.3 Description of the Proposed Project

The proposed project would rehabilitate six of Turlock Lake's 18 embankment dams for seismic stability and seepage remediation via downstream buttressing. Dams C, H, J, L, Q, and S would be retrofitted for seepage and seismic stability improvements using the methods described in Section 2.3.1, *Dam Buttressing*. Clearing of trees and woody vegetation would occur at Dams C, D, E, H, J, and L for dam safety purposes, as described in Section 2.4.1, *Site Preparation, Staging, Access, and Haul Routes*. For additional information regarding site preparation, staging, and construction import and export quantities for the proposed project features, see Section 2.4, *Construction Process and Schedule*.

2.3.1 Dam Buttressing

The proposed project would include the placement of buttress fills⁵ on the downstream slopes of Dams C, H, J, L, Q, and S (see Figure 2-3 for the locations of this work). Each buttress fill would reduce the risk of dam failure, enable the dam to perform satisfactorily, and retain the reservoir during an earthquake. For example, the height of the buttress (full height of the dam) would limit seismic deformation and loss of freeboard. The buttress would also include chimney drains and a filter-compatible sand and gravel toe drain to safely collect and control seepage.

Materials excavated from the borrow site shown on Figure 2-3 would be used to fill the buttresses. Each buttress fill would be approximately the full height of the dam, run the full length of the dam (from abutment to abutment), and would be up to 35 feet wide. The proposed chimney drains would be approximately 2 feet thick and the toe drain would be approximately 3 feet deep. It is anticipated that the chimney and toe drains⁶ would consist of single-stage filter/drain material imported from a source within 25 miles of the project site.

⁵ A *buttress fill* is a compact fill placed in an area where soft natural soils beneath a planned fill would be overstressed by the weight of the fill.

⁶ *Drains* are applications of free-draining material that are typically installed within an embankment and designed to intercept and control water seepage.

In general, the proposed project would include the following seepage remediation and seismic stability improvements:

- Site preparation (as described in Section 2.4.1, *Site Preparation, Staging, and Access*)
- Preparation of foundations (i.e., grading and compacting)
- Excavation, hauling, spreading, and compacting of materials for each buttress
- Installation of chimney drain material (i.e., concrete sand and imported drain rock [0.75-inch rock])
- Installation of filter material below excavation of the buttress
- Downstream hydroseeding

See **Table 2-3** in Section 2.4.3, *Construction Quantities*, for the anticipated construction quantities of proposed infrastructure at Dams C, H, J, L, Q, and S.

2.4 Construction Process and Schedule

This section provides an overview of construction processes and schedules relevant to the proposed project.

2.4.1 Site Preparation, Staging, Access, and Haul Routes

Figure 2-3 shows the locations of staging and borrow areas for the proposed project. Initial site preparation would include vegetation clearing of the staging and borrow areas and all work areas on dam slopes. Vegetation clearing would involve removal of trees, for dam safety purposes, on the upstream slope of Dams C and L, the downstream slopes of Dams D and H, and both the upstream and downstream slopes of Dams E and J. Once construction has been completed, downstream hydroseeding would occur but the dams would not be revegetated with trees for dam safety purposes.

TID anticipates mostly using existing paved and dirt roads during construction and remediation of the dams; however, the existing haul roads on the downstream toes of Dams C, H, J, and L will be covered by the new buttresses. These roads will need to be recut in the immediate footprint of the dams for use during construction and future operational needs.

To facilitate isolation of the proposed project sites from construction activities around the banks of the reservoir, construction would be completed in a dry state, with reservoir water elevation below 240 feet, and would not include any in-water work. Installation of cofferdams would not be required.

2.4.2 Construction Workforce and Equipment

Construction would require a crew size of approximately 10 workers. The specific equipment supporting construction of the proposed project would be identified based on requirements

specified by the proposed project’s construction contractor. However, TID anticipates that the following or similar types of equipment would be used on-site:

- Excavator
- Bulldozer
- 4 Dump trucks
- 2 Paddle wheel scrapers
- Forklift
- Compactor
- 4,000-gallon water truck
- Grader

2.4.3 Construction Quantities

Construction activities for the proposed project would require excavating buttress fill materials from the borrow site shown in Figure 2-3. Table 2-3 discusses the earthwork volumes and quantities of imported and exported materials required for the proposed project’s activities.

**TABLE 2-3
CONSTRUCTION QUANTITIES FOR DAM BUTTRESS AT DAMS C, H, J, L, Q, AND S**

Project Activity or Element	Dam C	Dam H	Dam J	Dam L	Dam Q	Dam S	Total
Buttress Foundation Preparation (cy) (removed, dried and replaced)	11,100	20,800	18,500	4,300	150	1,300	56,150
Buttress Fill from Borrow (cy)	13,900	24,500	12,400	3,700	75	900	55,475
Drain Filter Material (cy)	4,800	6,900	5,900	1,650	-	610	19,860
1-Foot-Diameter Perforated PVC Pipe (ft)	510	750	660	230	-	110	2,260
Top Soil Placement (cy)	2,875	3,100	2,400	700	65	315	9,455
Downstream Hydroseeding (sf)	91,700	124,800	95,100	28,400	2,600	9,800	352,400

NOTES: cy = cubic yards; ft = feet; PVC = polyvinyl chloride; sf = square feet
SOURCE: Stantec 2022

2.4.4 Construction Schedule and Phasing

Construction of the proposed project would require up to 8 months. Project construction would typically take place 5 days a week between 7 a.m. and 9 p.m. TID anticipates that project construction would occur during normal low-operation levels and into the non-irrigation season, between the months of September 2023 and April 2024. Construction would likely begin at Dam L, followed by J, H, C, S, and Q.

2.5 Project Operations and Maintenance

The Turlock Lake dams would be safely operated at the reservoir’s irrigation season certified maximum elevation of 240.6 feet (USGS), which is approximately 6–7 feet higher than the reservoir level observed during the inspections and 3–4 feet higher than existing operation elevations. All other operations, including vegetation and rodent management practices, would remain consistent with existing operations.

2.6 Responsible Agencies, Permits, and Approvals

Table 2-5 summarizes the permits and/or approvals that may be required before construction of the proposed project.

**TABLE 2-5
REGULATORY REQUIREMENTS, PERMITS, AND AUTHORIZATIONS FOR PROJECT FACILITIES**

Agency	Type of Approval
State Agencies	
California Department of Fish and Wildlife	California Fish and Game Code Section 1600 Lake or Streambed Alteration Agreement
Central Valley Regional Water Quality Control Board	Waste Discharge Requirement; NPDES General Permit for Stormwater Discharge Associated with Construction; General Order for Dewatering and Other Low Threat Discharges to Surface Waters Permit
State Historic Preservation Office	National Historic Preservation Act Section 106
Department of Water Resources Division of Safety of Dams	Dam Repair or Alteration permit
Local Agencies	
Stanislaus County	Stormwater Pollution Prevention Plan (SWPPP) permit
NOTES: N/A = not applicable; NPDES = National Pollutant Discharge Elimination System	
SOURCE: ESA 2021	

2.7 References

- Engle, G.F. 1946. Inspection of Dam: Owens Reservoir Dam No. 68-3. March 14, 1946.
- Hart, S.A. 1932. Memorandum to Mr. Hawley: Owens Reservoir #68-3. July 20, 1932.
- Perkins, W.A. 1928. Owens Dams. Memorandum to Mr. Hyatt dated June 29, 1928.
- Stanislaus County. 2016. Stanislaus County General Plan 2015. Adopted on August 23, 2016, by the Board of Supervisors. Available at: <https://www.stancounty.com/planning/pl/gp/current/gp-chapter2.pdf>. Accessed March 21, 2022.
- Stantec. 2019. Final Technical Memorandum: Turlock Lake Dam Rehabilitation Project – Conceptual Evaluation and Cost Estimate. Prepared for Turlock Irrigation District. September 30, 2019.
- Turlock Irrigation District. 2021. 2020 Agricultural Water Management Plan. Prepared by the Turlock Irrigation District. March 2021. Available at: <https://www.tid.org/irrigation/irrigation-information/ag-water-management-plan/>. Accessed June 9, 2022.

CHAPTER 3

Environmental Checklist and Discussion

3.1 Aesthetics

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
I. AESTHETICS — Except as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and 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 daytime or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.1.1 Environmental Setting

Aesthetic or visual resources include the “scenic character” of a particular region and site. Scenic features can be either natural (e.g., vegetation and topography) or man-made (e.g., historic structures). Areas that are more sensitive to potential effects are usually readily observable, such as land adjacent to major roadways and hilltops.

Visual Environment

The proposed project site is located in unincorporated Stanislaus County, approximately 1 mile from the county’s border with Merced County. The area is generally flat and used primarily for agriculture and open space, with the Turlock Lake State Recreation Area positioned along the northern edge of Turlock Lake, surrounding Dams D through K (Figure 2-3). Interstate 5 (I-5), the only officially designated scenic highway in Stanislaus County, is approximately 33 miles to the southwest. SR 132, approximately 1-mile north of the proposed project site, runs directly west approximately 8.5 miles to the city of Waterford and approximately 7.5 miles east-northeast to the rural community of La Grange. The proposed project site is surrounded by parcels primarily used for agricultural, open space, and recreational uses along the northern edge of Turlock Lake, and existing roads surrounding the proposed project site include paved and dirt roads.

3.1.2 Discussion

- a) **No Impact.** No designated scenic vistas or notable geographic features have been identified near the proposed project site in the Stanislaus County General Plan (Stanislaus County 2016). As a result, no impact on a scenic vista would occur.
- b) **No Impact.** A review of the current California Department of Transportation (Caltrans) Map of Designated Scenic Routes indicates one officially designated state scenic highway in Stanislaus County, I-5 (Caltrans 2019). I-5 is officially designated as a scenic route in Stanislaus County from the San Joaquin County line to the Merced County line; however, the interstate is approximately 33 miles southwest of the proposed project site. The proposed project would not be visible to travelers on I-5 and would not affect the scenic quality of the landscape or intrude upon travelers' enjoyment of the view. Therefore, no impact on scenic resources would occur.
- c) **Less than Significant.** Implementation of the proposed project would result in temporary changes to local visual conditions associated with construction activities, such as site preparation, preparation of foundations (e.g., grading and compacting), excavation, hauling, spreading, stockpiling, and compacting of materials, installation of associated infrastructure (e.g., chimney drain material), installation of filter material, downstream hydroseeding, and the presence of equipment within the proposed project site. These impacts would be temporary in nature and would not extend beyond the anticipated 8 months of construction. Therefore, given the relatively short-term nature of these construction-related activities, construction-related visual impacts would be less than significant.

Completion of the proposed project would result in some permanent visual changes to the proposed project site. Construction activities associated with buttressing existing dams within the Turlock Lake reservoir for seismic stability and seepage remediation would create visual changes consistent with the existing agricultural, open space, and recreational nature of the area, which includes 18 existing embankment dams and associated infrastructure. Additionally, the dams proposed for rehabilitation would be in the same location (Figure 2-3), which would result in minor changes to visual impacts. Therefore, visual impacts from the proposed project would be less than significant.

- d) **No Impact.** Construction of the proposed project would occur during the daytime, typically 5 days a week between 7 a.m. and 9 p.m. and would not require nighttime lighting. The proposed project does not propose any new light sources or reflective surfaces that would represent potential sources of glare. Therefore, no impact related to new sources of light and glare would occur.

3.1.3 References

California Department of Transportation (Caltrans). 2019. List of Eligible and Officially Designated State Scenic Highways. Available at: <https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aaca>. Accessed March 21, 2022.

Stanislaus County. 2016. Stanislaus County General Plan 2015. Adopted on August 23, 2016, by the Board of Supervisors. Available at: <https://www.stancounty.com/planning/pl/gp/current/gp-chapter2.pdf>. Accessed March 21, 2022.

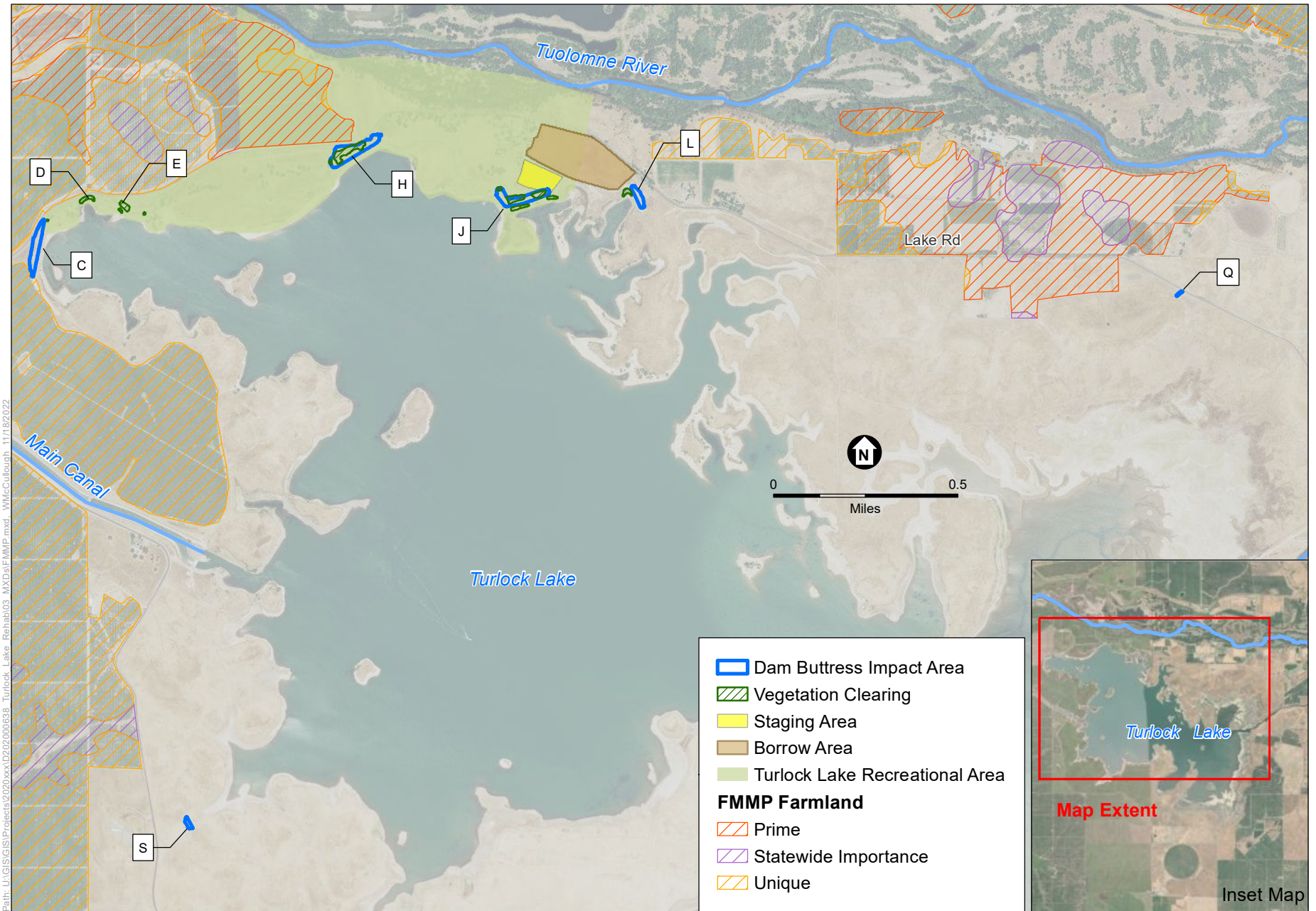
3.2 Agriculture and Forestry Resources

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
II. AGRICULTURE AND FORESTRY RESOURCES —				
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
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 checked="" type="checkbox"/>	<input type="checkbox"/>

3.2.1 Environmental Setting

Stanislaus County is one of California’s leading agricultural counties, with approximately 85 percent of the county’s total land acreage currently being used for agricultural purposes (Stanislaus County 2016). Stanislaus County ranked fifth overall in California agricultural sales from 2018 to 2019 (CDFA 2020).

The California Department of Conservation (DOC) administers the Farmland Mapping and Monitoring Program, California’s statewide agricultural land inventory. Through this mapping effort, DOC classifies farmland under four categories: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance. The proposed project site contains Prime Farmland, Farmland of Statewide Importance, and Unique Farmland. **Figure 3.2-1** shows the location and extent of designated farmland within the proposed project site. There is no forest land in or adjacent to the proposed project area. The proposed project site is designated by the Stanislaus County General Plan as Grazing Land, Urban and Built-Up Land, Water, Nonagricultural and Natural Vegetation, Unique Farmland, Farmland of Statewide Importance, and Prime Farmland (DOC 2016).



SOURCE: ESA, 20210

Turlock Lake Rehab Project

Figure 3.2-1
FMMP Farmland

The Williamson Act enables governments to enter into contracts with private landowners to restrict specific land parcels to agricultural or related open space use. The proposed project site is currently in a Williamson Act contract, as are adjacent parcels (Conservation Biology Institute 2022).

3.2.2 Discussion

a, b, e) **Less than Significant.** The proposed project site is designated primarily as Unique Farmland and Prime Farmland, and a small portion is designated as Statewide Importance Farmland. In addition, the site is currently in a Williamson Act contract. As of 2018, Stanislaus County contained 250,420 acres of Prime Farmland, 121,930 acres of Unique Farmland, and 33,042 acres of Farmland of Statewide Importance (Stanislaus County 2019). Implementation of the proposed project would result in the rehabilitation of existing dams and operation of the Turlock Lake reservoir at California DSOD-certified elevation levels. None of the dams proposed for rehabilitation are located within designated Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Implementation of the proposed project would result in Dam C being retrofitted for seepage and seismic stability improvements (e.g., dam buttressing)—this dam is located adjacent to designated Unique Farmland within the proposed project site. However, rehabilitation of Dam C would not infringe on designated Unique Farmland because construction activities would take place within the existing dam’s footprint, which extends to the edge of Lake Road that is on the northwest side of Dam C. The proposed project would not result in the realigning of Lake Road. Therefore, while rehabilitation activities at Dam C would be located immediately adjacent to designated Unique Farmland within the proposed project site, the proposed project would not convert existing farmland to non-agricultural use or result in permanent impacts to designated farmland within the proposed project site.

The proposed project is located directly along the perimeter of Turlock Lake and involves existing dams. Because the proposed project would result in the rehabilitation of existing dams within the existing footprint of the dams and would not result in the conversion of existing farmland to non-agricultural use, the proposed project would not conflict with an existing Williamson Act contract. Therefore, this impact would be less than significant.

c, d) **No Impact.** The proposed project site is not zoned as forest land or timberland or zoned for timberland production. Implementation of the proposed project would not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production, nor would it result in the loss of forest land or conversion of forest land to non-forest use. Therefore, no impact would occur.

3.2.3 References

California Department of Conservation (DOC). 2016. California Important Farmland Finder. Available at <https://maps.conservation.ca.gov/dlrp/ciff/>. Accessed March 25, 2022.

California Department of Food & Agriculture (CDFA). 2020. California Agricultural Statistics Review 2019-2020. Available at https://www.cdfa.ca.gov/Statistics/PDFs/2020_Ag_Stats_Review.pdf. Accessed March 25, 2022.

Conservation Biology Institute. 2022. Data Basin. Available at <https://databasin.org/maps/new/#datasets=20a568ac94f346d7908aa937947c4203>. Accessed March 25, 2022.

Stanislaus County. 2016. Stanislaus County General Plan and Airport Land Use Compatibility Plan Update Draft Program Environmental Impact Report. Available at <https://www.stancounty.com/planning/pl/gp/current/DraftEIR.pdf>. Accessed March 25, 2022.

_____. 2019. Important Farmland Data Availability 1984 - Present Historic Land Use Conversion. Available at <https://www.conservation.ca.gov/dlrp/fmmp/Pages/Stanislaus.aspx>. Accessed March 25, 2022.

3.3 Air Quality

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
III. AIR QUALITY —				
Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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"/>

3.3.1 Environmental Setting

General Climate and Meteorology

The proposed project site is located in unincorporated Stanislaus County in the northern portion of the San Joaquin Valley Air Basin (SJVAB). The SJVAB is defined by the Sierra Nevada in the east (8,000 to 14,000 feet in elevation), the Coast Ranges in the west (averaging 3,000 feet in elevation), and the Tehachapi mountains in the south (6,000 to 8,000 feet in elevation). The valley is basically flat with a slight downward gradient to the northwest. The valley opens to the sea at the Carquinez Strait, where the San Joaquin-Sacramento Delta empties into San Francisco Bay. The San Joaquin Valley could thus be considered a “bowl” open only to the north.

The SJVAB has an inland Mediterranean climate averaging over 260 sunny days per year. The valley floor experiences warm, dry summers and cool, wet winters. Summer high temperatures often exceed 100 degrees Fahrenheit, averaging in the low 90s in the northern valley and high 90s in the south. In the entire SJVAB, high daily temperature readings in summer average 95 degrees Fahrenheit. Over the past 30 years, the SJVAB averaged 106 days per year of 90 degrees Fahrenheit or hotter, and 40 days per year of 100 degrees Fahrenheit or hotter. The daily summer temperature variation can be as much as 30 degrees Fahrenheit.

In winter, as the cyclonic storm track moves southward, the storm systems moving in from the Pacific Ocean bring a maritime influence to the SJVAB. The high mountains to the east prevent the cold, continental air masses of the interior from influencing the valley. Winters are mild and humid. Temperatures below freezing are unusual. Average high temperatures in the winter are in the 50s, but highs in the 30s and 40s can occur on days with persistent fog and low cloudiness. The average daily low temperature is 45 degrees Fahrenheit.

Criteria Air Pollutants

Concentrations of criteria air pollutant are used as indicators of ambient air quality conditions. Source types, health effects, and future trends associated with each air pollutant are described below along with the most current attainment area designations and monitoring data for the proposed project areas and vicinity.

Ozone

Short-term exposure to ozone can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, ozone can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema. Ozone is not emitted directly into the atmosphere, but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gas (ROG) and nitrogen oxides (NO_x). ROG and NO_x are known as precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately 3 hours. Ozone is a regional air pollutant because it is not emitted directly by sources, but is formed downwind of sources of ROG and NO_x under the influence of wind and sunlight. Ozone concentrations tend to be higher in the late spring, summer, and fall, when the long sunny days combine with regional subsidence inversions to create conditions conducive to the formation and accumulation of secondary photochemical compounds, like ozone.

Carbon Monoxide

Ambient carbon monoxide (CO) concentrations normally are considered a local effect and typically correspond closely to the spatial and temporal distributions of vehicular traffic. Wind speed and atmospheric mixing also influence CO concentrations. Under inversion conditions, CO concentrations may be distributed more uniformly over an area that may extend some distance from vehicular sources. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia, as well as for fetuses.

CO concentrations have declined dramatically in California due to existing controls and programs, and most areas of the state, including the proposed project region, have no problem meeting the CO state and federal standards. CO measurements and modeling were important in the early 1980s when CO levels were regularly exceeded throughout California. In more recent years, CO measurements and modeling results have not been a priority in most California air districts due to the retirement of older polluting vehicles, lower emissions from new vehicles, and improvements in fuels.

Nitrogen Dioxide

Nitrogen dioxide (NO₂) is a reddish-brown gas that is a by-product of combustion processes. NO₂ may be visible as a coloring component of a brown cloud on high pollution days, especially in conjunction with high ozone levels.

Automobiles and industrial operations are the main sources of NO₂, which is an air quality concern because it acts a respiratory irritant and is a precursor of ozone. NO₂ is a major component of the group of gaseous nitrogen compounds commonly referred to as NO_x, which are produced by fuel combustion in motor vehicles, industrial stationary sources (such as industrial activities), ships, aircraft, and rail transit. Typically, NO_x emitted from fuel combustion are in the form of nitric oxide (NO) and NO₂. NO is often converted to NO₂ when it reacts with ozone or undergoes photochemical reactions in the atmosphere. Therefore, emissions of NO₂ from combustion sources are typically evaluated based on the amount of NO_x emitted from the source.

Sulfur Dioxide

Sulfur dioxide (SO₂) is a combustion product of sulfur or sulfur-containing fuels such as coal and diesel. SO₂ is also a precursor to the formation of atmospheric sulfate, particulate matter and contributes to potential atmospheric sulfuric acid formation that could precipitate downwind as acid rain. Concentration rather than duration of exposure is an important determinant of respiratory effects. Exposure to high SO₂ concentrations may result in edema of the lungs or glottis and respiratory paralysis.

Particulate Matter

PM₁₀ and PM_{2.5} consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively (a micron is one-millionth of a meter). PM₁₀ and PM_{2.5} represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects. Some sources of particulate matter, such as wood burning in fireplaces, demolition, and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates also can damage materials and reduce visibility. Large dust particles (diameter greater than 10 microns) settle out rapidly and are easily filtered by human breathing passages. This large dust is of more concern as a soiling nuisance rather than a health hazard. The remaining fraction, PM₁₀ and PM_{2.5}, are a health concern particularly at levels above the federal and state ambient air quality standards. PM_{2.5} (including diesel exhaust particles) is thought to have greater effects on health, because these particles are so small and, thus, are able to penetrate to the deepest parts of the lungs. Scientific studies have suggested links between fine particulate matter and numerous health problems including asthma, bronchitis, acute and chronic respiratory symptoms such as shortness of breath and painful breathing. Recent studies have shown an association between morbidity and mortality and daily concentrations of particulate matter in the air. Children are more susceptible to the health risks of PM₁₀ and PM_{2.5} because their immune and respiratory systems are still developing.

Mortality studies since the 1990s have shown a statistically significant direct association between mortality (premature deaths) and daily concentrations of particulate matter in the air. Despite important gaps in scientific knowledge and continued reasons for some skepticism, a comprehensive evaluation of the research findings provides persuasive evidence that exposure to fine particulate air pollution has adverse effects on cardiopulmonary health (Pope and Dockery 2006). The California Air Resources Board (CARB) has estimated that achieving the ambient air

quality standards for PM₁₀ could reduce premature mortality rates by 6,500 cases per year (CARB 2002).

Lead

Ambient lead concentrations meet both the federal and state standards in the proposed project areas. Lead has a range of adverse neurotoxin health effects, and was formerly released into the atmosphere primarily via leaded gasoline products. The phasing out of leaded gasoline in California resulted in decreasing levels of atmospheric lead. The proposed project would not introduce any new sources of lead emissions; consequently, lead emissions are not required to be quantified and are not further evaluated in this analysis.

Toxic Air Contaminants

Non-criteria air pollutants, or toxic air contaminants (TACs), are airborne substances that are capable of causing short-term (acute) and/or long-term (chronic or carcinogenic, i.e., cancer causing) adverse human health effects (i.e., injury or illness). TACs include both organic and inorganic chemical substances. They may be emitted from a variety of common sources including gasoline stations, automobiles, diesel engines, dry cleaners, industrial operations, and painting operations. TACs are regulated differently from criteria air pollutants at both federal and state levels. At the federal level, these airborne substances are referred to as hazardous air pollutants (HAPs). The state list of TACs identifies 243 substances and the federal list of HAPs identifies 189 substances.

CARB identified diesel particulate matter (DPM) as a TAC in 1998, primarily based on evidence demonstrating cancer effects in humans. The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Mobile sources such as trucks and buses are among the primary sources of diesel emissions, and concentrations of DPM are higher near heavily traveled highways and rail lines with diesel locomotive operations. The risk from DPM as determined by CARB declined from 750 in one million in 1990 to 570 in one million in 1995; by 2000, CARB estimated the average statewide cancer risk from DPM at 540 in one million (CARB 2009). This calculated cancer risk values from ambient air exposure can be compared against the lifetime probability of being diagnosed with cancer in the United States, from all causes, which is more than 40 percent (based on a sampling of 17 regions nationwide), or greater than 400,000 in one million, according to the National Cancer Institute (NCI 2012).

Odorous Emissions

Odors are generally regarded as an annoyance rather than a health hazard. Manifestations of a person's reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting and headache). The ability to detect odors varies considerably among the population and overall is quite subjective. People may have different reactions to the same odor. An odor that is offensive to one person may be perfectly acceptable to another (e.g., coffee roaster). An unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. Known as odor fatigue, a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity. The occurrence and severity of odor impacts depend on the nature, frequency,

and intensity of the source; wind speed and direction; and the sensitivity of receptors. Odor impacts should be considered for any proposed new odor sources located near existing receptors, as well as any new sensitive receptors located near existing odor sources. Generally, increasing the distance between the receptor and the odor source will mitigate odor impacts.

Sensitive Receptors

Some receptors are considered more sensitive than others to air pollutants. Reasons for greater sensitivity include preexisting health problems, proximity to emissions source, or duration of exposure to air pollutants. Schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because children, elderly people, and the infirm are more susceptible to respiratory infections and other air quality-related health problems than the general public. Residential areas are also sensitive to poor air quality because people usually stay home for extended periods of time. The distance to sensitive receptors from proposed project elements varies from 500 feet from the proposed borrow area to 900 feet from dams A, J, L, M, and N. All other dams are over 1,200 feet from the nearest residential receptor.

3.3.2 Discussion

- a) **Less than Significant.** The applicable air quality plan is the San Joaquin Valley Air Pollution Control District's (SJVAPCD's) *2016 Ozone Plan for 2008 8-hour Ozone Standard* (SJVAPCD 2016) and *2018 Plan for the 1997, 2006, and 2012 PM_{2.5} Standards* (SJVAPCD 2018). The current set of rules and regulations represents all feasible control measures for SJVAPCD sources. The SJVAPCD plans to achieve the California Ambient Air Quality Standards and National Ambient Air Quality Standards by the earliest practicable date as a result of local reductions. Exceedance of the SJVAPCD's current adopted thresholds of significance for criteria pollutant emissions would conflict with or obstruct the implementation of the *2016 Ozone Plan for 2008 8-hour Ozone Standard* and *2018 Plan for the 1997, 2006, and 2012 PM_{2.5} Standards*.

The proposed project would result in an increase in criteria pollutant emissions generated by construction worker trips, off-road equipment operations, and truck trips during construction. There would be minor employee trips during maintenance activities. However, the increase in employee trips is not expected to be substantially greater than what currently exists. The increased mobile source emissions at the proposed project site are expected to result in a marginal increase in criteria pollutant emissions and would not conflict with or obstruct the implementation of the *2016 Ozone Plan for 2008 8-hour Ozone Standard* and *2018 Plan for the 1997, 2006, and 2012 PM_{2.5} Standards*.

As described later under Impact b, project emissions of NO_x (ozone precursor) would not be expected to exceed the SJVAPCD significance threshold during the duration of construction activities. The construction of the proposed project would be short-term and temporary, and the increase in criteria pollutant emissions from off- and on-road equipment exhaust would not conflict with the applicable air quality plans. Since construction emissions are not expected to exceed the SJVAPCD or General Conformity *de minimums* thresholds for NO_x, this impact would be a less-than-significant impact.

- b) **Less than Significant with Mitigation Incorporated.** The sources of construction-related pollutant emissions would include on-road worker trips and localized haul trips to and from the borrow area and off-road equipment. Construction activities are anticipated to be 8 months in total and would not generate substantial amounts of pollutant emissions.

Construction activities are short term and typically result in combustion exhaust emissions (e.g., vehicle and equipment tailpipe emissions), including ozone precursors (ROG and NO_x), and PM from combustion and in the form of dust (fugitive dust). Emissions of ozone precursors and PM are primarily a result of the combustion of fuel from on-road vehicles and off-road equipment.

Pollutant emissions associated with construction of the proposed project would be generated from the following general construction activities: (1) ground disturbance from grading, excavation, etc.; (2) vehicle trips from workers traveling to and from the construction areas; (3) trips associated with delivery of construction supplies to, and hauling debris from, the construction areas; and (4) fuel combustion by on-site construction equipment. These construction activities would temporarily generate air pollutant emissions, including dust and fumes. The amount of emissions that would be generated on a daily basis would vary, depending on the intensity and types of construction activities that would occur simultaneously. Overall, construction activities associated with the proposed projects components would occur over a period of approximately 8 months.

Project construction emissions were estimated using the California Emissions Estimator Model (CalEEMod) version 2020.4.0 and are presented in **Table 3.3-1**. The table shows total construction emissions, which occur within a year, and compares them to the SJVAPCD significance thresholds for construction. See **Appendix A** for the complete CalEEMod results.

**TABLE 3.3-1
UNMITIGATED PROJECT CONSTRUCTION EMISSIONS**

Project Construction Activities	Estimated Construction Emissions (tons/year)					
	CO	NO _x	ROG	SO ₂	PM ₁₀	PM _{2.5}
2023	2.2	2.8	0.29	<0.01	0.84	0.33
2024	2.1	2.7	0.29	<0.01	0.83	0.32
SJVAPCD Significance Threshold	100	10	10	27	15	15
Exceed Threshold?	No	No	No	No	No	No

As shown in Table 3.3-1, the annual construction emissions of CO, NO_x, ROG, SO_x, PM₁₀, and PM_{2.5} would not exceed the SJVAPCD significance thresholds for construction. For projects in which construction-related activities would disturb equal to or greater than 1-acre of surface area, SJVAPCD recommends demonstration of receipt of an SJVAPCD-approved Dust Control Plan or Construction Notification form and the implementation of fugitive dust control measures. The fugitive dust control measures are included in **Mitigation Measure AQ-1** and would reduce fugitive dust emissions from construction

activities and would be implemented as part of the proposed project (SJVAPCD 2015). Thus, with implementation of **Mitigation Measure AQ-1**, this impact would be less than significant for construction.

The proposed project would include vehicle trips during inspection activities. However, the employee trips required for periodic facility inspection to assess reservoir integrity would not be significantly more than existing employee trips, and would result in negligible increases in emissions. Therefore, this impact would be less than significant for operations.

Mitigation Measure AQ-1: Turlock Irrigation District and/or its contractor shall implement the following fugitive dust control standards for construction emissions (SJVAPCD 2015):

1. Apply water to unpaved surfaces and areas.
2. Use non-toxic chemical or organic dust suppressants on unpaved roads and traffic areas.
3. Limit or reduce vehicle speed on unpaved roads and traffic areas.
4. Maintain areas in a stabilized condition by restricting vehicle access.
5. Install wind barriers.
6. During high winds, cease outdoor activities that disturb the soil.
7. Keep bulk materials sufficiently wet when handling.
8. Store and handle materials in a three-sided structure.
9. When storing bulk materials, apply water to the surface or cover the storage pile with a tarp.
10. Do not overload haul trucks; overloaded trucks are likely to spill bulk materials.
11. Cover haul trucks with a tarp or other suitable cover, or wet the top of the load enough to limit visible dust emissions.
12. Clean the interior of cargo compartments on emptied haul trucks prior to leaving a site.
13. Prevent trackout by installing a trackout control device.
14. Clean up trackout at least once a day. If along a busy road or highway, clean up trackout immediately.
15. Monitor dust-generating activities and implement appropriate measures for maximum dust control.

- c) **Less than Significant.** Construction of the proposed project would take approximately 8 months to complete. The dam areas are separated by several hundreds of feet; work duration in any one given dam area would be substantially less than the total 6-month period. Due to this relatively short period of exposure, TACs generated during

construction would not be expected to result in concentrations causing significant health risks. In addition, construction-related activities associated with the proposed project would require only the minimal use of off-road equipment known to generate large amounts of TAC emissions. Additionally, almost all of the nearest receptors are over 900 feet away from the dam areas. Therefore, health risks associated with construction of the proposed project would be less than significant.

Normal operation of the proposed project would consist of periodic maintenance. However, employee trips required for periodic maintenance to clean the barriers would not be significantly more than to those generated under existing operations. As a result, exposure of sensitive receptors to substantial TAC emissions from the proposed project would be less than significant.

- d) **Less than Significant.** Construction of the proposed project would last for approximately 8 months and on-site diesel-powered equipment would only operate intermittently, up to approximately 14 hours per day. The use of on-site diesel-powered equipment can produce odorous exhaust, but use of the equipment at each of the proposed project sites would be temporary, and potential odors would not affect a substantial number of people in the vicinity of the proposed project sites given the rural nature of the proposed project sites. Therefore, construction of the proposed project would not create objectionable odors that would affect a substantial number of people, and odor impacts would result in a less-than-significant impact.

As a general matter, the types of land use development that pose potential odor problems include wastewater treatment plants, refineries, landfills, composting facilities, and transfer stations. Since the proposed project would consist of rehabilitating dams and no uses known to pose potential odor problems would occupy the proposed project sites, operation of the proposed project would not create objectionable odors that would affect a substantial number of people. The impact would be less than significant.

3.3.3 References

California Air Resources Board (CARB). 2002 (May 3). Staff Report: Public Hearing to Consider Amendments to the Ambient Air Quality Standards for Particulate Matter and Sulfates.

———. 2009. The California Almanac of Emissions and Air Quality – 2009 Edition. Chapter 5, Toxic Air Contaminant Emissions, Air Quality and Health Risk.

National Cancer Institute (NCI). 2012. Lifetime Risk (Percent) of Being Diagnosed with Cancer by Site and Race/Ethnicity, Both Sexes: 18 SEER Areas, 2007-2009 (Table 1.14). Available: https://seer.cancer.gov/archive/csr/1975_2009_pops09/results_merged/topic_lifetime_risk_diagnosis.pdf. Accessed March 25, 2022.

Pope, C.A. 3rd and D.W. Dockery. 2006. Health Effects of Fine Particulate Air Pollution: Lines that Connect, *Journal of the Air & Waste Management Association*, 56:6, 709-742, DOI: 10.1080/10473289.2006.10464485.

San Joaquin Valley Air Pollution Control District (SJVAPCD). 2015. Guidance for Assessing and Mitigating Air Quality Impacts, Available: <http://www.valleyair.org/transportation/GAMAQI-2015/GAMAQI1-30-15.pdf>. Accessed March 25, 2022.

———. 2016. 2016 Ozone Plan for 2008 8-hour Ozone Standard. Available: http://valleyair.org/Air_Quality_Plans/Ozone-Plan-2016.htm. Accessed March 25, 2022.

———. 2018. 2018 Plan for the 1997, 2006, and 2012 PM_{2.5} Standards. Available: <https://ww2.arb.ca.gov/resources/documents/2018-san-joaquin-valley-pm25-plan>. Accessed March 25, 2022.

3.4 Biological Resources

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
IV. BIOLOGICAL RESOURCES — Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input 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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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"/>

3.4.1 Environmental Setting

Data Sources/Methodology

Biological resources within the proposed project site were identified through a combination of database resources, a wetland delineation conducted by an Environmental Science Associates (ESA) biologist on February 17, 2021 and on April 7, 2022, and a habitat suitability assessment conducted by an ESA biologist on February 13, 2023. The delineation and habitat suitability assessment were conducted on foot, and existing habitat types, plants, and waters and wetlands within and adjacent to the proposed project site were recorded.

Habitats present on the proposed project site were compared to the habitat requirements of the regionally occurring special-status species and used to determine which of these species have the potential to occur on or adjacent to the site. Plant nomenclature follows *The Jepson Manual: Vascular Plants of California (Second Edition)* (Baldwin et al. 2012), as revised by *Jepson eFlora* (Jepson Flora Project 2020). Common names of plant species are derived from *The Jepson Manual* or *Calflora* (2020).

The following primary data sources were referenced for this section:

- U.S. Fish and Wildlife Service (USFWS) *Information for Planning and Consultation (IPaC) Resource List* (USFWS 2022) (see **Appendix B**).
- California Natural Diversity Database, Rarefind 5 computer program (v5.2.14) (CDFW 2023) (see **Appendix B**).
- California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (v8-03 0.39) (CNPS 2022) (see **Appendix B**).
- CDFW Special Animals List (CNDDDB 2022a).
- CDFW Special Vascular Plants, Bryophytes, and Lichens List (CNDDDB 2022b).

Project Site Setting

The proposed project site is located within the Tuolumne River watershed, adjacent to and south of the Tuolumne River. The surrounding land use is agricultural and open space, with the Turlock Lake State Recreation Area positioned along the northern edge of Turlock Lake, surrounding Dams D through K (Figure 2-3). SR 132, approximately 1 mile north of the proposed project site, runs directly west approximately 8.5 miles to the city of Waterford and approximately 7.5 miles east-northeast to the rural community of La Grange.

Vegetation/Habitat Types

Habitat types within the proposed project site consist of grasslands, valley foothill riparian, eucalyptus, and mixed riparian scrub habitats, ruderal/disturbed areas with dirt roads and road shoulders with scattered riparian areas consisting of scattered willows (*Salix* sp.) and Fremont cottonwoods (*Populus fremontii*).

Annual Grassland

Grassland in the study area is dominated by annual grasses and herbs, mostly non-native species. Dominant plants include bromes (*Bromus diandrus* and *B. hordeaceus*), wild oat (*Avena barbata*), Italian ryegrass (*Festuca perennis*), bur clover (*Medicago polymorpha*), wild radish (*Raphanus sativus*), and black mustard (*Brassica nigra*). Grasslands have moderate to dense cover of annual species, and some are grazed by livestock. Isolated trees and shrubs occur in the grassland, including a few elderberries (*Sambucus nigra* subsp. *caerulea*), dispersed valley oaks (*Quercus lobata*), and some landscape trees such as Chinese hackberry (*Celtis sinensis*).

Many wildlife species use annual grasslands for refugia, nesting, and foraging. A variety of songbirds and raptors use grassland habitat for breeding, foraging on small rodents and insects, or both. Common species include American kestrel (*Falco sparverius*), grasshopper sparrow (*Ammodramus savannarum*), northern harrier (*Circus cyaneus*), western meadowlark (*Sturnella neglecta*), and white-tailed kite (*Elanus leucurus*). Reptiles in this community include Pacific rattlesnake (*Crotalus oreganus oreganus*), Pacific gopher snake (*Pituophis catenifer catenifer*), western fence lizard (*Sceloporus occidentalis*), and western skink (*Plestiodon skiltonianus*), which are often found in association with woody debris and rocks. Mammals such as black-tailed

jackrabbit (*Lepus californicus*), Botta's pocket gopher (*Thomomys bottae*), and California ground squirrel (*Otospermophilus beecheyi*), ~~and badger (*Taxidea taxus*)~~ are common in grassland habitat.

Valley Foothill Riparian

Valley foothill riparian habitat within the study area is limited to small stands of mature cottonwood (*Populus fremontii*) and Gooding's black willow (*Salix gooddingii*), with occasional young valley oaks along the margins of Turlock Lake. Understory plants include patches of Himalayan blackberry (*Rubus armeniacus*) and annual grasses and forbs discussed above in the *Annual Grassland* section.

Valley foothill riparian communities also provide habitat for a variety of reptiles and amphibians, including the California newt (*Taricha torosa*), California slender salamander (*Batrachoseps attenuatus*), Sierran tree frog (*Pseudacris sierra*), western pond turtle (*Actinemys marmorata*), and western toad (*Anaxyrus boreas*). Mammals that occur in this community include several species of bats, deer mouse (*Peromyscus maniculatus*), raccoon (*Procyon lotor*), Virginia opossum (*Didelphis marsupialis*), western harvest mouse (*Reithrodontomys megalotis*), mule deer (*Odocoileus hemionus*), bobcat (*Lynx rufus*), wild turkey (*Meleagris gallopavo*), and coyote (*Canis latrans*).

Eucalyptus

Several stands of planted eucalyptus trees (*Eucalyptus* sp.) exist within the study area. These areas support an understory of annual grasses and forbs and a wildlife community similar to valley foothill riparian.

Mixed Riparian Scrub

Like valley foothill riparian habitat, mixed riparian scrub is found along the margin of Turlock Lake, but this habitat type generally lacks large-canopy trees and is instead composed of dense shrubs. Common species include sandbar willow (*Salix exigua*) along with young Gooding's black willow and cottonwood trees.

Similar to valley foothill riparian habitat, mixed riparian scrub provides habitat for a diverse array of wildlife. Birds common to this habitat include bushtit (*Psaltriparus minimus*), California towhee (*Melospiza crissalis*), California quail (*Callipepla californica*), ~~loggerhead shrike (*Lanius ludovicianus*)~~, ~~northern harrier~~, and spotted towhee (*Pipilo maculatus*), ~~and white-tailed kite~~. Large and small mammals use mixed riparian scrub for shelter, food, water, and movement.

Sensitive Natural Communities, including Waters of the United States and Waters of the State

Sensitive natural communities are vegetation communities of limited distribution statewide or within a county or region and are often vulnerable to the environmental impacts of projects. Sensitive natural communities include those that are of special concern to resource agencies such as CDFW, the U.S. Army Corps of Engineers (USACE), or USFWS, or are afforded specific consideration through CEQA, Section 1602 of the California Fish and Game Code, Section 404 of the federal Clean Water Act, and the Porter-Cologne Water Quality Control Act.

Turlock Lake itself is potentially considered a water of the U.S. and water of the state, however the project will not impact Turlock Lake as all major construction activities will occur on the downstream side of each rehabilitated dam and vegetation clearing will occur on the upstream side at only a few specific dam locations.

Lacustrine

Only the upper margin of Turlock Lake is included in some of the study areas. The upper limit of the lake is defined by the lake's ordinary high water mark (OHWM), which is a line on the bank with shelving in some areas, a change in vegetation from wetland to upland species, and some deposited sediment and debris. Within the study areas where lake margin is present, the banks have a very gradual slope and include wetland vegetation such as rushes (*Juncus* spp.) and gumplant (*Grindelia* spp.).

The lake margin provides foraging, cover, and nesting sites for resident and migratory bird, mammal, reptile, and amphibian species. Common wetland bird species include great blue heron (*Ardea herodias*) and great egret (*A. alba*). Osprey (*Pandion haliaetus*) are also known to forage at Turlock Lake and nest in tall trees or custom nest structures.

Seasonal Wetland

Seasonal wetlands occur in topographical low points that are subject to inundation during the fall, winter, and spring months followed by a summer dry period. Seasonal wetlands typically are dominated by wetland-adapted plants in the winter and spring months and may transition to species characteristic of the surrounding uplands in summer; thus, evidence of wetland-adapted plants may not be visible after late spring or early summer, and the recurrence of these plants in future years depends on climatic conditions. Common spikerush (*Eleocharis macrostachya*), great valley popcorn flower (*Plagiobothrys stipitatus*), meadow barley (*Hordeum marinum*), and Italian rye grass are common species in this habitat type.

Seasonal wetlands support a variety of invertebrate and amphibian species that in turn provide food for other wildlife species. They can provide foraging habitat for wintering shorebirds and waterfowl described in the *Lacustrine* section above.

Wildlife Movement Corridors

Wildlife movement corridors are considered an important ecological resource by various agencies (CDFW and USFWS) and under CEQA. Movement corridors may provide favorable locations for wildlife to travel between different habitat areas such as foraging sites, breeding sites, cover areas, and preferred summer and winter range locations. They may also function as dispersal corridors, allowing animals to move between various locations within their range.

Topography and other natural factors, in combination with urbanization, can fragment or separate large open-space areas. Areas of human disturbance or urban development can fragment wildlife habitats and impede wildlife movement between areas of suitable habitat. This fragmentation creates isolated "islands" of vegetation that may not provide sufficient area to accommodate sustainable populations and can adversely affect genetic and species diversity. Movement

corridors mitigate the effects of this fragmentation by allowing animals to move between remaining habitats, which in turn allows depleted populations to be replenished and promotes genetic exchange between separate populations.

The relatively open area around Turlock Lake could serve as a wildlife movement corridor in combination with the Tuolumne River Corridor immediately north of the lake. The proposed project activities would not interfere with wildlife movement.

Special-Status Species

Special-status species are regulated under the federal and California Endangered Species Acts or other regulations, or are species that are considered sufficiently rare by the scientific community to qualify for such listing. These species are classified under the following categories:

- (1) Species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (Code of Federal Regulations Title 50, Section 17.12 [listed plants] and Section 17.11 [listed animals], and various notices in the *Federal Register* [proposed species]).
- (2) Species that are candidates for possible future listing as threatened or endangered under the federal Endangered Species Act (*Federal Register* Title 61, Number 40, February 28, 1996).
- (3) Species listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (California Code of Regulations Title 14, Section 670.5).
- (4) Plants listed as rare or endangered under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.).
- (5) Animal species of special concern to CDFW.
- (6) Animals fully protected under the California Fish and Game Code (Sections 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).
- (7) Species that meet the definitions of rare and endangered under CEQA. CEQA Section 15380 provides that a plant or animal species may be treated as “rare or endangered” even if not on one of the official lists (State CEQA Guidelines, Section 15380).
- (8) Plants considered by CNPS and CDFW to be “rare, threatened or endangered in California” (California Rare Plant Rank 1A, 1B, and 2 in CNPS 2022).

A list of regionally occurring special-status species in the vicinity of the proposed project site was compiled based on data identified in the California Natural Diversity Database (CDFW 2023) and the USFWS (2022) and CNPS (2022) databases. A table documenting special-status species, identifying their general habitat requirements, and assessing their potential to occur at the proposed project site is provided in **Appendix C**.

The “Potential to Occur” categories are defined as follows:

- **Unlikely:** The proposed project site does not support suitable habitat for a particular species and/or the site is outside of the species’ known range.

- **Low Potential:** The proposed project site only provides limited and/or low-quality habitat for a particular species. In addition, the known range for a particular species may be outside of the immediate proposed project site.
- **Medium Potential:** The proposed project site and/or immediate vicinity provides suitable habitat for a particular species.
- **High Potential:** The proposed project site and/or immediate proposed project area provide ideal habitat conditions for a particular species and/or known populations occur within or in the vicinity of the proposed project site.

Conclusions regarding habitat suitability and species occurrence are based on the analysis of existing literature and databases described previously and known habitats occurring within the proposed project site and regionally. Species considered unlikely or to have low potential are not discussed further. As described in Appendix C, special-status plants or wildlife species with potential to occur at the proposed project site include valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), vernal pool fairy shrimp (*Branchinecta lynchi*) and vernal pool tadpole shrimp (*Lepidurus packardii*), California tiger salamander (CTS) (*Ambystoma californiense*), western spadefoot (*Spea hammondi*), western pond turtle (*Emys marmorata*), burrowing owl (*Athene cunicularia*), Swainson's hawk (*Buteo swainsoni*), and bald eagle (*Haliaeetus leucocephalus*); other birds also have the potential to occur within the proposed project site or nearby and forage within or on the shores of Turlock Lake. Nesting birds regulated by the federal Migratory Bird Treaty Act (MBTA) or California Fish and Game Code have the potential to occur within the proposed project site.

Critical Habitat

Critical habitat is defined in Section 3(5)A of the federal Endangered Species Act as the specific portions of the geographic area occupied by the species in which physical or biological features essential to the conservation of the species are found, and that may require special management considerations or protection. Specific areas outside of the geographic area occupied by the species may also be included in critical habitat designations upon a determination that such areas are essential for the conservation of the species.

Critical habitat for Colusa grass (*Neostapfia colusana*), hairy Orcutt grass (*Orcuttia Pilosa*), Hoover's spurge (*Chamaesyce hooveri*), and vernal pool fairy shrimp (*Branchinecta lynchi*) surrounds the south, east, and west side of Turlock Lake, encompassing Dams C, D, E, S, Q, and a portion of H. Areas of mapped critical habitat include at least one of the physical or biological features essential to the conservation of the species, which are termed 'physical or biological features' (previously known as primary constituent elements).

The physical or biological features of critical habitat for listed vernal pool branchiopods are identified as: 1) a suitable aquatic environment with an appropriate hydroperiod for development and without predators, and 2) an entire vernal pool complex including pools, swales, and associated uplands to support the aquatic functions of the vernal pool habitat. While mapped critical habitat for vernal pool fairy shrimp occurs in a portion of the project site, the project site

lacks the vernal pool complex identified as a physical or biological feature. The project will not impact critical habitat for vernal pool fairy shrimp (USFWS 2003).

The physical or biological features of critical habitat for vernal pool plants (Colusa grass, hairy Orcutt grass, and Hoover's spurge) are identified as 1) vernal pools, swales, and other wetlands of appropriate size and depth with adjacent upland margins that sustain germination, growth and maturation, and reproduction, and 2) the associated watershed(s) and hydrologic features that contribute to the filling and drying of vernal pools or ephemeral wetlands, and that maintain suitable periods of pool inundation, water quality, and soils moisture for the species. While mapped critical habitat for Colusa grass, hairy Orcutt grass, and Hoover's spurge occurs in a portion of the project site, the project site lacks the habitat necessary for growth and the hydrologic period as identified as physical or biological features. The project will not impact critical habitat for vernal pool plant species (USFWS 2003).

3.4.2 Discussion

a) **Less than Significant with Mitigation Incorporated.**

The proposed project site contains several elderberry (*Sambucus spp.*) shrubs, which may serve as host plants for the valley elderberry longhorn beetle, a federally threatened species. The proposed project area is within the range of the species, although the closest known occurrence is approximately 10 miles to the west. The sites will be surveyed for shrubs, which will be avoided or appropriately mitigated in compliance with USFWS protocols (USFWS 2017). When removal of occupied shrubs could result in a potentially significant impact, implementation of **Mitigation Measure BIO-1** would reduce the impact to a less-than-significant level.

~~Swainson's hawks, bald eagles, and other nesting birds regulated by the MBTA and the California Fish and Game Code may be affected either directly or indirectly by implementation of the proposed project.~~

During the 2023 field survey, unidentified vernal pool branchiopods were observed in a ponded feature at Dam J. The proposed project is within the range of both vernal pool fairy shrimp, a federally threatened species, and vernal pool tadpole shrimp, a federally endangered species. The closest CNDDDB records of vernal pool fairy shrimp are located 2 miles to the southwest and 4.7 miles to the east of the project sites. The ponded feature at Dam J as well as ponded features at Dam C and Q provide potential habitat for vernal pool fairy shrimp and vernal pool tadpole shrimp. Work within 250 feet of suitable habitat could impact listed vernal pool branchiopods through direct take or alteration of the hydroperiod of the habitat, or indirectly through the deposition of dust and sediment in pools. This would be a potentially significant impact. Protocol surveys for listed vernal pool branchiopods are currently scheduled within suitable habitat in winter 2023/2024. If survey results are negative and the USFWS concurs with the results, then no further mitigation measures are necessary. If surveys detect the presence of vernal pool fairy shrimp or vernal pool tadpole shrimp, or if the surveys are not completed, then

Mitigation Measure BIO-2 would be implemented to reduce the impact to a less-than-significant level.

A total of three ponded features potentially suitable for CTS breeding were identified on the project site (at Dams C, J, and Q) during the 2023 field survey. An additional seven ponded features potentially suitable for CTS breeding were observed within 1.3 miles of the project site. No CTS, eggs, or tadpoles were observed during any of the field surveys. There are three CNDDDB records of CTS within 1.3 miles of the project site. At their closest, these records occur 0.65 mile to the west, 1.3 miles to the west, and 1.3 miles to the southeast. Six of the dam sites were determined to have a moderate potential for CTS to occur (Dams C, J, L, Q, and the staging and borrow areas) due to their distance to potentially suitable breeding habitat and known records. Work within suitable aquatic and/or upland habitat could impact CTS through direct take, destruction of upland burrows, or alteration of the hydroperiod of breed pools. This is a potentially significant impact. Protocol surveys for CTS are currently scheduled within suitable habitat in winter 2023/2024. If survey results are negative, and the USFWS and CDFW concur with the results, then no further mitigation measures are necessary. If surveys detect the presence of CTS, or if the surveys are not completed, then **Mitigation Measure BIO-3** would be implemented to reduce the impact to a less-than-significant level.

The three ponded features identified as suitable for CTS breeding also provide suitable breeding habitat for western spadefoot. Additionally, seasonal wetlands and ponded water around the project site could also provide suitable breeding habitat for western spadefoot. During the non-breeding season, spadefoot could burrow in the grassland habitats in the project site. No western spadefoot, eggs, or tadpoles were observed during any of the field surveys. Work within suitable aquatic and/or upland habitat could impact western spadefoot through direct take, destruction of upland burrows, or alteration of the hydroperiod of breed pools. This is a potentially significant impact. The protocol surveys scheduled for CTS and listed vernal pool branchiopods will also detect western spadefoot if present. If the survey results are negative, then no further mitigation measures are necessary. If surveys detect the presence of western spadefoot, or if the surveys are not completed, then **Mitigation Measure BIO-3** would be implemented to reduce the impact to a less-than-significant level.

Western pond turtle is a highly aquatic species that inhabits permanent or nearly permanent water in a wide variety of habitat types, such as ponds, lakes, streams, irrigation ditches, and permanent pools along intermittent streams. Turlock Lake provides potential aquatic habitat for western pond turtle. Pond turtles also require upland habitat that is suitable for nesting and overwintering use. Soils need to be loose enough to allow nest excavation, while disturbance needs to be infrequent enough or of sufficiently low intensity that nests are not disturbed. Nests are usually located within 330 feet of a water body. Upland areas within 330 feet of the lake may provide suitable upland and nesting habitat where soils are loose enough to allow excavation. No western pond turtles or their nests were observed during any of the field surveys. Work within suitable aquatic habitat or upland habitat within 330 feet of suitable aquatic habitat could impact western pond

turtle through direct take or destruction of their nests. This is a potentially significant impact. Implementation of **Mitigation Measure BIO-4** would reduce impacts to a less-than-significant level.

Under the MBTA, most bird species and their nests and eggs are protected from injury or death. California Fish and Game Code Sections 3503, 3503.5, and 3800 prohibit the possession, incidental take, or needless destruction of birds and their nests and eggs.

Swainson's hawks, bald eagles, burrowing owls, and other nesting birds regulated by the MBTA and the California Fish and Game Code may be affected either directly or indirectly by implementation of the proposed project. Portions of the proposed project site and the immediate vicinity have the potential to support nesting birds. Direct impacts on nesting birds or active burrowing owl burrows or their habitat could occur during initial proposed project activities, such as clearing and grubbing. Nesting birds or active burrowing owl burrows could be adversely affected if active nesting, roosting, burrowing, or foraging sites are either removed or exposed to a substantial increase in noise or human presence during proposed project activities. This impact would be potentially significant. Implementation of **Mitigation Measure BIO-54** would reduce the impact to a less-than-significant level.

Mitigation Measure BIO-1: Avoid and Protect Elderberry Shrubs. Prior to construction, the sites shall be surveyed for the presence of elderberry plants which are the host plant of the valley elderberry longhorn beetle. The survey shall be conducted by a qualified biologist in accordance with USFWS protocols (USFWS 2017). If elderberry plants with one or more stems measuring 1.0 inch or greater in diameter at ground level occur on or adjacent to the proposed project site or are otherwise located where they may be directly or indirectly affected by the proposed project, minimization and compensation measures, which include avoidance or transplanting existing shrubs, are required (see below).

Elderberry plants without stems measuring 1.0 inch or greater in diameter at ground level are unlikely to be habitat for the beetle because of the plants' small size and/or immaturity. Therefore, no mitigation measures are required for removal of elderberry plants with all stems measuring less than 1.0 inch in diameter at ground level.

Avoidance and Minimization Measures

To reduce direct and indirect impacts on shrubs that would not be transplanted and that occur within 50 meters (165 feet) of the Project, the following measures would be implemented:

- Fencing. All areas to be avoided during construction activities would be fenced and/or flagged as close to construction limits as feasible.
- Avoidance area. Activities that may damage or kill an elderberry shrub (e.g., trenching, paving) may need an avoidance area of at least 6 meters (20 feet) from the dripline, depending on the type of activity.
- Worker education. A qualified biologist would provide training for all contractors, work crews, and any on-site personnel on the status of the VELB, its

host plant and habitat, the need to avoid damaging the elderberry shrubs, and the possible penalties for non-compliance.

- **Construction monitoring.** A qualified biologist would monitor the initial groundbreaking activities, vegetation removal, installation of protective fencing, and would be present during all transplanting and trimming activities. Weekly site visits would also be conducted to ensure all mitigation measures are being implemented and maintained. Additional monitoring may be required per the USFWS BO.
- **Timing.** As much as feasible, all activities that could occur within 50 meters (165 feet) of an elderberry shrub would be conducted outside of the flight season of the VELB (March–July).
- **Trimming.** Trimming may remove or destroy VELB eggs and/or larvae and may reduce the health and vigor of the elderberry shrub. To avoid and minimize adverse effects on VELB when trimming, trimming would occur between November and February and would avoid the removal of any branches or stems that are 1 inch or larger in diameter unless they were approved and compensated for by following the USFWS requirements.
- **Chemical Usage.** Herbicides would not be used within the dripline of the shrub. Insecticides would not be used within 30 meters (98 feet) of an elderberry shrub. All chemicals would be applied using a backpack sprayer or similar direct application method.
- **Mowing.** Mechanical weed removal within the dripline of the shrub would be limited to the season when adults are not active (August–February) and would avoid damaging the elderberry shrub.
- **Erosion Control and Revegetation.** Erosion control would be implemented, and the affected area would be revegetated with appropriate native plants.
- **Dust Control.** Dust would be controlled by reducing speed limits to 10 miles per hour, regularly watering roads, and wetting down soil before removal and during placement.

Transplanting

Affected elderberry shrubs with one or more stems measuring 1.0 inch or greater in diameter at ground level that could feasibly be transplanted in accordance with the 2017 Framework must be transplanted to a mitigation site as approved by USFWS. Elderberry compensation would be planted in the vicinity, but outside of the Project Area (off-site) because of construction timing. Sites would be designed and developed in accordance with the criteria listed below before any effects on VELB habitat.

- **Monitor.** A qualified biologist would be on-site for the duration of transplanting activities to assure compliance with avoidance and minimization measures and other conservation measures (as listed above).
- **Exit Holes.** Exit-hole surveys would be completed immediately before transplanting. The number of exit holes found, the GPS location of the plant to be

relocated, and the GPS location where the plant is transplanted would be reported to USFWS and to the CNDDDB.

- **Timing.** Elderberry shrubs would be transplanted when the shrubs are dormant (November through the first 2 weeks in February) and after they have lost their leaves. Transplanting during the non-growing season would reduce shock to the shrub and increase transplantation success.
- **Transplanting Procedure.** Transplanting would follow the most current version of the ANSI A300 (Part 6) guidelines for transplanting shrubs (<http://www.tcia.org/>).
- **Trimming Procedure.** Trimming would occur between November and February and should minimize the removal of branches or stems that exceed 1 inch in diameter.

Mitigation Measure BIO-2: Avoid and Protect Federal-Listed Vernal Pool Branchiopods. If protocol-level surveys for listed vernal pool branchiopods are negative, and USFWS concurs with the results, no mitigation measures are necessary. If surveys detect the presence of vernal pool fairy shrimp or vernal pool tadpole shrimp, or if the surveys are not completed, then implementation of avoidance and minimization measures is required (see below).

Avoidance and Minimization Measures

Where suitable habitat for federal-listed vernal pool branchiopods occurs within 250 feet of the project site, the following measures will be implemented to ensure the project does not have adverse impacts on federal-listed vernal pool branchiopods:

- A qualified biologist will conduct worker environmental awareness training prior to the start of construction. The training will include a discussion of the biology and general behavior of federal-listed vernal pool branchiopods, its habitat needs, its legal status, project-specific protective measures, and what to do if found. Upon completion of the training, each attending shall sign a form stating they attended the training and understand all protection measures.
- Direct impacts on seasonal wetlands and areas of ponded water (does not include Turlock Lake which is not suitable habitat for vernal pool branchiopods) will be avoided to the maximum extent possible.
- Where habitat for vernal pool branchiopods occurs within the project site, a qualified biologist will stake and flag an exclusion zone around avoided features prior to construction activities. The size of the exclusion zone will be based on site conditions and will be the maximum practical distance that ensures protection of the feature from direct and indirect effects of the project. Exclusion zones will be established around avoided features whether they are wet or dry at the time of construction. Exclusions zones will be established using stakes, flags, and/or rope and be clearly distinguishable as an avoidance area.
- Where impacts to habitat for listed vernal pool branchiopods cannot be avoided, compensatory mitigation will be provided at a USFWS-approved conservation bank in accordance with mitigation ratios and requirements outlined in the terms of the permit in consultation with USFWS.

Mitigation Measure BIO-3: Avoid and Protect CTS and Western Spadefoot. If protocol surveys for CTS are negative, and USFWS and CDFW concur with the results, no mitigation measures are necessary for CTS. Additionally, if the protocol surveys are also negative for western spadefoot, then no further mitigation measures are necessary. If surveys detect the presence of CTS and/or western spadefoot, or if the surveys are not completed, then implementation of avoidance and minimization measures is required (see below).

Avoidance and Minimization Measures

Where suitable habitat for CTS and/or western spadefoot occurs in the project site, and CTS and/or western spadefoot have been determined to have a moderate potential to occur (Sites C, J, L, Q, and the staging and borrow areas), the following measures will be implemented to ensure the project does not have adverse impacts on CTS and/or western spadefoot:

- Prior to the start of construction, a qualified biologist will locate appropriate relocation areas for any adult or juvenile CTS and/or western spadefoot that may need to be moved during construction. Appropriate relocation areas will be within 1.3 miles of where they were found, contain suitable burrows and nearby aquatic habitat, and will be located outside the area of impact. CTS and/or western spadefoot eggs and tadpoles will not be relocated without approval from USFWS and CDFW.
- A qualified biologist will conduct worker environmental awareness training for all construction personnel prior to the start of construction. The training will include a discussion of the biology and general behavior of CTS and/or western spadefoot, its habitat needs, its legal status, project-specific protective measures, and what to do if found. Upon completion of the training, each attending shall sign a form stating they attended the training and understand all protection measures.
- If at any time during preconstruction surveys or project implementation individual CTS and/or western spadefoot (including adults, juveniles, larvae, or eggs) are found in the work area, any work that could potentially harm CTS and/or western spadefoot will be halted. If the CTS and/or western spadefoot cannot or will not move offsite on their own, they will be relocated by the qualified biologist to the pre-determined relocation areas. CTS and/or western spadefoot will be transported in clean plastic containers with air holes and a moist unused sponge. CTS and/or western spadefoot will be handled using clean disposable gloves. CTS and/or western spadefoot will not be held in containers for longer than 30 minutes and will be kept in a shaded area. CTS and/or western spadefoot will be released into a burrow and monitored for 10 minutes to ensure acceptance of the burrow. The qualified biologist will follow all disinfectant practices developed by the Declining Amphibian Population Task Force. Construction may resume after the CTS and/or western spadefoot has been relocated. Incidental take permits from USFWS and CDFW are required for relocation of CTS.
- Burrows and a 50-foot buffer around each burrow should be avoided to the extent possible. Prior to the start of construction, in coordination with the construction contractor, the qualified biologist should identify any burrows in the work area

and within 50 feet that can be avoided. A 50-foot avoidance buffer around each avoided burrow shall be established using stakes, flags, and/or rope and be clearly distinguishable as an avoidance area.

- Within 2 weeks prior to the start of construction, small mammal burrows that cannot be fully avoided by at least 50 feet shall be fully hand excavated by a qualified biologist. For burrows located in heavily compacted soils, mechanical assistance may be utilized under the supervision of the qualified biologist.
- A qualified biologist will conduct preconstruction surveys of the work area immediately prior to ground-disturbing activities (including equipment staging, vegetation removal, and grading). If CTS and/or western spadefoot are found in the work area, they will be relocated as described above.
- A qualified biologist will be onsite during initial earthmoving activities to survey for CTS and/or western spadefoot. If CTS and/or western spadefoot are found in the work area, they will be relocated as described above.
- No ground-disturbing work will occur during wet weather unless the site has been cleared of CTS and/or western spadefoot by the qualified biologist and an exclusion fence set up around the work area to prevent migration of CTS and/or western spadefoot into the work area. Wet weather is defined as when there has been 0.25 inch of rain in a 24-hour period. Ground disturbing activities halted due to wet weather may resume when precipitation ceases and the National Weather Service 72-hour weather forecast indicates a 30% or less chance of precipitation. No ground-disturbing work will occur during a dry-out period of 48 hours after the above reference wet weather.
- During the CTS and western spadefoot migration/active season from November 1 to June 15, all project ground-disturbing activities will terminate 30 minutes before sunset and will not resume until 30 minutes after sunrise.
- No monofilament plastic will be used for erosion control. Non-monofilament substitutes including coconut coir matting and tackified hydroseeding compounds.
- Vehicles will not exceed a speed limit of 15 mph on unpaved roads within natural landcover types, or during offroad travel.
- Trenches or holes more than 6 inches deep will be provided with one or more escape ramps constructed of earth fill or wooden planks and will be inspected by a qualified biologist prior to being filled. Any such features that are left open overnight will be searched each day by trained construction personnel or the qualified biologist prior to construction activities to ensure no CTS and/or western spadefoot are trapped. If CTS and/or western spadefoot are found in the work area, they will be relocated as described above.
- Trained construction personnel or the qualified biologist will inspect under construction equipment and material left onsite prior to moving the equipment or material to look for CTS and/or western spadefoot that may have become trapped or are seeking refuge. If CTS and/or western spadefoot are found in the work area, they will be relocated as described above.

Mitigation Measure BIO-4: Avoid and Protect Western Pond Turtle. The following measures will be implemented to protect western pond turtles where work will occur within 330 feet of Turlock Lake:

- A qualified biologist will conduct worker environmental awareness training for all construction personnel prior to the start of construction. The training will include a discussion of the biology and general behavior of western pond turtle, its habitat needs, its legal status, project-specific protective measures, and what to do if found. Upon completion of the training, each attending shall sign a form stating they attended the training and understand all protection measures.
- For any work occurring within 330 feet of Turlock Lake, a pre-construction survey for western pond turtles and their nests will be conducted by a qualified biologist within 14 days of project activities. If western pond turtle nests are found, a 100-foot no-disturbance buffer will be established around the nest. The buffer will remain in place until the eggs have hatched, the juvenile turtles have dispersed, and the nest is no longer active.
- If western pond turtles are found at the project site during project implementation, work will stop within 100 feet of the turtle and a qualified biologist will be notified immediately. The turtle will be allowed to leave the work area on its own. If the turtle does not leave the work area on its own, the qualified biologist will capture and relocate the turtle to suitable habitat away from the construction zone. If the turtle does not voluntarily leave the maintenance area and cannot be captured and relocated unharmed, construction activities within approximately 100 feet of the turtle shall stop to prevent harm to the turtle, and CDFW shall be consulted to identify the next steps, if needed. Work may resume once the turtle has left the area and is no longer in danger of being harmed.

Mitigation Measure BIO-52: Protect Special-Status Birds and Nesting Birds Regulated by the MBTA and California Fish and Game Code. For construction activities occurring during the nesting season (February 1 through September 15) (also the wintering season for burrowing owls), a qualified biologist shall conduct a preconstruction pedestrian-level survey for active nests of raptors within 500 feet and active nests of non-raptors within 250 feet of the proposed project site. The survey shall be conducted using binoculars, from publicly accessible areas outside of the proposed project site, no more than 10 days before the start of construction. Additional survey requirements for Swainson's hawk and burrowing owl are provided below.

If no active nests or occupied burrowing owl burrows are identified during the preconstruction survey, the biologist shall submit a letter report to TID for its records, and no further mitigation is necessary. If construction stops for a period of 1 week or longer at any time during the nesting season, preconstruction surveys shall be conducted before construction resumes.

If active nests of protected birds are found in the survey area, a worker education and awareness program shall be provided to all on-site personnel by a qualified biologist before the commencement of materials staging or ground-disturbing activities. The biologist shall explain to construction workers how best to avoid impacts on nesting birds and shall include topics on species identification, life history, descriptions, and

habitat requirements. The crew members shall sign a sign-in sheet documenting that they received the training.

If active nests of raptors are found within 500 feet or active nests of non-raptors are found within 250 feet of the proposed project site, TID shall wait until the nests are not active to start construction, to the extent feasible. If construction must occur while the nest is active, an appropriate avoidance buffer zone shall be established around the nest, as determined by the qualified biologist. The biologist shall mark the avoidance buffer zone with construction tape or pin flags and shall maintain the buffer zone until the young have fledged or the nest is no longer active, as determined by the qualified biologist. Buffer zones are typically 500 feet for a bird of prey nest (excluding Swainson's hawk and burrowing owl, as described below), and 250 feet for all other protected birds. Buffer size shall be determined by the qualified biologist based on the species of bird, the location of the nest relative to the project, project activities during the time the nest is active, and other project-specific conditions.

If establishing the typical buffer zone is impractical, the qualified biologist may reduce the buffer depending on the species. Project activities that may affect nesting birds shall be monitored by a qualified biologist either continuously or periodically during work, as determined by the qualified biologist. The qualified biologist shall be empowered to stop construction activities that, in the biologist's opinion, threaten to cause unanticipated and/or unpermitted nest abandonment.

Additional Measures for Swainson's Hawk

If construction activities are anticipated to commence during the Swainson's hawk nesting season (March 1 to September 15), a qualified biologist shall conduct a minimum of two pre-construction surveys during the recommended survey periods in accordance with the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee, 2000). All potential nest trees within 0.25 mile of the project areas shall be visually examined for potential Swainson's hawk nests, as accessible. If no active Swainson's hawk nests are identified on or within 0.25-mile of the project site, no additional mitigation measures are required.

If an active Swainson's hawk nest is found during surveys, the nest should be buffered from construction activities by 0.25 mile to the extent feasible. The qualified biologist may reduce the avoidance buffer based on the specific construction activities to be conducted, barriers present between construction work and the nest, the nest stage, and other factors.

If work will occur within 0.25 mile of a Swainson's hawk nest, then construction shall be monitored daily by a qualified biologist until they feel comfortable that construction activities will not cause disturbance to the nest. Subsequent monitoring by the qualified biologist shall be conducted as determined necessary by the qualified biologist to ensure that no nest disturbance occurs.

The biologist may halt construction activities if they determine that the construction activities are disturbing the nest. CDFW shall be consulted prior to re-initiation of activities that may disturb the nest.

Additional Measures for Burrowing Owl

Prior to the start of construction, a qualified biologist will conduct preconstruction Take Avoidance Surveys in accordance with Appendix D of the CDFW Staff Report on Burrowing Owl Mitigation (California Department of Fish and Game [CDFG] 2012). One survey will be conducted no less than 14 days prior to initiating ground disturbance activities. A second survey will be conducted within 24 hours prior to ground disturbance. If no burrowing owls are identified on or in the vicinity of the project site, no additional mitigation measures are required.

If burrowing owls are discovered on the project site or in the vicinity of the project site, a qualified biologist will establish a fenced exclusion zone around each occupied burrow. No project activities will be allowed within the exclusion buffer zone until such time that the burrows are determined to be unoccupied by a qualified biologist. The buffer zones will be a minimum of 160 feet from an occupied burrow during the non-breeding season (September 1 through January 31), and a minimum of 500 feet from an occupied burrow during the breeding season (February 1 through August 31). If work will occur within the buffer zones, it will be monitored by a qualified biologist to ensure no disturbance occurs to the burrowing owl.

If complete avoidance is not feasible, the CDFW will be consulted regarding the implementation of avoidance or passive relocation methods. All activities that will result in a disturbance to burrows will be approved by the CDFW prior to implementation.

- b) **Less than Significant.** Initial site preparation would include vegetation clearing of all work areas on dam slopes, including tree removal on the upstream slope of Dams C and L, the downstream slopes of Dams D and H, and both the upstream and downstream slopes of Dams E and J. It is anticipated that, once construction has been completed, the dams would not be revegetated with trees (for dam safety purposes). While these trees may be considered riparian trees, they provide limited habitat value and no sensitive species are known to occupy them.
- c) **Less than Significant with Mitigation Incorporated.** At the site of Dam C, a seasonal wetland (SW-3) has formed on the downstream side. This wetland is a localized depression that captures rain runoff during the wet season. Because this wetland does not directly abut Turlock Lake and is downstream of the lake, it is not considered a water of the U.S. but is considered a water of the state. Dam buttressing at this location will result in an impact of 0.04 acres to the wetland. Impacts and fill within this feature will require approvals from the Central Valley RWQCB and CDFW and may require mitigation. Therefore, this impact would be potentially significant. Implementation of **Mitigation Measure BIO-63** would reduce the impact to a less-than-significant level.

Mitigation Measure BIO-63: Obtain Permit Approvals and Conduct Required Mitigation for Impacts to Waters of the State. Impacts and fill within waters of the state will require obtaining permit approvals from the Central Valley RWQCB and CDFW and may require the completion of mitigation activities to replace losses to these features. Mitigation may include purchasing credits from agency-approved mitigation banks or conducting other mitigation activities. The proposed project shall

obtain all necessary permits for impacts to waters of the state and complete any mitigation requirements.

- d) **No Impact.** The proposed project would not interfere with the movement of wildlife or fish and would not result in any barriers to the movement of upland wildlife. Therefore, no impact on wildlife movement would occur.
- e) **No Impact.** Stanislaus County does not have a tree ordinance. The proposed project is consistent with policies in the Conservation/Open Space Element of the *Stanislaus County General Plan* (Stanislaus County 2015) that generally promote the conservation and improvement of riparian areas for wildlife. Therefore, no impact related to a conflict with local policies or ordinances for biological resources would occur.
- f) **No Impact.** No adopted habitat conservation plans, natural community conservation plans, or other local conservation plans cover the proposed project site. Therefore, no impact would occur.

3.4.3 References

- Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken (eds.). 2012. *The Jepson Manual: Vascular Plants of California*, second edition. Berkeley: University of California Press. Accessed April 2022.
- Calflora. 2020. Information on California Plants for Education, Research and Conservation [web application]. Berkeley, CA: The Calflora Database. Available: <http://www.calflora.org/>. Accessed April 2022.
- California Natural Diversity Database (CNDDDB). 2022a. Special Animals List. California Department of Fish and Wildlife. Sacramento, CA. April 2022.
- . 2022b. Special Vascular Plants, Bryophytes, and Lichens List. California Department of Fish and Wildlife. Sacramento, CA. April 2022.
- California Department of Fish and Game (CDFG). 2012. Staff Report on Burrowing Owl Mitigation. State of California. Natural Resources Agency. Department of Fish and Game. March 7, 2012.
- California Department of Fish and Wildlife (CDFW). ~~2022~~2023. California Natural Diversity Database (CNDDDB) Rarefind 5 computer program (v5.2.14). Biogeographic Data Branch, Sacramento, CA, December 11, 2023.
- California Native Plant Society (CNPS). 2022. *Inventory of Rare and Endangered Plants* (online edition, v8.03 0.39). Sacramento, CA.
- Jepson Flora Project (eds.). 2020. *Jepson eFlora*. Available: <http://ucjeps.berkeley.edu/eflora/>. Last updated December 23, 2021. Accessed April 2022.
- Stanislaus County. 2015. *Stanislaus County General Plan Conservation/Open Space Element (Chapter 3)*. Adopted August 23, 2016, by the Board of Supervisors.

Swainson's Hawk Technical Advisory Committee. 2000. *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in the Central Valley.*

U.S. Fish and Wildlife Service (USFWS). 2003. *Endangered and threatened wildlife and plants; critical habitat designation for four vernal pool crustaceans and eleven vernal pool plants in California and southern Oregon; final rule. Federal Register 68(151):46684-46867, 50 CFR Part 17, 6 August 2003.*

_____. 2017. Framework for Assessing Impacts to the Valley Elderberry Longhorn Beetle (*Desmocerus californicus dimorphus*). U.S. Fish and Wildlife Service; Sacramento, California. 28 pp.

~~U.S. Fish and Wildlife Service (USFWS)~~_____. 2022. *Information for Planning and Consultation Resource List*. Sacramento Fish and Wildlife Office, Endangered Species Division. Sacramento, CA.

3.5 Cultural Resources

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
V. CULTURAL RESOURCES — Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.5.1 Environmental Setting

Background Research

ESA completed a records search at the Central California Information Center (CCaIC) of the California Historical Resources Information System on February 2, 2021 (File No. 011646N). The review included the proposed project site and a 0.5-mile radius. Previous surveys, studies, and site records were accessed. Records were also reviewed in the Built Environment Resources Directory for Stanislaus County, which contains information on places of recognized historical significance, including those evaluated for listing in the *National Register of Historic Places*, the *California Register of Historical Resources*, the *California Inventory of Historical Resources*, *California Historical Landmarks*, and *California Points of Historical Interest*. The purpose of the records search was to (1) determine whether known cultural resources have been recorded within the proposed project vicinity; (2) assess the likelihood for unrecorded cultural resources to be present based on historical references and the distribution of nearby sites; and (3) develop a context for the identification and preliminary evaluation of cultural resources.

The CCaIC records search indicated that no previously recorded cultural resources have been recorded on the proposed project site and three cultural resources (P-50-000206, -000227, -000228) have been previously recorded within 0.5 miles of the proposed project site. These three resources are all pre-contact archaeological sites. P-50-000206 is 0.3 miles north of the proposed project site and was recorded based on a verbal account from the landowner and has not been relocated since its documentation in 1954 (Bennyhoff 1954; Stewart 1994). P-50-000227 is a pre-contact habitation site with a bedrock milling feature surrounded by midden that was recorded 0.4 miles northeast of the proposed project site (Olsen 1972a). P-50-000228 is a pre-contact habitation site with groundstone and flaked stone tools, and was impacted prior to its initial recordation by the construction of residences and other support structures for State Parks (Olsen 1972b). P-50-000228 is northeast of the proposed project site. The location of P-50-000228 was meticulously surveyed during the pedestrian survey conducted for the proposed project, but no cultural material was identified. The site record prepared by Olsen (1972b) states that the cultural material is subsurface only.

The records search results indicated that the majority of the proposed project site has not been previously surveyed for cultural resources. One previous survey covered a small portion of the work proposed at Dam H and no cultural resources were identified (Woodward 1983).

Cultural Resources Survey

An ESA archaeologist and an ESA architectural historian completed a pedestrian surface survey of the proposed project site on March 10, 2022. All areas of proposed ground disturbance were walked in transects to provide an overall assessment of existing conditions. Visibility was fair to good, generally 50 to 75 percent, within the dams where the rehabilitation work is planned. However, visibility was very poor, generally 0 to 15 percent, within the proposed borrow and staging areas. In the borrow and staging areas, dense vegetation and tall grasses obscured soil visibility. Soil throughout the proposed project site, where visible, was dry and light brown with gravel inclusions. The proposed project site includes a few areas that have been built or paved over, including some of the access roads to and over the dams.

No archaeological resources or other evidence of past pre-contact or indigenous use or occupation of the proposed project site was identified during the survey. One architectural resource, the Turlock Lake/Davis Reservoir was identified during the survey. This resource was recorded and is discussed below.

Archaeological Testing Results

Methods

ESA identified soils potentially sensitive for buried archaeological resources within the proposed project site during initial analysis of the proposed project. The result of this investigation is briefly summarized below but is described fully in the Archaeological Sensitivity Assessment below. To determine if these areas contained buried archaeological resources, ESA prepared an Archaeological Testing Plan and DPR 412A Application and Permit to Conduct Archaeological Investigations/Collections for California Department of Parks and Recreation form to conduct the testing with the portion of the proposed project site that is within Turlock Lake State Recreation Area (Zimmer and Sims 2022). Preliminary review of soil types, topography, and previously recorded archaeological resources indicated that portions of Dams H, J, and K, as well as portions of the borrow and staging areas had a high potential for the presence of pre-contact archaeological resources in undisturbed areas because they contained Hanford sand loams which date to the Middle and Late Holocene (Rosenthal and Meyer 2004). The records search also identified a pre-contact habitation site, P-50-000228, near the proposed project site within the Hanford sand loams.

Results

On May 16–19, 2022, ESA completed 52 archeological test trenches on the approximately 100-foot test grid established throughout the entirety of the portion of the proposed project site identified as containing potentially sensitive soils. ESA archeologists directed the excavation of 3-foot-wide by 15-foot-long trenches in successive, shallow layers using an excavator fitted with a flat-bladed bucket to avoid impacting cultural deposits or seriously compromising any feature

associations should any resources be encountered. The trenching extended to the maximum depth of planned ground disturbance or until bedrock was reached for each location, at depths ranging from 2 to 12 feet below ground surface (bgs) (Table 3.5-1). One 5-gallon-bucked from every foot of the trench was screened for archaeological materials using a 1/4-inch mesh screen.

**TABLE 3.5-1
TEST TRENCHING SUMMARY**

Location	Number of Trenches	Maximum Trench Depth (ft)
Borrow Area	15	5
Staging Area	20	3
Dam J	3	9
Dam H	14	12

Within the borrow and staging areas, stratigraphy encountered during trenching primarily consisted of Hanford fine sandy loam (lightly compact to compact sandy loams with varying gravel inclusions) that extended to the maximum depth of investigation (5 and 3 feet bgs, respectively). Three trenches placed near the foot of Dam J encountered Hanford fine sandy loam overlying fine sandstone bedrock of the Mehrten Formation at depths ranging from 6 to 9 feet bgs. Stratigraphy within the Dam H area consisted of Hanford sandy loam (lightly compact to compact sandy loam with varying gravel inclusions) overlying bedrock at 6 to 9 feet bgs. No evidence of buried soil horizons or other potentially archaeologically sensitive soils were observed during excavation, and no cultural material was identified in any of the excavated trenches.

Archaeological Sensitivity Assessment

Landforms that predate the earliest estimated periods for human occupation of the region are considered to have very low potential for the presence of buried archaeological sites, while those that postdate human occupation are considered to have a higher potential for buried archaeological sites. The degree of buried site potential is inversely related to the estimated date range of a landform. Currently, archaeological research indicates that the earliest evidence for human occupation of California dates to the Late Pleistocene, which ended approximately 11,500 years before present. Therefore, the potential for buried archaeological deposits in landforms from or predating the Late Pleistocene is very low (Rosenthal and Meyer 2004).

In many places, the interface between older land surfaces and subsequent soil deposits are marked by a buried, “fossilized” land surface, or a paleosol. Paleosols are preserved, stable, land surfaces represented by a well-developed A-horizon, and thus have the potential to contain archaeological resources if the area was occupied or settled by humans (Rapp and Hill 2006:43). Because human populations have grown since the arrival of the area’s first inhabitants, younger paleosols (Late Holocene) are more likely to yield archaeological resources than older paleosols (prior to Late Holocene).

Overlying soils in the southwestern portion of the APE (Dam S) includes Pentz and Whitney sandy loams and (Dam A) Peters clay that date to the Pre-Quaternary, with very low buried archaeological site potential (Rosenthal and Meyer 2004:107, Appendix D; USDA 2022). The northwestern portion of the APE (Dams B, C, D, E, H, J, K, borrow and staging areas) includes Montpellier sandy loams, and Whitney sandy loams dating to the Early and Middle Pleistocene with very low buried archaeological site potential. The northeastern portion of the APE (Dams L, M, N, O, and P) includes Madera sandy loams dating to the Pre-Quaternary with very low buried archaeological site potential, according to Rosenthal and Meyer (2004:107, Appendix D).

Along the backside of Dams H, J, and K and the western portion of the staging area and borrow area, soils consist of Hanford sand loams which date to the middle to late Holocene and were identified by Rosenthal and Meyer (2004: Appendix D) as having a very high sensitivity for buried archaeological sites.

The underlying geology of the APE has four constituents: Turlock Lake Formation, Mehrten Formation, Riverbank Formation, and Modesto Formation (Wagner et al. 1991, see Figure 7). The Mehrten Formation is the oldest, dating to the early to middle Pliocene, and underlies Dams Q and R. The Turlock Lake Formation dates to the early Pleistocene and underlies dams A, B, C, D, E, and S. The Riverbank Formation dates to the middle Pleistocene and underlies dams J, K, L, M, N, O, P, the eastern end of Dam H, as well as the proposed staging and borrow areas. The Modesto formation dates to the late Pleistocene and underlies the majority of Dam H. All of these geologic formations are dated prior to the Holocene and therefore have a low sensitivity for buried archaeological sites (Wagner et al. 1991).

The proposed project site intersects a few historical streams and creeks (although most have since been channelized or moved with the construction of the dams for Turlock Lake) and is near the Tuolumne River, which does increase the sensitivity of the area for pre-contact archaeological resources, however the pedestrian surface survey and the subsurface archaeological testing did not identify any resources. The records search results of the proposed project site suggest that, prior to historic-era, there was indigenous occupation of the area, particularly the northern portion of the proposed project site nearest Tuolumne River. No pre-contact or indigenous resources were identified within the proposed project site; however, a pre-contact resource is recorded within 140 feet of the borrow area. Therefore, the landform, proximity to water resources, and proximity to known archaeological resources, suggest that the portion of the proposed project site including Dams A, B, C, D, E, H, L, M, N, O, P, Q, R, and S have a low potential for the presence of pre-contact archaeological resources in undisturbed areas.

The portions of Dams H, J, and K, as well as portions of the borrow and staging areas with Hanford loams have a high potential for the presence of pre-contact archaeological resources in undisturbed areas based on the soils present (Rosenthal and Meyer 2004). These areas were tested to the depth of proposed ground disturbance as part of the archaeological subsurface testing and no cultural material was identified. It is likely that portions of the areas identified by the soils analysis with high sensitivity have been previously disturbed by the construction of Turlock Lake and the associated dams. As a result of the archaeological testing, these areas have a low

sensitivity for buried pre-contact archaeological resources and the potential for the proposed project to impact significant pre-contact archaeological resources is low.

Evidence of historic-era settlement and land-reclamation activities have been documented near and within the proposed project site; however, these resources are mostly built-environment resources and there have been little to no geological, alluvial, or other human-caused processes that would bury these resources. Therefore, any such resources would likely be on the surface and would have been identified during pedestrian surveys, which have covered the entirety of the proposed project site. A historic aerial and map imagery review did not identify any structures or features previously constructed within the proposed project site, besides the road alignments and dam structures (NETR 2022). Based on this review, the potential for the presence of unrecorded, or previously unknown, historic-era archaeological resources is low.

Therefore, this analysis concludes that the proposed project site's sensitivity for previously unrecorded historic-era archaeological resources and pre-contact archaeological resources is low.

Architectural Resources

As described above, the 18 dams associated with Turlock Lake were examined and recorded during the pedestrian survey. Due to the geographic proximity, similar age, and shared functionality of the dams, all 18 were recorded as one resource with multiple components: Turlock Lake/Davis Reservoir.

Davis Reservoir, later renamed Owens Reservoir and now called Turlock Lake, was constructed in 1913–1914. Alfred Davis was the rancher who owned the majority (1,400 acres) of the property purchased by TID to construct Turlock Lake/Davis Reservoir. The reservoir reflected his name from its completion in 1914 until 1917, when the reservoir was renamed the Owen Reservoir after T.A. Owen, one of the first directors of the TID, in recognition for his work for the TID. Turlock Lake served as TID's main storage reservoir until completion of the original Don Pedro Dam and Reservoir in 1923. In 1949, Governor Earl Warren signed legislation permitting TID to lease a portion of the northern end of Owen Reservoir for use as a state park. The bill for the proposed park covered 220 acres, and included construction of sanitary and camping facilities, landscaping, docking and boat facilities, beaches, and picnicking areas. The park opened summer 1950 and functioned as a recreation area until closure resulted from lack of funding due to COVID-19 in 2021.

Archival review, detailed in Sims et al. (2022),⁷ determined that Turlock Lake/Davis Reservoir and its associated dams do not meet the requirements of the National Register of Historic Places (National Register) or the California Register of Historical Resources (California Register) Criteria A/1–D/4 -association with significant events (A/1), individuals (B/2), architecture (C/3), or ability to yield information important to history. Additionally, the dams do not retain sufficient physical integrity to reflect the original design. As such, Turlock Lake/Davis Reservoir and its associated dams do not appear to be eligible for the National Register or the California Register,

⁷ The Cultural Resources Inventory Report (Sims et al. 2022) is a confidential document due to the sensitivity of cultural resources and may be provided to qualified persons upon request.

and would not be considered a historic property per Section 106, nor a historical resource under CEQA.

3.5.2 Regulatory Framework

National Register of Historic Places

The National Historic Preservation Act of 1966, as amended (U.S. Code Title 54, Section 306108), and its implementing regulations established the National Register as a comprehensive inventory of known historic resources throughout the United States. The National Register is administered by the National Park Service under the direction of the Secretary of the Interior. It includes buildings, structures, sites, objects, and districts that possess historic, architectural, archaeological, engineering, or cultural significance. A property is considered significant if it meets the criteria for listing in the National Register at Code of Federal Regulations Title 36, Section 60.4 (36 CFR 60.4).

California Register of Historical Resources

The California Register is “an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change” (PRC Section 5024.1(a)). Certain resources are determined by law to be automatically included in the California Register, including California properties formally determined eligible for, or listed in, the National Register.

Native American Heritage Commission

The Native American Heritage Commission (NAHC) was created by statute in 1976. It is a nine-member body appointed by the governor to identify and catalog cultural resources (i.e., places of special religious or social significance to Native Americans, and known graves and cemeteries of Native Americans on private lands) in California. The NAHC is responsible for preserving and ensuring accessibility of sacred sites and burials, ensuring the disposition of Native American human remains and burial items, maintaining an inventory of Native American sacred sites located on public lands, and reviewing current administrative and statutory protections related to these sacred sites.

California Public Resources Code Sections 5097.98 and 5097.99

PRC Section 5097.98 (reiterated in CEQA Guidelines Section 15064.5(e)) identifies steps to follow in the event of the accidental discovery or recognition of any human remains in any location other than a dedicated cemetery. PRC Section 5097.99 prohibits obtaining or possessing any Native American artifacts or human remains that are taken from a Native American grave or cairn (stone burial mound).

California Health and Safety Code Section 7050.5

California Health and Safety Code Section 7050.5 protects human remains by prohibiting the disinterment, disturbance, or removal of human remains from any location other than a dedicated cemetery.

3.5.3 Discussion

- a) **No Impact.** A significant impact would occur if the proposed project would cause a substantial adverse change to a historical resource through physical demolition, destruction, relocation, or alteration of the resource. As used in this analysis, *historical resources* refers to historic-era architectural resources or the built environment, including buildings, structures, and objects.

Based on the results of the records search, background research, surface survey, subsurface survey, and resource evaluation, one potential historical resource, the Turlock Lake/Davis Reservoir was identified in the proposed project footprint. ESA evaluated this potential resource and recommends that it is not eligible for the National Register or California Register. Therefore, there are no historic properties or historical resources in the proposed project site and no impact on historical resources of the built environment would occur.

- b) **Less than Significant with Mitigation Incorporated.** This section discusses archaeological resources, both as historical resources according to CEQA Guidelines Section 15064.5, as well as unique archaeological resources, as defined in California Public Resources (PRC) (CEQA) Section 21083.2(g). A significant impact would occur if the proposed project would cause a substantial adverse change to an archaeological resource through physical demolition, destruction, relocation, or alteration of the resource.

Based on the results of the records search, background research, and archaeological sensitivity assessment, no archaeological resources have been identified in the proposed project site. The archaeological sensitivity analysis found that the proposed project site has a high potential for encountering archaeological resources within portions of the work areas around Dams H, J, the borrow area, and the staging area. All other portions of the proposed project site have a low potential for encountering archaeological resources. An archaeological testing program was conducted within the sensitive soils at the four locations between May 16 and May 19, as detailed above. No cultural material was identified as a result of the subsurface testing (Sims et al. 2022).⁸ Therefore, based on the results of the test the entire proposed project site has a low potential for encountered archaeological resources.

Despite the low sensitivity, there is still the potential for the discovery of buried archaeological resources during ground-disturbing activities. Accordingly, the proposed project shall implement **Mitigation Measure CUL-1: Cultural Resources Awareness Training** and **Mitigation Measure CUL-2: Inadvertent Discovery of Cultural Resources** to determine, mitigate, and reduce any potential significant impacts. If any previously unrecorded archaeological resources are identified during proposed project ground-disturbing activities and were found to qualify as a historical resource per CEQA

⁸ The Cultural Resources Inventory Report (Sims et al. 2022) is a confidential document due to the sensitivity of cultural resources and may be provided to qualified persons upon request.

Guidelines Section 15064.5 or a unique archaeological resource, as defined in PRC (CEQA) Section 21083.2(g), any impacts to the resource resulting from the proposed project could be potentially significant. Any such potential significant impacts would be reduced to a less-than-significant level with implementation of **Mitigation Measure CUL-1** and **Mitigation Measure CUL-2**.

Mitigation Measure CUL-1: Cultural Resources Awareness Training: Before any ground-disturbing and/or construction activities, an archaeologist meeting or under the supervision of an archaeologist meeting the Secretary of the Interior Standards for Archeology shall conduct a training program for all construction and field personnel involved in ground disturbance. If a Native American tribe has expressed interest in the proposed project via tribal consultation as per Assembly Bill 52 consultation, they will be invited to participate in the training program. On-site personnel shall attend a mandatory pre-project training that shall outline the general archaeological sensitivity of the area and the procedures to follow in the event an archaeological resource and/or human remains are inadvertently discovered. A training program shall be established for new project personnel before they begin project work.

Mitigation Measure CUL-2: Inadvertent Discovery of Cultural Resources: If pre-contact or historic-era archaeological resources are encountered during project implementation, all construction activities within 100 feet shall halt, and a qualified archaeologist, defined as an archaeologist meeting the U.S. Secretary of the Interior's Professional Qualification Standards for Archeology, shall inspect the find within 24 hours of discovery and notify TID of their initial assessment. Pre-contact archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-era materials might include building or structure footings and walls, and deposits of metal, glass, and/or ceramic refuse.

If TID determines, based on recommendations from a qualified archaeologist and a Native American representative (if the resource is pre-contact), that the resource may qualify as a historical resource or unique archaeological resource (as defined in CEQA Guidelines Section 15064.5) or a tribal cultural resource (as defined in PRC Section 21080.3), the resource shall be avoided, if feasible. Consistent with Section 15126.4(b)(3), this may be accomplished through planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement.

If avoidance is not feasible, TID shall consult with appropriate Native American tribes (if the resource is pre-contact), and other appropriate interested parties to determine treatment measures to avoid, minimize, or mitigate any potential impacts to the resource pursuant to PRC Section 21083.2, and CEQA Guidelines Section 15126.4. This shall include documentation of the resource and may include data recovery (according to PRC Section 21083.2), if deemed appropriate, or other actions such as treating the resource with culturally appropriate dignity and

protecting the cultural character and integrity of the resource (according to PRC Section 21084.3).

- c) **Less than Significant with Mitigation.** Based on the records search and survey results, no human remains are known to exist within the proposed project site. It is possible that human remains would be encountered during construction of the proposed project. Therefore, the possibility of inadvertent discovery cannot be entirely discounted. In the event of the discovery of human remains during project construction activities, implementation of **Mitigation Measure CUL-3: Inadvertent Discovery of Human Remains** would reduce potential impacts to human remains.

Mitigation Measure CUL-3: Inadvertent Discovery of Human Remains: In the event of discovery or recognition of any human remains during construction activities, such activities within 100 feet of the find shall cease until the appropriate County Coroner has been contacted to determine that no investigation of the cause of death is required. The NAHC will be contacted within 24 hours if it is determined that the remains are Native American. The NAHC will then identify the person or persons it believes to be the most likely descendant from the deceased Native American, who in turn would make recommendations to the lead agency for the appropriate means of treating the human remains and any grave goods.

3.5.4 References

- Bennyhoff, 1954. Archaeological Site Survey Record, P-50-000206. On file, CCaIC, CSU Stanislaus, Turlock, California, 1954.
- Central California Information Center (CCaIC), Records Search File No. File No. 011646N. On file, ESA, February 2, 2021.
- Nationwide Environmental Title Research (NETR) Historic Aerials, Turlock Lake, California. Available at <https://historicaerials.com/viewer>. Accessed March 11, 2022.
- Olsen, W. H. 1972a. DPR 422 Form Set, P-5-000227. On file, CCaIC, CSU Stanislaus, Turlock, California.
- Olsen, W. H. 1972b. DPR 422 Form Set, P-5-000228. On file, CCaIC, CSU Stanislaus, Turlock, California.
- Rapp, G. and C.L. Hill. 2006. *Geoarchaeology: The Earth-Science Approach to Archaeological Interpretation*, 2nd ed., Yale University Press, New Haven, CT.
- Rosenthal, J.S. and J. Meyer. 2004. Cultural Resources Inventory of Caltrans District 10 Rural Conventional Highways, Volume III: Geoarchaeological Study, Landscape Evolution and the Archaeological Record of Central California, prepared by Far Western Anthropological Research Groups, Inc. for Caltrans District 10.
- Sims, A., K. Cleveland and P. Zimmer, Turlock Lake Rehabilitation Project, Stanislaus County, California, Cultural Resources Inventory Report. Prepared by Environmental Science Associates. Prepared for Turlock Irrigation District. 2022.

Stewart, S. 1994. Archaeological Site Record, P-50-000206. On file, CCaIC, CSU Stanislaus, Turlock, California.

USDA (U.S. Department of Agriculture). 2022. Natural Resources Conservation Service Web Soil Survey, Version 3.1, <http://websoilsurvey.sc.egov.usda.gov/app/WebSoilSurvey.aspx>, March 25, 2022.

Wagner, D.L., E.J. Bortugno, and R.D. McJunkin. 1991. Geologic Map of the San Francisco-San Jose Quadrangle, California, 1:250,000, California Division of Mines and Geology, Available at https://www.conservation.ca.gov/cgs/Documents/Publications/Regional-Geologic-Maps/RGM_005A/RGM_005A_SanFrancisco-SanJose_1991_Sheet1of5.pdf, 1991.

Woodward, J. 1983. Waterline and Accessories (minor capital outlay) Archaeological Survey Report, Prepared by California Department of Parks and Recreation.

Zimmer, P. and A. Sims. 2022. Archaeological Testing Plan for the Turlock Lake Rehabilitation Project, Turlock, California. Prepared by Environmental Science Associates. Prepared for Turlock Irrigation District.

3.6 Energy

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
V. ENERGY — Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.6.1 Discussion

Consistent with Public Resources Code Section 21100(b)(3), this impact analysis evaluates the potential for the proposed project to result in a substantial increase in energy demand and wasteful use of energy during project construction, operation, and maintenance. The impact analysis is informed by Appendix G of the CEQA Guidelines. The potential impacts are analyzed based on an evaluation of whether construction energy use estimates for the proposed project would be considered excessive, wasteful, or inefficient.

- a) **Less than Significant.** During construction of the proposed Project, fuel consumption would result from the use of construction tools and equipment, truck trips to haul material, and construction workers' commutes to and from the proposed project site. Construction of the proposed project is anticipated to last for 8 months.

Construction activities and corresponding fuel energy consumption would be temporary and localized, as the use of diesel fuel and heavy-duty equipment would not be a long-term condition of the proposed project. In addition, the proposed project has no unusual characteristics that would require using construction equipment or haul vehicles that would be less energy efficient than equipment and vehicles used at similar construction sites elsewhere in California. In conclusion, construction-related fuel consumption by the proposed project would not result in inefficient, wasteful, or unnecessary energy use compared with other construction sites in the region. This impact would be less than significant.

Once construction is complete, operational emissions would be minimal and related to periodic facility inspection to assess dam integrity. Because the proposed project's operational impacts on energy resources would be driven primarily by limited maintenance activities, energy use would be negligible. This impact would be less than significant.

- b) **Less than Significant.** The transportation sector is a major end user of energy in California, accounting for approximately 39 percent of the state's total energy consumption in 2018 (U.S. Energy Information Administration 2020). Energy is also consumed in connection with construction and maintenance of transportation infrastructure, such as streets, highways, freeways, rail lines, and airport runways.

In 2015, California's 30 million vehicles consumed more than 15 billion gallons of gasoline and more than 4.2 billion gallons of diesel, making California the second largest consumer of gasoline in the world (CEC 2016).

Existing standards for transportation energy are promulgated through the regulation of fuel refineries and products, such as the Low Carbon Fuel Standard, which mandated a 10 percent reduction in the non-biogenic carbon content of vehicle fuels by 2020. In 2018, CARB approved amendments to the regulation, which included strengthening and smoothing the carbon intensity benchmarks through 2030 in line with California's 2030 greenhouse gas emissions reduction target enacted through Senate Bill 32, adding new crediting opportunities to promote zero-emissions vehicle adoption, alternative jet fuel, carbon capture and sequestration, and advanced technologies to achieve deep decarbonization in the transportation sector. Other regulatory programs with emissions and fuel efficiency standards have been established by the U.S. Environmental Protection Agency and CARB, such as Pavley II/Low Emission Vehicle III from California's Advanced Clean Cars Program and the Heavy-Duty (Tractor-Trailer) Greenhouse Gas Regulation. CARB has set a goal of 4.2 million zero-emissions vehicles on the road by the year 2030 (CARB 2021). Further, construction sites need to comply with state requirements designed to minimize idling and associated emissions, which also minimizes fuel use. Specifically, idling of commercial vehicles and off-road equipment is limited to 5 minutes in accordance with the Commercial Motor Vehicle Idling Regulation and the Off-Road Regulation (California Code of Regulations Title 13, Section 2485).

Stanislaus County has not implemented energy action plans. The proposed project is consistent with the state goals and would not impede progress toward achieving these goals.

The proposed project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency or impede progress toward achieving any goals and targets. This impact would be less than significant.

3.6.2 References

- California Air Resources Board (CARB). 2021. 2020 Mobile Source Strategy. Available: <https://ww2.arb.ca.gov/resources/documents/2020-mobile-source-strategy>. Accessed March 2022.
- California Energy Commission (CEC). 2016. Summary of California Vehicle and Transportation Energy. Available: http://www.energy.ca.gov/almanac/transportation_data/summary.html#vehicles. Accessed March 2022.
- U.S. Energy Information Administration. 2020. California State Profile and Energy Estimates: Consumption by Sector. Available: <http://www.eia.gov/state/?sid=CA#tabs-2>. Accessed: March 2022.

3.7 Geology and Soils

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
VII. GEOLOGY AND SOILS — Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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 checked="" type="checkbox"/>	<input 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 waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.7.1 Environmental Setting

This analysis is based, in part, on the draft Turlock Lake Dam Rehabilitation Geotechnical Data Report by Stantec Consulting Services Inc. (Stantec) in October 2021 (Stantec 2021).

The proposed project area is located within the central portion of the Great Valley geomorphic province,⁹ just east of the Coast Ranges (CGS 2002). The Great Valley is an elongate lowland approximately 50 miles wide and 400 miles long. It is bounded to the east by the Sierra Nevada Range and to the west by the Coast Range (Stantec 2021). The Great Valley rises from about sea level to approximately 400 feet in elevation at its northern and southern ends. The northern portion of the valley, referred to as the Sacramento Valley, is drained by the Sacramento River, while the southern portion of the valley, referred to as the San Joaquin Valley, is drained by the San Joaquin River. The Great Valley is filled with large volumes of sediments that have been eroded from the

⁹ A geomorphic province is an area that possesses similar bedrock, structure, history, and age. California has 11 geomorphic provinces.

Sierra Nevada and Coast Range provinces. These sediments are nearly 6 miles deep at the southern end of the Great Valley (Leech 2006).

Current geologic mapping indicates that the surficial geology within the proposed project area consists of Pleistocene-age Riverbank (Qr), Modesto (Qm), and Turlock Lake (Qtl) Formations; and Miocene-age Mehrten Formation (Tm) (Wagner et al. 1991; Stantec 2021). Subsurface investigations performed by Stantec indicate that fill material is present in the immediate subsurface and alluvial deposits (derived from the Riverbank and Turlock Lake Formations) are present at depths between 1 and 70 feet below ground surface (bgs) (Stantec 2021).

The California Earthquake Hazards Zone Application (EQ Zapp) is an interactive map available on the California Geological Survey (CGS) website. The EQ Zapp allows users to view all available earthquake hazard zone data, including earthquake fault, liquefaction, and earthquake-induced landslide zones. Holocene-active faults are designated Earthquake Fault Zones (EFZs) because they display evidence of surface rupture within the last 11,700 years. As required by the Alquist-Priolo Earthquake Fault Zoning Act, the proposed project site is not within an established EFZ as delineated on an EFZ Map.

There are no known Holocene-active¹⁰ faults or pre-Holocene¹¹ faults within the proposed project area (CGS 2010; Stantec 2021). The nearest known Holocene-active fault is the Cottonwood Arm section of the Ortigalita fault zone, approximately 45 miles southwest of the proposed project site. The Foothill fault system and the San Joaquin fault are pre-Holocene faults and are approximately 15 miles northwest and 35 miles west of the proposed project site, respectively (Stantec 2021).

Ground shaking due to fault rupture can cause damage to life and property. The extent of the damage varies by event and is determined by several factors, including (but not limited to): magnitude and depth of the earthquake, distance from epicenter, duration and intensity of the shaking, underlying soil and rock types, and integrity of structures.

There is a potential for strong seismic ground shaking due to the presence of the nearby Ortigalita fault zone. The 2014 Working Group on California Earthquake Probabilities¹² (WGCEP) concluded that there is a 1.91 percent probability that a magnitude (M_w) 6.7 earthquake or higher could occur on the Ortigalita fault zone within the next 30 years (Field et al. 2015).

ShakeMap is a product of the United State Geological Survey (USGS) Earthquake Hazards Program; ShakeMap earthquake scenarios represent one realization of a potential future earthquake by assuming a particular magnitude and location. According to the ShakeMap that corresponds with an earthquake planning scenario generated by an estimated 7.1 M_w earthquake along the Ortigalita fault zone, the proposed project area would be subjected to modest to strong seismic ground shaking (USGS 2013).

¹⁰ Holocene-active faults show evidence of displacement within the Holocene Epoch, or the last 11,700 years are considered active (CGS 2008).

¹¹ Pre-Holocene faults have not shown evidence of displacement in the last 11,700 years (CGS 2008).

¹² Also referred to as WGCEP 2014, this is a working group comprised of seismologists from the U.S. Geological Survey (USGS), California Geological Survey (CGS), Southern California Earthquake Center, and California Earthquake Authority.

A deterministic seismic hazard analysis was performed; the analysis assumed a Magnitude (M) 7.6 event within the Foothills fault system at a distance of approximately 15 miles, with a peak ground acceleration of approximately $0.29 g^{13}$ experienced at the proposed project site (Stantec 2021).

Expansive soils are soils that possess a “shrink-swell” characteristic, also referred to as linear extensibility. Shrink-swell is the cyclic change in volume (expansion and contraction) that occurs in fine-grained clay sediments from the process of wetting and drying; the volume change is reported as a percent change for the whole soil. This property is measured using the coefficient of linear extensibility (COLE) (NRCS 2017). The Natural Resources Conservation Service (NRCS) relies on linear extensibility measurements to determine the shrink-swell potential of soils. If the linear extensibility percent is more than 3 percent (COLE = 0.03), shrinking and swelling may cause damage to buildings, roads, and other structures (NRCS 2017). Changes in soil moisture can result from rainfall, landscape irrigation, utility leakage, roof drainage, and/or perched groundwater.¹⁴ Expansive soils are typically very fine-grained and have a high to very high percentage of clay. Structural damage may occur incrementally over a long period of time, usually as a result of inadequate soil and foundation engineering or the placement of structures directly on expansive soils.

The NRCS Web Soil Survey data indicates that the soils along the Turlock Lake shoreline have a widely variable linear extensibility rating, with the lowest rating at 0.7 percent and the highest at 9.9 percent. A majority of the soils along the shoreline have a low expansion potential (linear extensibility rating between 0.7 and 2.4 percent); however, the soils along the eastern and western shorelines have a very high expansion potential (linear extensibility rating between 0.7 and 6.4 percent) (NRCS 2021). The Geotechnical Data Report does not specifically state that expansive soils were encountered during subsurface investigations; however, there is mention of “fat clays” in the subsurface (Stantec 2021), which are considered expansive (Stratum Logics 2022).

Liquefaction is a phenomenon in which unconsolidated, water-saturated sediments become unstable due to the effects of strong seismic shaking. During an earthquake, these sediments can behave like a liquid, potentially causing damage to overlying structures. Lateral spreading is a type of minor landslide that occurs when unconsolidated liquefiable material breaks and spreads due to the effects of gravity, usually down gentle slopes.

The potential damaging effects of liquefaction include differential settlement, loss of ground support for foundations, ground cracking, heaving and cracking of structure slabs due to sand boiling, and buckling of deep foundations due to ground settlement. In general, a relatively high potential for liquefaction exists in loose, sandy soils that are within 50 feet of the ground surface and are saturated (below the groundwater table).

Although geologic mapping indicates a majority of the Turlock Lake shoreline is composed of outcrops of the Riverbank, Modesto, and Merhten Formations (Wagner et al. 1991), the subsurface geotechnical investigation indicates there are moderately to highly dispersive fill material and

¹³ The gravity of Earth is denoted by a lower-case *g* and stands for the net acceleration that is imparted to objects due to the combined effect of gravitation and the centrifugal force from Earth’s rotation.

¹⁴ Perched groundwater is a local saturated zone above the water table that typically exists above an impervious layer (such as clay) of limited extent.

alluvial deposits in the immediate subsurface (Stantec 2021). Subsurface investigations further indicate that groundwater has been encountered between 16.5 to 58 feet bgs. While the Geotechnical Data Report does not specifically state that the subsurface materials had a high liquefaction potential (Stantec 2021), the reported soil conditions are conducive to liquefaction.

Additionally, landslides and other slope failures are not anticipated within the proposed project area because of the relatively flat surrounding area. Based on Google Earth imagery, there are no signs of previous landslides within or around the proposed project area. Additionally, based on a review of geologic maps of the area, there are no mapped historical landslides in the vicinity of the proposed project area (Wagner et al. 1991). According to the EQ Zapp, the proposed project site is not mapped within an established liquefaction or earthquake-induced landslide zone (CGS 2022).

Land subsidence is the gradual settling or sudden sinking of the earth's surface due to subsurface movement of earth materials. Subsidence in alluvial valley areas is typically associated with groundwater or petroleum withdrawal, and regional ground subsidence or settlement is typically caused by compaction of alluvial deposits or other saturated deposits in the subsurface (USGS 1999). The San Joaquin Valley has a history of land subsidence due to groundwater pumping and related compaction of sand and clay layers in Valley sediments. The proposed project area is not in an area that has experienced much land subsidence in the past (Sneed et al. 2018).

Paleontological resources are the mineralized (fossilized) remains of prehistoric plants and animals and the mineralized impressions (trace fossils) left as indirect evidence of the form and activity of such organisms. These resources are located within sedimentary rocks or alluvium and are considered to be nonrenewable. Formations that contain vertebrate fossils are considered more sensitive because vertebrate fossils tend to be rare and fragmentary. Formations containing microfossils, plant casts, and invertebrate fossils are more common. A significant fossil deposit is a rock unit or formation that contains significant nonrenewable paleontological resources. This is defined as comprising one or more identifiable vertebrate fossils, large or small, and any associated invertebrate and plant fossils, traces, and other data that provide taphonomic, taxonomic, phylogenetic, ecologic, and stratigraphic information (ichnites and trace fossils generated by vertebrate animals such as trackways or nests and middens) that in turn provides datable material and climatic information. This definition excludes invertebrate or botanical fossils except when present within a given vertebrate assemblage. However, invertebrate and botanical fossils may be significant as environmental indicators associated with vertebrate fossils.

In its "Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources," the Society of Vertebrate Paleontology (SVP) defines, as follows, four categories of paleontological potential for rock units: high, low, undetermined, and no potential. High potential rock units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered are considered to have a high potential for containing additional significant paleontological resources. Low potential rock units that are poorly represented by fossil specimens in institutional collections, or based on general scientific consensus, only preserve fossils in rare circumstances, and the presence of fossils is the exception not the rule. Undetermined potential rock units are those for which little information is available concerning their paleontological content, geologic age, and depositional environment. No potential rock units

like high-grade metamorphic rocks (such as gneisses and schists) and plutonic igneous rocks (such as granites and diorites) will not preserve fossil resources (SVP 2010). It is important to note that while paleontological potential as defined above can provide a rough idea of whether subsurface fossils may exist, the uniqueness or significance of a fossil locality is unknown until it is identified to a reasonably precise level (Scott and Springer 2003). Therefore, any fossil discovery should be treated as potentially unique or significant until determined otherwise by a professional paleontologist.

Based on geologic mapping, the surficial geology within the proposed project area consists of Pleistocene-age Riverbank (Qr), Modesto (Qm), and Turlock Lake (Qtl) Formations and Miocene-age Mehrten Formation (Tm) (Wagner et al. 1991).

A search of the University of California Museum of Paleontology (UCMP) fossil locality online database indicates that there are 17 recorded fossil localities collected from the Merhten Formation at Turlock Lake. Of the 17 recorded fossil sites, at least 167 individual specimens have been collected (including the remains of horses, rhinoceroses, camels, pronghorns, beavers, badgers, other rodents, canids, and amphibians) (Wagner 1976; Biewer et al. 2016; Sankey et al. 2016; Balisi et al. 2018; UCMP 2022a) Additionally, more than 100 individual plant specimens have been recovered from the Mehrten Formation at Turlock Lake (UCMP 2022b). Although there are no recorded localities within the Riverbank, Modesto, or Turlock Lake Formations within the proposed project site, there is one Riverbank Formation locality and three Modesto Formation localities within Stanislaus County (UCMP 2022c). While not abundant in Stanislaus County, there are numerous Riverbank and Modesto Formation localities within California (UCMP 2022d).

Because of the abundance of fossils that have been recovered from the Riverbank, Modesto, and Mehrten Formations, these formations are considered to have a high potential to contain significant paleontological resources.

3.7.2 Discussion

- a.i) **No Impact.** The proposed project site is not located within an established EFZ. The proposed project would have no impact related to surface fault rupture.
- a.ii) **Less than Significant.** The proposed project site is in an area of California with relatively low seismic activity due to the distance from Holocene-active faults. However, as discussed above, the proposed project site could experience moderate to strong ground shaking in the event of an earthquake within the Ortigalita fault zone. If strong seismic ground shaking were to damage or destroy one or more of the dams at the proposed project site, this would result in a significant impact.

However, the dams at the proposed project site are under the jurisdiction of the DWR DSOD, who oversees the construction, repair, and alteration of dams within its jurisdiction. Further, the construction, alteration, and repair of any structure constructed within the state is required to comply with the standards and regulations included in the most current version of the California Building Code (CBC).

Compliance with DSOD and CBC standards and regulations would reduce the impacts related to seismic ground shaking to a less-than-significant level.

- a.iii, a.iv, c) **Less than Significant.** As discussed above in the *Environmental Setting* section, the proposed project site is not within an area known to be susceptible to landslides or liquefaction. In addition, the proposed project would be subject to compliance with the DSOD and CBC standards and regulations. Therefore, the impacts related to liquefaction, landslides, and other soil instability issues would be less than significant.
- b) **Less than Significant.** Project construction would involve ground-disturbing earthwork, such as limited earthmoving, trenching, and grading. These activities could increase the susceptibility of soils to erosion by wind or water and subsequently result in the loss of topsoil. If not controlled and managed, the impact of soil erosion could be significant. However, a Stormwater Pollution Prevention Plan would be developed and implemented as part of the proposed project in accordance with a National Pollutant Discharge and Elimination System General Permit for Stormwater Discharge Associated with Construction and Land Disturbance Activities. This plan would include best management practices (BMPs) designed to control and reduce soil erosion. The BMPs may include dewatering procedures, stormwater runoff quality control measures, watering for dust control, and the construction of silt fences, as needed. During construction-related activities, soil compaction would be used to further reduce soil erosion. The implementation of these soil and erosion control measures would ensure that soil disturbance and loss would result in a less-than-significant impact.
- d) **Less than Significant.** As described previously, there are areas of very high soil expansion potential along the shoreline of Turlock Lake. If any new structures are constructed within expansive soils, they could be damaged and could result in a significant impact.

However, as discussed above, the proposed project would be subject to the standards and regulations of the DSOD and CBC. Included in these standards is the requirement for a project that proposes to construct, alter, or repair structures to undergo a geotechnical investigation to determine whether there are any geotechnical hazards present at a project site. The evaluation of expansive soils is required during this process to ensure that structures are not subject to the damaging effects of expansive soils. Compliance with the DSOD and CBC requirements would reduce impacts related to expansive soils to a less-than-significant level.

- e) **No Impact.** The proposed project would not include the use of septic tanks or alternative wastewater disposal systems; there would be no impact.
- f) **Less than Significant with Mitigation Incorporated.** A significant impact would occur if a project would destroy a unique paleontological resource or site, or a unique geologic feature. Paleontological resources are the fossilized evidence of past life found in the geologic record. Despite the tremendous volume of sedimentary rock deposits preserved worldwide, and the enormous number of organisms that have lived through time,

preservation of plant or animal remains as fossils is an extremely rare occurrence. Because of the infrequency of fossil preservation, fossils—particularly vertebrate fossils—are considered to be nonrenewable resources. Because of their rarity, and the scientific information they can provide, fossils are highly significant records of ancient life.

Geologic mapping indicates that the Riverbank, Modesto, and Mehrten Formations are exposed at the surface at the proposed project site.

A records search of the UCMP online fossil locality database indicated that there have been at least 167 individual vertebrate fossil specimens recovered from 17 different localities from the Merhten Formation at Turlock Lake. Additionally, over 100 individual plant fossil specimens have been recovered from the Mehrten Formation at Turlock Lake. Although there have been no significant discoveries from the Riverbank or Modesto Formations at Turlock Lake, there are three localities in Stanislas County and numerous others throughout California. Due to the numerous significant discoveries from the Riverbank, Modesto, and Mehrten Formations, all of these formations are considered to have a high potential to contain significant paleontological resources.

As discussed in Section 2.3, *Description of the Proposed Project*, excavation associated with the proposed Project would be limited to excavation of fill material from the borrow area (depicted in Figure 2-3). The borrow area would be located in an area where the Riverbank Formation is exposed at the surface. Further, as the Modesto and Mehrten Formations are older (and, therefore, stratigraphically beneath) the Riverbank Formation, it is possible that deep excavations into the Riverbank Formation could expose the Modesto or Mehrten Formations; therefore, excavation into previously undisturbed deposits of the Riverbank, Modesto, and Mehrten Formations could encounter significant paleontological resources. If the excavation associated with the proposed project encounters and inadvertently disturbs or destroys significant paleontological resources, that would be a potentially significant impact.

To avoid potential impacts to significant paleontological resources, Mitigation Measure GEO-1 would be required to ensure that a qualified paleontologist develops worker awareness training for all construction personnel and proper salvage and treatment protocols are in place, in the event of a significant discovery. Implementation of Mitigation Measure GEO-1 would reduce the proposed project's impacts on significant paleontological resources to a less-than-significant level.

Mitigation Measure Error! Reference source not found.GEO-1: Paleontological Training

- a) **Project Paleontologist:** The Project Applicant shall retain a qualified professional paleontologist (qualified paleontologist) meeting SVP standards as set forth in the *Definitions* section of Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources prior to the approval of demolition or grading permits. The qualified paleontologist shall attend the proposed project's kickoff meeting and proposed project progress meetings on a

regular basis, shall report to the site in the event potential paleontological resources are encountered, and shall implement the outlined duties.

- b) **Worker Training:** Prior to the start of any ground-disturbing activity, the qualified paleontologist shall prepare paleontological resources sensitivity training materials for use during project-wide Worker Environmental Awareness Training (or equivalent). The paleontological resources sensitivity training shall be conducted by a qualified environmental trainer working under the supervision of the qualified paleontologist. In the event construction crews are phased, additional trainings shall be conducted for new construction personnel. The training session shall focus on the recognition of the types of paleontological resources that could be encountered within the proposed project site and the procedures to be followed if they are found, as outlined in an approved Paleontological Resources Monitoring and Mitigation Plan (discussed below). The Project Applicant shall retain documentation demonstrating that all construction personnel attended the training prior to the start of work on the site and shall provide the documentation upon request.

- c) **Significant Fossil Treatment.** If any find is deemed significant, as defined in the SVP standards, the qualified paleontologist shall salvage and prepare the fossil for permanent curation with a certified repository with retrievable storage following SVP standards.

3.7.3 References

- Balisi, M., X. Wang, J. Sankey, J. Biewer, and D. Garber, 2018. Fossil canids from the Mehrten Formation, Late Cenozoic of Northern California. *Journal of Vertebrate Paleontology*, DOI: 10.1080/02724634.2017.1405009.
- Biewer, J., J. Sankey, H. Hutchinson, and D. Garber, 2016. A fossil giant tortoise from the Mehrten Formation of Northern California. *PaleoBios*, 33: 1-13, March 8, 2016.
- California Geological Survey (CGS), 2002. California Geomorphic Provinces. Note 36.
- CGS, 2008. Guidelines for Evaluating and Mitigation Seismic Hazards in California. Special Publication 117A.
- CGS, 2010. 2010 Fault Activity Map of California. California Geological Survey, Geologic Data Map No. 6. Compilation and Interpretation by Charles W. Jennings and William A. Bryant. Graphics by: Milind Patel, Ellen Sander, Jim Thompson, Barbara Wanish and Milton Fonseca. Available: www.conservation.ca.gov/cgs/cgs_history/PublishingImages/FAM_750k_MapRelease_page.jpg. Accessed May 24, 2022.
- CGS, 2022. California Earthquake Hazards Zone Application (EQ ZAPP). Earthquake Zones of Required Investigation. California Geological Survey. Available online: <https://maps.conservation.ca.gov/cgs/EQZApp/app/>. Accessed on March 30, 2022.
- Field, E. H., G.P. Biasi, P. Bird, T.E. Dawson, K.R. Felzer, D.D. Jackson, K.M. Johnson, T.H. Jordan, C. Madden, A.J. Michael, K.R. Milner, M.T. Page, T. Parsons, P.M. Powers, B.E. Shaw, W.R. Thatcher, R.J. Weldon II, and Y. Zeng, 2015. Long-Term Time-Dependent Probabilities for the Third Uniform California Earthquake Rupture Forecast (UCERF3).

- Bulletin of the Seismological Society of America, Vol. 105, No. 2A. pp. 511-543. April, 2015. doi: 10.1785/0120140093.
- Leech, M. 2006. Geology of the Central California Coast: April 21-22, 2006 [field trip guide].
- Natural Resources Conservation Service (NRCS), 2017. Title - National Soil Survey Handbook. Part 618 – Soil Properties and Qualities. Section 618.41, Linear Extensibility Percent.
- NRCS, 2021. Web Soil Survey. Linear Extensibility – Eastern Stanislaus Area, California. Map. Scale 1:45,700. Available: <http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>. Accessed March 28, 2022.
- Sankey, J., J. Biewer, J. Basuga, F. Palacios, H. Wagner, and D. Garber. 2016. A giant spike-toothed salmon, *Oncorhynchus rastrosus* and the “Proto-Tuolumne River” (early Pliocene) of Central California. *PaleoBios* 33: 1-16, November 14, 2016.
- Scott, E. and K. Springer. 2003. CEQA and Fossil Preservation in California. AEP 2004 Conference, AEP Spring 2004 CEQA Workshop Series.
- Sneed, M., J. Brandt, and M. Solt. 2018. Land Subsidence Along the California Aqueduct in the West-Central San Joaquin Valley, California, 2003–10: U.S. Geological Survey Scientific Investigations Report 2018–5144. [<http://dx.doi.org/10.3133/sir20135142>].
- Society of Vertebrate Paleontology (SVP). 2010. Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. Prepared by: SVP Impact Mitigation Guidelines Revision Committee.
- Stantec Consulting Services Inc. (Stantec). 2021. Turlock Lake Dam Rehabilitation Geotechnical Data Report. Report – Rev. A Draft. Turlock Irrigation District, California. October 2021.
- Stratum Logics. 2022. Expansive Clays and Soft Soils. Available online at: <https://www.stratumlogics.com/expertise/expansive-clays-soft-soils/>. Accessed on April 12, 2022.
- University of California Museum of Paleontology (UCMP). 2022a. UC Museum of Paleontology Localities database. Vertebrate fossil localities from the Mehrten Formation.
- UCMP. 2022b. UC Museum of Paleontology Localities database. Plant fossil localities from the Mehrten Formation.
- UCMP. 2022c. UC Museum of Paleontology Localities database. Fossil localities from the Riverbank and Modesto Formations from Stanislaus County.
- UCMP. 2022d. UC Museum of Paleontology Localities database. Fossil localities from the Riverbank and Modesto Formations throughout California.
- United State Geological Survey (USGS). 1999. Land Subsidence in the United States. Circular 1182
- USGS. 2013. Earthquake Planning Scenario. M 7.1 Scenario Earthquake – Ortingalita. Accessed on March 30, 2022.

Wagner, H. 1976. A New Species of *Pliotaxidea* (Mustelidae: Carnivora) from California. *Journal of Paleontology* Vol. 50, No. 1 (January, 1976), pp. 107-127. Published By: SEPM Society for Sedimentary Geology.

Wagner, D.L., E.J. Bortugno and R.D. McJunkin. 1991. Geologic Map of the San Francisco-San Jose Quadrangle, California. California Geological Survey. Map. Scale 1:250,000.

3.8 Greenhouse Gas Emissions

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
VIII. GREENHOUSE GAS EMISSIONS —				
Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.8.1 Discussion

a, b) **Less than Significant with Mitigation Incorporated.** The San Joaquin Valley Air Pollution Control District’s (SVJAPCD’s) greenhouse gas (GHG) guidance is intended to streamline CEQA review by pre-quantifying emissions reductions that would be achieved through the implementation of Best Performance Standards. A project is considered to have a less-than-significant cumulative impact on climate change if it meets any of the following conditions:

1. Comply with an approved GHG reduction plan.
2. Achieve a score of at least 29 using any combination of approved operational Best Performance Standards.
3. Reduce operational GHG emissions by at least 29 percent over business-as-usual (BAU) conditions (demonstrated quantitatively).

Because Stanislaus County currently has no adopted GHG reduction plan, Option 1 (listed above) cannot be applied. Options 2 and 3 both require projects to achieve GHG reductions consistent with the goal of Assembly Bill (AB) 32—to reduce statewide GHG emissions to 1990 levels by 2020 (equivalent to a 29 percent reduction over BAU conditions).

However, since publication of SVJAPCD’s GHG guidance in 2009, the California Supreme Court has considered the CEQA issue of determining the significance of GHG emissions, in its decision in *Center for Biological Diversity v. CDFW and Newhall Land and Farming (Center for Biological Diversity v. Department of Fish & Wildlife (2015) 62 Cal.4th 204)*. In the *Newhall* decision, the court questioned a common CEQA approach to GHG analyses for development projects that compared project emissions to the reductions from BAU that would be needed statewide to reduce emissions to 1990 levels by 2020, as required by AB 32. The court upheld the BAU method as valid in theory, but concluded that the method was applied improperly in the case of the *Newhall* project: The project’s target was incorrectly deemed consistent with the statewide emission target of 29 percent below BAU for the year 2020. In other words, the court said that the percent-below-BAU target developed by the AB 32 Scoping Plan is intended as a measure of the GHG reduction

effort required by the state as a whole, and it cannot necessarily be applied to the impacts of a specific project in a specific location.

The California Supreme Court provided some guidance for evaluating the cumulative significance of a proposed land use project's GHG emissions, but noted that none of the approaches could be guaranteed to satisfy CEQA for a particular project. The court's suggested "pathways to compliance" include:

- Use a geographically specific GHG emissions reduction plan (e.g., climate action plan) that outlines how the jurisdiction will reduce emissions consistent with state reduction targets, to provide the basis for streamlining project-level CEQA analysis, as described in State CEQA Guidelines Section 15183.5.
- Use the Scoping Plan's BAU reduction goal, but provide substantial evidence to bridge the gap between the statewide goal and the proposed project's emissions reductions.
- Assess consistency with AB 32's goal in whole or part by looking to comply with regulatory programs designed to reduce GHG emissions from particular activities. As an example, the court points out that projects consistent with a Senate Bill 375 sustainable communities strategy may need to reevaluate GHG emissions from cars and light trucks.
- Rely on existing numerical thresholds of significance for GHG emissions, such as those developed by an air district.

In light of the *Newhall* decision and the reliance of SVJAPCD's GHG guidance on the statewide percentage reduction of GHG emissions by 2020, the following assessment of the proposed project's potential GHG emissions impacts under CEQA uses a twofold approach:

1. Does the proposed project include reasonably feasible measures (i.e., Best Performance Standards) to reduce GHG emissions?
2. Although not strictly applicable to projects within the SJVAB, would the proposed project's emissions exceed the Bay Area Air Quality Management District's GHG mass emissions (or "bright line") threshold of 1,100 metric tons of carbon dioxide equivalent (CO₂e) per year?

As discussed previously, operational GHG emissions for the proposed project would be generated primarily by on-road vehicular traffic for maintenance trips. However, employee trips required for periodic facility inspection to assess reservoir integrity would not be significantly greater than the trips generated under current operations. These trips would emit negligible amounts of GHGs. The work area is widespread, and thus a refueling truck, as compared to a centrally located fueling station, provides the most feasible means to refueling the equipment.

Project-related construction emissions calculated using the California Emissions Estimator Model version 2020.4.0 indicate that construction-related GHG emissions would be 614 metric tons of CO₂e in 2023 and 613 metric tons of CO₂e in 2024, which

would be below 1,100 metric tons of carbon dioxide equivalent per year. Construction of the proposed project would not result in a cumulatively considerable increase in GHG emissions and this impact would be less than significant. However, to be consistent with the intent of San Joaquin Valley Air Pollution Control District's GHG guidance, available Best Performance Standards would be implemented as part of **Mitigation Measure GHG-1** to further minimize this impact.

Mitigation Measure GHG-1: Turlock Irrigation District and/or its contractor shall implement the following best performance standards for construction emissions (AEP 2016):

- (1) Use alternatively fueled vehicles and equipment, including electrification, as well as alternative fuels where reasonably available and certified for use in construction equipment and vehicles (e.g., biodiesel blends, renewable diesel).
- (2) Reduce worker trips through organized ride sharing, where appropriate.
- (3) Use local sources of construction materials when economically feasible.

3.8.2 References

Association of Environmental Professionals (AEP). 2016. Final White Paper Beyond 2020 and Newhall, A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California. October 18, 2016. Page 36.

3.9 Hazards and Hazardous Materials

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

3.9.1 Environmental Setting

Hazardous Materials

Materials and waste may be considered hazardous if they are poisonous (toxicity), can be ignited by open flame (ignitability), corrode other materials (corrosivity), or react violently, explode or generate vapors when mixed with water (reactivity). The term “hazardous material” is defined in law as any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment.¹⁵ In some cases, past uses can result in spills or leaks of hazardous materials to the ground, thereby resulting in soil and groundwater contamination. The use, storage, transportation, and disposal of hazardous materials are subject to numerous federal, state, and local laws and regulations.

¹⁵ State of California, Health and Safety Code, Chapter 6.95, Section 25501(o).

Fire Suppression

The California Department of Forestry and Fire Protection (CAL FIRE) Forest Resource Assessment Program published maps that delineate Very High Fire Hazard Severity Zones (VHFHSZs) in State Responsibility Areas (SRAs) and Local Responsibility Areas (LRAs).

Based on mapping by CAL FIRE (2007), the proposed project site is not within a mapped VSFHSZ, although there are mapped Moderate Fire Hazard Severity Zones (FHSZs) adjacent to Turlock Lake to the north, east, and southeast.

3.9.2 Discussion

- a, b) **Less than Significant.** During the construction phase, project construction equipment and materials would include fuels, oils and lubricants, cement, and concrete, all of which are commonly used in construction. The routine use, or an accidental spill, of hazardous materials used in construction could result in inadvertent releases, which could adversely affect construction workers, the public, and the environment.

Construction activities would be required to comply with numerous hazardous materials regulations designed to ensure that hazardous materials are transported, used, stored, and disposed of in a safe manner to protect worker safety and to reduce the potential for a release of construction-related fuels or other hazardous materials into the environment, including into stormwater and downstream receiving water bodies. Contractors would be required to prepare and implement Hazardous Materials Business Plans that would require that hazardous materials used for construction would be used properly and stored in appropriate containers with secondary containment to contain a potential release. The California Fire Code would also require measures for the safe storage and handling of hazardous materials.

As discussed in *Geology and Soils*, and *Hydrology and Water Quality*, construction contractors would be required to prepare a Stormwater Pollution Prevention Plan (SWPPP) for construction activities according to the National Pollutant Discharge Elimination System's General Construction Permit requirements. The SWPPP would list the hazardous materials (including petroleum products) proposed for use during construction; describe spill prevention measures, equipment inspections, equipment and fuel storage; delineate protocols for responding immediately to spills; and describe best management practices for controlling site runoff.

In addition, the transportation of hazardous materials would be regulated by the U.S. Department of Transportation, California Department of Transportation, and the California Highway Patrol. Together, federal and state agencies determine driver-training requirements, load labeling procedures, and container specifications designed to minimize the risk of accidental release.

Finally, in the event of a spill that releases hazardous materials at the proposed project site, a coordinated response would occur at the federal, state, and local levels. In the

event of a hazardous materials spill, a hazardous materials response team and the police department would be simultaneously notified and sent to the scene to respond to and assess the situation.

The required compliance with the numerous laws and regulations discussed above that govern the transportation, use, handling, and disposal of hazardous materials would limit the potential for creation of hazardous conditions due to the use or accidental release of hazardous materials, and the impact would be less than significant.

- c) **No Impact.** There are no schools located within 0.25 miles of the proposed project sites. Therefore, relative to schools, there would be no impact.
- d) **No Impact.** A review of the State Water Resources Control Board (SWRCB) GeoTracker database and the Department of Toxic Substances Control (DTSC) EnviroStor database revealed that there are no hazardous material sites at or near the proposed project site (SWRCB 2022; DTSC 2022). The GeoTracker and EnviroStor review also indicated that the proposed project site itself is not on a list hazardous materials sites (in this case, the Cortese List). Therefore, there would be no impact.
- e) **No Impact.** No public airports or public use airports are located within 2 miles of the proposed project site. Therefore, relative to airport safety hazards, there would be no impact.
- f) **No Impact.** The proposed project would not require any road closures, nor would it include any activities that would obstruct any roads. As such, proposed project activities would not impair or physically interfere with any emergency response or evacuation plan. There would be no impact.
- g) **Less than Significant.** The proposed project site is not within a mapped VSFHSZ, although there are mapped Moderate FHSZ adjacent to Turlock Lake to the north, east, and southeast.

The use of construction equipment and the possible temporary on-site storage of fuels and/or other flammable construction chemicals could pose an increased fire risk resulting in injury to workers or the public during construction. However, contractors would be required to comply with hazardous materials storage and fire protection regulations, which would minimize potential for fire creation, and ensure that the risk of wildland fires during construction would be less than significant.

3.9.3 References

California Department of Forestry and Fire Protection (CAL FIRE). 2007. Fire Hazard Severity Zones in SRA, Stanislaus County.

Department of Toxic Substances Control (DTSC). 2022. EnviroStor database. Results for hazardous materials sites in and around Turlock Lake.

State Water Resources Control Board (SWRCB). 2022. GeoTracker Database. Results for hazardous materials sites in and around Turlock Lake.

3.10 Hydrology and Water Quality

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
X. HYDROLOGY AND WATER QUALITY — Would the project:				
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 type="checkbox"/>	<input checked="" type="checkbox"/>
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	<input type="checkbox"/>	<input type="checkbox"/>	<input 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 type="checkbox"/>	<input checked="" type="checkbox"/>
iv) impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" 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"/>

3.10.1 Environmental Setting

Turlock Lake is located in Lower San Joaquin River watershed (Hydrologic Unit Code, HUC 8) and is filled by snowmelt, seasonal rains, and diversions from the Tuolumne River (Calisphere 2022). The lake serves as Turlock Irrigation District’s balancing reservoir to store irrigation water. The proposed project site is characterized as a Mediterranean-type climate with hot, dry summers and cool, wet winters, with most of the precipitation occurring between November and March. Refer to Section 2.1.1 for additional background on Turlock Lake.

3.10.2 Discussion

a, b, e) **Less than Significant.** The proposed project would not require the use of groundwater and would not include any activities that would impede groundwater recharge. Construction of the proposed project would involve the use of heavy equipment, and construction activities would include, but not be limited to, excavation, grading, and earthmoving. In general, construction activities have the potential to cause increased rates of erosion and sedimentation. In addition, the use of heavy machinery during construction

could result in the potential accidental release of fuels, oils, solvents, hydraulic fluid, and other construction-related fluids to the environment, thereby degrading water quality.

Construction activities would be required to comply with numerous regulations designed to reduce the potential for a release of construction-related fuels or other hazardous materials into the environment, including stormwater and downstream receiving water bodies. Contractors would be required to prepare and implement Hazardous Materials Business Plans (HMBPs) that would require that hazardous materials used for construction would be used properly and stored in appropriate containers with secondary containment to contain a potential release.

As discussed in the *Geology and Soils*, and *Hazards and Hazardous Materials* sections, construction contractors would be required to prepare an SWPPP for construction activities according to the National Pollutant Discharge Elimination System General Construction Permit requirements. The SWPPP would list the hazardous materials (including petroleum products) proposed for use during construction; it would also describe spill prevention measures, equipment inspections, equipment, fuel storage, protocols for responding immediately to spills, and BMPs for controlling site runoff.

Management of dewatering activities in accordance with the General Order for Dewatering and Other Low Threat Discharges to Surface Waters Permit would minimize the risk of impacting the water quality of receiving waters. Therefore, this impact is considered less than significant.

- c.i-iv) **No Impact.** The proposed project would not alter the existing drainage pattern of the area. The proposed project activities would not result in a change in the amount or location of drainage. As described previously, the proposed project would not result in substantial erosion or siltation on- or off-site post-construction. There would be no impact.
- d) **Less than Significant.** As discussed above, the proposed project is not within a mapped Federal Emergency Management Agency (FEMA) flood hazard zone. However, there is a mapped flood hazard zone just to the north of Turlock Lake, along the Tuolumne River.

A seiche is a phenomenon similar to a tsunami except that they occur in large, enclosed bodies of water—like Turlock Lake. Disturbances in the body of water (e.g., caused by strong seismic ground shaking) can cause a seiche. The key requirement for formation of a seiche is that the body of water be at least partially bounded, allowing the formation of the standing wave. As the proposed project is in an area with minimal seismic activity, the chances of a seiche being formed in Turlock Lake is low.

The proposed project is over 100 miles east of the Pacific Ocean and therefore would not be subject to inundation from a tsunami.

As the proposed project would not include storing hazardous materials or other pollutants on-site and is not in an area subject to inundation by a flood, tsunami, or seiche, the impact would be less than significant.

3.10.3 References

Calisphere. 2022. Outlet gate to Turlock Lake, 1914. Stanislaus Region History and Culture Image Collection. California State University, Stanislaus. Available: <https://calisphere.org/item/ark:/13030/kt6b69q9f5/>. Accessed May 2022.

3.11 Noise

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
XI. NOISE — Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.11.1 Environmental Setting

Sound is mechanical energy transmitted by pressure waves through a medium such as air, while noise is defined as unwanted sound. Sound pressure level is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain. The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that deemphasizes the frequencies below 1,000 Hertz¹⁶ (Hz) and above 5,000 Hz in a manner corresponding to the human ear's decreased sensitivity to low and extremely high frequencies instead of the frequency mid-range. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA).¹⁷

Effects of Noise on People

The effects of noise on people can be placed into three categories:

- Subjective effects of annoyance, nuisance, dissatisfaction
- Interference with activities such as speech, sleep, learning
- Physiological effects such as hearing loss or sudden startling

Environmental noise typically produces effects in the first two categories. Workers in industrial plants generally experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction. A wide variation exists in individual thresholds of annoyance, and different tolerances to noise tend to develop based on an individual's past experiences with noise.

¹⁶ Hertz is a unit of frequency equivalent to one cycle per second.

¹⁷ All noise levels reported herein reflect A-weighted decibels unless otherwise stated.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so called “ambient noise” level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur:

- In carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived.
- Outside of the laboratory, a 3 dBA change is considered a just-perceivable difference when the change in noise is perceived but does not cause a human response.
- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected.
- A 10 dBA change is subjectively heard as approximately a doubling in loudness, and can cause adverse response.

The human ear perceives sound in a nonlinear fashion; hence the decibel scale was developed. Because the decibel scale is nonlinear, two noise sources do not combine in a simple additive fashion, but rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.

Noise Attenuation

Stationary “point” sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate of 6 dBA to 7.5 dBA per doubling of distance from the source, depending upon environmental conditions (i.e., atmospheric conditions and noise barriers, either vegetative or manufactured, etc.). Widely distributed noises, such as a large industrial facility spread over many acres or a street with moving vehicles (a “line” source), would typically attenuate at a lower rate, approximately 3 to 4.5 dBA per doubling distance from the source (also dependent upon environmental conditions) (Caltrans 2013). Noise from large construction sites would have characteristics of both “point” and “line” sources, so attenuation would generally range between 4.5 and 7.5 dBA per doubling of distance.

Vibration

Vibration is an oscillatory motion through a solid medium in which the motion’s amplitude can be described in terms of displacement, velocity, or acceleration. There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (VdB) is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration (FTA 2018). Typically, groundborne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration.

Existing Ambient Noise Environment

The noise environment in the area surrounding the proposed project site is characterized by rural roadways, rural agricultural noise, and scattered residences. It includes low-volume traffic noise from tractors, large trucks, and other farm equipment as well as both on- and off-road passenger vehicles. The ambient noise environment in the vicinity of the proposed project site was estimated using a relationship population density and ambient noise determined during a research program by the U.S. Environmental Protection Agency (USEPA). The USEPA determined that residents in rural or other non-urban areas are estimated to be exposed to outdoor ambient noise levels ranging from 35 to 50 dBA Ldn¹⁸ (USEPA 1974). Since the area surrounding the Project site can be categorized as rural or other non-urban area, it is assumed that ambient noise levels would range between 35 and 50 dBA Ldn.

Sensitive Receptors

Human response to noise varies considerably from one individual to another. Effects of noise at various levels can include interference with sleep, concentration, and communication; physiological and psychological stress; and hearing loss. Given these effects, some land uses are considered more sensitive to ambient noise levels than others. In general, residences, schools, hotels, hospitals, and nursing homes are considered to be the most sensitive to noise. Commercial and industrial uses are considered the least noise-sensitive. Sensitive receptor land uses in the vicinity of the proposed Project include residences. The distances to sensitive receptors from proposed project elements vary from 500 feet from the proposed borrow area to 900 feet dams A, J, L, M, and N. All other dams are over 1,200 feet from the nearest residential receptor.

3.11.2 Discussion

- a) **Less than Significant.** For assessment of temporary construction noise impacts, construction activities that could occur outside of the Stanislaus County construction exempt hours would constitute a significant impact. Chapter 10.46 of the Stanislaus County Code limits construction noise to 75 dBA at any receiving property line between the hours of 7 p.m. and 7 a.m. Implementation of this code requirement will limit construction noise to a level determined to be acceptable by the County.

On-site construction activities could take place between 7 a.m. and 9 p.m., with the latter 2 hours occurring outside of the exclusion window pursuant to Chapter 10.46.

The Federal Highway Administration's Roadway Construction Noise Model was used to determine the noise generated by construction activities for the proposed project. The model assumed simultaneous operation of the two noisiest pieces of construction equipment.¹⁹ **Table 3.11-1** shows the predicted noise levels from the two noisiest pieces

¹⁸ Also abbreviated DNL, it is a 24-hour day and night A-weighted noise exposure level which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night ("penalizing" nighttime noises). Noise between 10:00 p.m. and 7:00 a.m. is weighted (penalized) by adding 10 dB to take into account the greater annoyance of nighttime noises.

¹⁹ The model inputs include acoustical use factors, maximum (Lmax) values, and equivalent (or average) (Leq) values at various distances depending on the sensitive receptor location analyzed.

of equipment (grader and scraper) at each of the three nearest sensitive receptors. As shown in 3.11-1, construction noise from the construction would be below the 75 dBA nighttime criterion for residential sensitive receptors established by Chapter 10.46 of the County Code. Therefore, the proposed project would not generate a substantial temporary increase in ambient noise levels in the vicinity of the proposed project site in excess of the nighttime construction criteria for the county. This impact would be less than significant.

**TABLE 3.11-1
NOISE LEVELS FROM CONSTRUCTION**

Receptor	Loudest Two Noise Sources	Usage Factor ^b (percent)	Distance to Receptor (feet)	Adjusted L _{eq} Level (dBA) ^c	Exceed Exterior 75 dBA Nighttime Standard?
Lake Road Residences near Borrow area	Grader/Scraper	40	500	63	No
Davis Road Residences near Dam S	Excavator/Crane	40	1,000	57	No
Davis Road Residences near Dam A	Excavator/Crane	40	900	58	No

NOTES:

- a L_{eq} represents the constant sound level. The reported existing level is the lower-end estimate of the roadside noise level for the area.
 b Usage factor is the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation.
 c The L_{eq} level is adjusted for distance and percentage of usage.

SOURCE: Data compiled by Environmental Science Associates in 2022.

The proposed project is located in rural areas adjacent to land in agricultural use. Normal activities in the proposed project areas would entail low-volume traffic noise from tractors, large trucks, and other farm equipment, as well as both on- and off-road passenger vehicles.

The proposed project areas have existing conditions of ambient noise from rural agricultural noise and scattered residences. Operation of the proposed project would not involve noise that differs from what is currently experienced under existing conditions. Consequently, it is expected that there would be no permanent substantial noise increases from the proposed project over existing conditions, nor would noise levels generated by maintenance activities exceed the county's exterior noise standards at the nearest sensitive receptor. Therefore, this impact would be less than significant.

- b) **Less than Significant.** Since the operation of the proposed project would not include any activities that would generate significant levels of vibration, it is not anticipated that the operation of the proposed project would expose the nearest sensitive receptor or structure to vibration levels that would result in annoyance. Therefore, only vibration impacts from on-site construction activities are evaluated.

For adverse human reaction, the analysis applies the "strongly perceptible" threshold of 0.9-inch/second PPV for transient sources. For risk of architectural damage to historic buildings and structures, the analysis applies a threshold of 0.12-inch/second PPV

(Caltrans 2013). A threshold of 0.3-inch/second PPV is used to assess damage risk for all other buildings. There are no historic structures in the vicinity of proposed project that could be adversely affected by proposed project construction-related vibration.

The potential use of a bulldozer during proposed project construction would be expected to generate the highest vibration levels during construction. Vibration levels for bulldozers are typically 87 VdB or 0.089-inch/second PPV at 25 feet, which is a typical estimate for a wide range of soil. Under typical propagation conditions, vibration levels at residences 500 feet from the bulldozing activities, which represents the location of the nearest receptor, would be 48 VdB, which is well below the FTA threshold of 72 VdB for human annoyance and would be 0.001-inch/sec PPV, which is well below the 0.20-inch/sec PPV for building damage. Therefore, this impact would be less than significant.

- c) **No Impact.** No private airstrips or public airport or public use airports are located within 2 miles of the proposed project areas. Therefore, the proposed project would not expose people working in the proposed project areas to excessive noise levels, and there would be no impact.

3.11.3 References

California Department of Transportation (Caltrans). 2013. Technical Noise Supplement to the traffic Noise Analysis Protocol. September 2013.

Federal Transit Administration (FTA). 2018. Transit Noise and Vibration Impact Assessment. September 2018.

U.S. Environmental Protection Agency (USEPA). 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, March 1974, Available at: <https://nepis.epa.gov/Exe/ZyPDF.cgi/2000L3LN.PDF?Dockey=2000L3LN.PDF>. Accessed March 2022.

3.12 Recreation

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
XVI. Recreation — Would the project:				
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) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.12.1 Environmental Setting

There are 5 regional parks, 22 neighborhood parks, 8 special-interest parks, and 9 miscellaneous parks and open space assets within Stanislaus County (Stanislaus County 2018). These parks comprise the County’s existing 6,516 acres of parks and open space that vary in size and amenities.

The proposed project site contains the Turlock Lake State Recreation Area positioned along the northern edge of Turlock Lake, surrounding Dams D through K (Figure 2-3). The recreation area is bounded on the north by the Tuolumne River and on the south by Turlock Lake (California Parks and Recreation 2022). It spans 26 miles along the shoreline of Turlock Lake and the foothill country leased from the Turlock Irrigation District in 1950. Facilities and activities within the area typically include overnight camping, river access, swimming, fishing, hunting, boating, canoes, kayaks, paddleboards, windsurfing, and vehicle/boat parking. A portion of the recreation area is restricted to duck hunters from approximately September 25 through February 15 each year. On May 13, 2021, California State Parks announced the temporary full closure of Turlock Lake State Recreation Area that took effect on May 14, 2021 (California Parks and Recreation 2021).

3.12.2 Discussion

a) **Less than Significant.** The proposed project would include construction activities within the Turlock Lake State Recreation Area. Construction activities associated with the rehabilitation of Dams C, H, and J include dam buttressing. These activities, including the location of the proposed project’s staging and borrow areas, would result in the temporary closure of recreational facilities within the Turlock Lake State Recreation Area along the northern portion of the proposed project site. However, while proposed project construction activities would interrupt recreational uses within the immediate area of several of the proposed project components, recreational use in the proposed project vicinity would continue, given the overall availability of recreational opportunities within the surrounding area. Additionally, as of May 13, 2021, California State Parks announced the temporary full closure of Turlock Lake State Recreation Area that took effect on May 14, 2021, and is still in place today. Given the temporary full closure of Turlock Lake State Recreation Area, and the short-term nature of project construction, recreational

areas would be temporarily closed for up to 8 months during construction and would be reopened upon completion of the proposed project. It is not anticipated that existing recreation users would instead use other recreational resources such that substantial physical deterioration of the facility would occur or be accelerated.

The proposed project would result in the rehabilitation of existing dams of Turlock Lake via buttressing. As a result, the proposed project would not increase the population by introducing new housing or employment opportunities, and thus would not 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. Therefore, this impact is less than significant.

- d) **No Impact.** The proposed project does not include recreation facilities. Construction activities would be temporary in nature and occur for up to 8 months and would not require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment. Therefore, no impact would occur.

3.12.3 References

Stanislaus County Parks & Recreation. 2018. Stanislaus County Parks & Recreation Master Plan 2018. Available at <https://www.stancounty.com/parks/pdf/stanislaus-county-parks-and-recreation-master-plan-2018.pdf>. Accessed March 21, 2022.

California Department of Parks and Recreation. 2021. Turlock Lake State Recreation Area Temporarily Closed. May 13, 2021. Available at <https://www.parks.ca.gov/News/Release/1017>. Accessed March 21, 2022.

California Department of Parks and Recreation. 2022. Turlock Lake State Recreation Area. Updated May 13, 2021. Available at https://www.parks.ca.gov/?page_id=555. Accessed March 21, 2022.

3.13 Transportation

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

3.13.1 Environmental Setting

The proposed project site is located in southeast Stanislaus County, approximately 16.5 miles east of the city of Modesto. The proposed project setting is a mix of rural agricultural land uses. Transportation facilities in the vicinity of the proposed project area are consistent with a rural agricultural setting.

Highways

There are no major highways in the proposed project vicinity. The nearest major highway, State Route (SR) 99 is located approximately 17 miles to the west of the proposed project site.

State Route 132/Yosemite Boulevard

SR 132/Yosemite Boulevard is the nearest highway to the proposed project site, running generally east-west from Interstate 580 (I-580) along the west side of the San Joaquin Valley, near the proposed project site along the north side of the Tuolumne River, and east to its terminus at an interchange with SR 49 in Coulterville, approximately 20 miles east-northeast of the proposed project site. SR 132 provides regional access to the proposed project site from areas to the north and east, via Roberts Ferry Road, which connects to Lake Road, that runs along the north side of the Turlock Lake reservoir.

County Roadways/Traffic Types

County roadways in the proposed project vicinity are limited to rural local roadways, that serve as land access facilities in the agricultural areas of the county, with a single lane of traffic in each direction and unpaved roadway shoulders. The network of county roadways around the proposed project site do not include pedestrian or bicycle facilities.

Lake Road

Lake Road is designated as a Major Collector Road in the Stanislaus County General Plan. It extends generally east-west and runs along the north side of Turlock Lake, running from

Hickman, 8 miles west of the proposed project site, to its terminus with SR 132/Yosemite Boulevard, approximately 3.6 miles to the northeast of the proposed project site (Stanislaus County 2016). Lake Road provides access to the Turlock State Recreation Areas and would be the primary route of access to each area of the proposed project site.

Davis Road

Davis Road is designated as a Local Road in the Stanislaus County General Plan. The road extends south-eastward from Lake Road and runs along north side of Turlock Lake from Lake Road to its intersection with South Polanco Place near the edge of Turlock Lake, and further south to its terminus with Silver Ridge Road. Davis Road provides access to major collector roads, including Lake Road and Keyes Road, facilitating access to the Turlock State Recreation Areas.

Laverne Potts Road

Laverne Potts Road is designated as a Local Road in the Stanislaus County General Plan and extends westward from Lake Road above the intersection between Lake Road and Coyote Run. Laverne Potts Road provides direct access to the north edge of Turlock Lake.

Coyote Run

Coyote Run is designated as a Local Road in the Stanislaus County General Plan. The road extends south from Lake Road, running adjacent to Los Cerritos Road to its terminus. Coyote Run extends less than a mile from its intersection at Lake Road.

Los Cerritos Road

Los Cerritos Road is designated as a Minor Collector Roadway in the Stanislaus County General Plan, and extends south from Lake Road to the east of the proposed project site, providing access from areas to the south of the proposed project site, including the neighboring Merced County.

Other Transportation Facilities

Transit

There are no transit facilities and no known transit routes near the proposed project site.

Railroads

No railways exist within the near vicinity of the proposed project site. The Turlock-Denair Amtrak Station is located approximately 20 miles from Turlock Lake, and the Modesto Amtrak Station is located approximately 24 miles from Turlock Lake.

Airports

Turlock Municipal Airport is located just over 20 miles southwest from Turlock Lake, and Modesto City-County Airport is approximately a 25-mile distance west from Turlock Lake. Other airports are located at similar distances to the proposed project site, including the Merced-Castle Airport located 16 miles to the south and Oakdale Airport located 15.5 miles to

the northwest. The proposed project site is not located within airport approach, overflight, or policy areas.

3.13.2 Discussion

- a) **Less than Significant.** The proposed project would not conflict with regulations implemented which address the circulation system in the surrounding vicinity. Construction from the proposed project would temporarily generate increases in vehicle trips on area roadways and a minimal increase in truck trips. However, considering the 6-month length of the construction period, the capacity of local roads used to access the proposed project site would not be substantially reduced. No decreased level of service would occur; therefore, impacts from the proposed project would be less than significant.
- b) **Less than Significant.** Section 15064.3 of the State CEQA Guidelines establishes specific considerations for evaluating a project’s transportation impacts. The State CEQA Guidelines identify vehicle miles traveled (VMT)—the amount and distance of automobile travel attributable to a project—as the most appropriate measure of transportation impacts. Other relevant considerations may include the effects of the proposed project on transit and nonmotorized travel. A qualitative analysis of the proposed project evaluates the availability of transit near the proposed project site as well as other factors. As noted above in the *Environmental Setting* section, the proposed project is set in a mix of rural and agricultural land uses, with access to primarily rural local roadways in its vicinity, but no access to transit. The project would not expand the use capacity or variety of recreational uses at Turlock Lake. Operation of the proposed project would not be anticipated to add new vehicle trips related to operation of the reservoir. For this reason, the proposed project would not be anticipated to have a substantive impact related to operational VMT. Therefore, the impact would be less than significant.
- c) **Less than Significant.** Construction activity related to hauling and grading fill material would not result in a high number of anticipated construction trips relative to traffic volumes on nearby roadways. This lack of frequency of construction trips in combination with their limited duration warrants a less-than-significant impact from proposed project construction.

In addition, operation of the proposed project site resulting from construction would not pose hazards due to any geometric design features or incompatible uses. No expansion or change of use of existing roadways surrounding the proposed project site will occur as a result of proposed project construction, thus creating no hazards and resulting in a less-than-significant impact.

- d) **Less than Significant.** No roadway or lane closures would result from the construction or operation of the proposed project. Increases in traffic volumes on local roadways providing access to the proposed project area could cause intermittent and temporary slowdowns in traffic flow during construction, although truck trips associated with

proposed project operation are not expected to cause access on local roadways to deteriorate. For these reasons, the proposed project would not result in inadequate emergency access, and this impact would be less than significant.

3.13.3 References

Stanislaus County. 2016. Stanislaus County General Plan and Airport Land Use Compatibility Plan Update, Draft Program Environmental Impact Report. April 2016.

3.14 Utilities and Service Systems

<u>Issues (and Supporting Information Sources):</u>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
XIV. UTILITIES AND SERVICE SYSTEMS —				
Would the project:				
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 type="checkbox"/>	<input checked="" type="checkbox"/>
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

3.14.1 Environmental Setting

The Fink Road Sanitary Landfill is a Class III landfill for nonhazardous municipal solid waste and is owned by Stanislaus County and operated by the Stanislaus County Department of Environmental Resources. As of March 1, 2017, the Fink Road Sanitary Landfill, the sole permitted landfill in the county, had a permitted capacity of 14,640,000 cubic yards and a remaining capacity of 7,184,701, and is permitted through 2023 (CalRecycle 2019).

3.14.2 Discussion

a, b, c, d) **No Impact.** The purpose of the proposed project is to rehabilitate several dams at Turlock Lake to structurally and geotechnically sound conditions via dam buttressing. As such, the proposed project would not include the relocation or construction of new or expanded facilities (i.e., water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities). As the proposed project would not require the use of water supplies (except for the hydroseeding process during construction), it would not result in a strain of the available water supply. Further, the proposed project would not require the produce wastewater that would require treatment by a local provider and would not produce waste in excess, such that it exceeds the capacity of local infrastructure. Due to the nature of the proposed project, there would be no impact as it relates to these criteria.

- e) **Less than Significant.** The proposed project would generate minimal waste from temporary construction activities and vegetation removal. The landfill that serves the proposed project areas has the capacity to accept waste generated by the proposed project. Therefore, the impact would be less than significant.

3.14.3 References

California Department of Resources Recycling and Recovery (CalRecycle). 2019. Facility/Site Summary Details: Fink Road Landfill (50-AA-0001). Available: <https://www2.calrecycle.ca.gov/SolidWaste/Site/Summary/3733>. Accessed May 30, 2019.

3.15 Wildfire

Issues (and Supporting Information Sources):	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
XV. WILDFIRE — If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
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 uncontrolled spread of a wildfire?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.15.1 Environmental Setting

CAL FIRE Forest Resource Assessment Program published maps that delineate VHFHSZs in SRAs and LRAs. Based on mapping by CAL FIRE, the Project site is not within a mapped VHFHSZ, although there are mapped Moderate FHSZ in an SRA adjacent to Turlock Lake to the north, east, and southeast (CAL FIRE 2007).

3.15.2 Discussion

- a) **No Impact.** The proposed project would not require any road closures, nor would it include any activities that would obstruct any roads. As such, proposed project activities would not impair or physically interfere with any emergency response or evacuation plan. There would be no impact.
- b) **Less than Significant.** Initial site preparation for the proposed project would include vegetation clearing of the staging and borrow areas and all work areas on dam slopes, including tree removal on the upstream slope of Dams C and L, the downstream slopes of Dams D and H, and both the upstream and downstream slopes of Dams E and J. It is anticipated that once construction has been completed, for dam safety purposes, the dams would not be revegetated with trees. Removing vegetation would lower on-site fuel sources for wildfires. As discussed in the *Hazards and Hazardous Materials* section, contractors would be required to comply with hazardous materials storage and fire protection regulations, which would minimize potential for fire creation, and ensure that the risk of wildland fires during construction would be less than significant.
- c) **Less than Significant.** The proposed project would include dam buttressing. These activities would not require the installation of infrastructure that would exacerbate the fire

risk at the proposed project site or otherwise result in a temporary or long-term impact to the environment. This impact would be less than significant.

- d) **No Impact.** The proposed project would not exacerbate the fire risk at the proposed project site. The purpose of the proposed project is to repair the dams at Turlock Lake, and this would not require drainage changes or improvements that would increase the run-off at the proposed project site. As such, the proposed project would not expose people or structures to downslope or downstream flooding or landslides, and there would be no impact.

3.15.3 References

California Department of Forestry and Fire Protection (CAL FIRE). 2007. Fire Hazard Severity Zones in SRA, Stanislaus County. October 2007.

3.16 Tribal Cultural Resources

<u>Issues (and Supporting Information Sources):</u>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
XVI. TRIBAL CULTURAL RESOURCES —				
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or	<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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

3.16.1 Environmental Setting

ESA contacted the NAHC on February 3, 2021, to request a search of the NAHC’s Sacred Lands File and a list of Native American representatives who may have knowledge of tribal cultural resources in the proposed project site, or interest in the proposed project. The NAHC replied to ESA by email on March 8, 2021, with the statement that the Sacred Lands File has no record of sacred sites within the proposed project site. The NAHC’s response included a list of 12 Native American representatives from 8 tribes who may have knowledge of tribal cultural resources in the proposed project site, or be interested in the proposed project. TID also has a list of 16 Native American representatives from 11 tribes who have previously been consulted for nearby TID projects. Some of these individuals and tribes overlapped, but all 24 Native American representatives from 12 tribes who were identified in the lists were contacted and invited to be consulted with regarding the proposed project under AB 52 between March 7 and March 10, 2022.

On March 7, 2022, Darrel Cruz of the Washoe Tribe of Nevada and California responded that the tribe was not interested in being consulted regarding the proposed project.

As of May 26, 2022, no additional tribes have responded to the request for consultation. No tribal cultural resources have been identified within the proposed project area as a result of the NAHC Sacred Lands File request or tribal consultation.

See Section 5.5, *Cultural Resources*, for a summary of ESA’s CCaIC records search, background research, and archaeological sensitivity analysis.

3.16.2 Regulatory Framework

Native American Heritage Commission

NAHC was created by statute in 1976. It is a nine-member body appointed by the governor to identify and catalog cultural resources (i.e., places of special religious or social significance to Native Americans, and known graves and cemeteries of Native Americans on private lands) in California. The NAHC is responsible for preserving and ensuring accessibility of sacred sites and burials, ensuring the disposition of Native American human remains and burial items, maintaining an inventory of Native American sacred sites located on public lands, and reviewing current administrative and statutory protections related to these sacred sites.

California Public Resources Code and Tribal Cultural Resources

In 2014, the California Legislature enacted AB 52, which added provisions to the Public Resources Code (PRC) regarding the evaluation of impacts on tribal cultural resources under CEQA, and requirements to consult with California Native American tribes. In particular, AB 52 requires lead agencies to analyze project impacts on tribal cultural resources separately from archaeological resources (PRC Sections 21074 and 21083.09). AB 52 defines “tribal cultural resources” in PRC Section 21074 and requires lead agencies to engage in additional consultation procedures with respect to California Native American tribes (PRC Sections 21080.3.1, 21080.3.2, and 21082.3).

A *tribal cultural resource* is defined in PRC Section 21074 as either a site, feature, place, or 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:

- 1) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC Section 5020.1(k); or
- 2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in PRC Section 5024.1(c). In applying the criteria set forth in PRC Section 5024.1(c), the lead agency shall consider the significance of the resource to a California Native American tribe.

California Public Resources Code Sections 5097.98 and 5097.99

PRC Section 5097.98 (reiterated in CEQA Guidelines Section 15064.5(e)) identifies steps to follow in the event of the accidental discovery or recognition of any human remains in any location other than a dedicated cemetery. PRC Section 5097.99 prohibits obtaining or possessing any Native American artifacts or human remains that are taken from a Native American grave or cairn (stone burial mound).

3.16.3 Discussion

- a.i) **Less than Significant with Mitigation Incorporated.** Based on the results of the tribal outreach efforts, no known tribal cultural resources listed or determined eligible for listing in the California Register, or included in a local register of historical resources as

defined in PRC Section 5020.1(k), pursuant to PRC Section 21074(a)(1), would be affected by the proposed project.

However, if any previously unrecorded archaeological resource were identified during ground-disturbing construction activities and were found to qualify as a tribal cultural resource pursuant to PRC Section 21074(a)(1) (determined to be eligible for listing in the California Register or in a local register of historical resources), any impacts of the proposed project on the resource could be potentially significant. Any such potentially significant impacts would be reduced to a less-than-significant level by implementing **Mitigation Measure CUL-1: Cultural Resources Awareness Training**, **Mitigation Measure CUL-2: Inadvertent Discovery of Cultural Resources**, and **Mitigation Measure CUL-3: Inadvertent Discovery of Human Remains** (see Section 3.5, *Cultural Resources*).

- a.ii) **No Impact.** Based on the results of tribal outreach efforts, the TID did not determine any resource that could potentially be affected by the proposed project to be a tribal cultural resource significant pursuant to criteria set forth in PRC Section 5024.1(c). Therefore, the proposed project is not anticipated to affect any such resources.

3.16.4 References

Central California Information Center (CCaIC). 2021. Records Search File No. File No. 011646N. On file, ESA, February 2, 2021.

Appendix A
**CalEEMod Annual Emissions
Report**



Turlock Dam Rehabilitation - Stanislaus County, Annual

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

**Turlock Dam Rehabilitation
Stanislaus County, Annual**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Recreational	900.00	User Defined Unit	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	46
Climate Zone	3			Operational Year	2025
Utility Company	Turlock Irrigation District				
CO2 Intensity (lb/MWhr)	420.83	CH4 Intensity (lb/MWhr)	0.033	N2O Intensity (lb/MWhr)	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - construction period per PD

Off-road Equipment -

Grading -

Trips and VMT - Average distance from Dam S to borrow area

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	0.00	130.00
tblConstructionPhase	PhaseEndDate	9/29/2023	3/31/2024
tblGrading	MaterialExported	0.00	175,900.00
tblOffRoadEquipment	LoadFactor	0.38	0.38

Turlock Dam Rehabilitation - Stanislaus County, Annual

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

tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.48	0.48
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.41	0.41
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Rough Terrain Forklifts
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Graders
tblTripsAndVMT	HaulingTripLength	20.00	3.50
tblTripsAndVMT	WorkerTripNumber	28.00	10.00

2.0 Emissions Summary

Turlock Dam Rehabilitation - Stanislaus County, Annual

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

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.2925	2.8160	2.1586	6.8500e-003	0.7335	0.1019	0.8353	0.2341	0.0938	0.3279	0.0000	606.5967	606.5967	0.1742	0.0105	614.0827
2024	0.2860	2.6535	2.1289	6.8300e-003	0.7335	0.0959	0.8294	0.2341	0.0883	0.3224	0.0000	605.2523	605.2523	0.1742	0.0103	612.6776
Maximum	0.2925	2.8160	2.1586	6.8500e-003	0.7335	0.1019	0.8353	0.2341	0.0938	0.3279	0.0000	606.5967	606.5967	0.1742	0.0105	614.0827

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.2925	2.8160	2.1586	6.8500e-003	0.7335	0.1019	0.8353	0.2341	0.0938	0.3279	0.0000	606.5960	606.5960	0.1742	0.0105	614.0821
2024	0.2860	2.6535	2.1289	6.8300e-003	0.7335	0.0959	0.8294	0.2341	0.0883	0.3224	0.0000	605.2516	605.2516	0.1742	0.0103	612.6770
Maximum	0.2925	2.8160	2.1586	6.8500e-003	0.7335	0.1019	0.8353	0.2341	0.0938	0.3279	0.0000	606.5960	606.5960	0.1742	0.0105	614.0821

Turlock Dam Rehabilitation - Stanislaus County, Annual

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

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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	10-1-2023	12-31-2023	3.1488	3.1488
2	1-1-2024	3-31-2024	2.9456	2.9456
		Highest	3.1488	3.1488

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	7.6000e-004	7.0000e-005	8.2500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0171
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	7.6000e-004	7.0000e-005	8.2500e-003	0.0000	0.0000	3.0000e-005	3.0000e-005	0.0000	3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0171

Turlock Dam Rehabilitation - Stanislaus County, Annual

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

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	7.6000e-004	7.0000e-005	8.2500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0171
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	7.6000e-004	7.0000e-005	8.2500e-003	0.0000	0.0000	3.0000e-005	3.0000e-005	0.0000	3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0171

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	9/30/2023	3/31/2024	5	130	

Acres of Grading (Site Preparation Phase): 0

Turlock Dam Rehabilitation - Stanislaus County, Annual

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

Acres of Grading (Grading Phase): 682.5

Acres of Paving: 0

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

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	1	14.00	158	0.38
Grading	Rubber Tired Dozers	1	14.00	247	0.40
Grading	Off-Highway Trucks	4	14.00	402	0.38
Grading	Scrapers	2	14.00	367	0.48
Grading	Rough Terrain Forklifts	1	14.00	100	0.40
Grading	Plate Compactors	1	14.00	8	0.43
Grading	Graders	1	14.00	187	0.41

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	11	10.00	0.00	21,988.00	10.80	7.30	3.50	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Turlock Dam Rehabilitation - Stanislaus County, Annual

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

3.2 Grading - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.7144	0.0000	0.7144	0.2289	0.0000	0.2289	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2845	2.6099	2.0529	6.1300e-003		0.1007	0.1007		0.0927	0.0927	0.0000	538.0845	538.0845	0.1736	0.0000	542.4254
Total	0.2845	2.6099	2.0529	6.1300e-003	0.7144	0.1007	0.8150	0.2289	0.0927	0.3215	0.0000	538.0845	538.0845	0.1736	0.0000	542.4254

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.9400e-003	0.2054	0.0972	6.9000e-004	0.0165	1.1600e-003	0.0177	4.5500e-003	1.1100e-003	5.6600e-003	0.0000	66.4219	66.4219	4.8000e-004	0.0105	69.5469
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0700e-003	6.9000e-004	8.5100e-003	2.0000e-005	2.6000e-003	1.0000e-005	2.6100e-003	6.9000e-004	1.0000e-005	7.0000e-004	0.0000	2.0903	2.0903	7.0000e-005	6.0000e-005	2.1105
Total	8.0100e-003	0.2061	0.1057	7.1000e-004	0.0191	1.1700e-003	0.0203	5.2400e-003	1.1200e-003	6.3600e-003	0.0000	68.5122	68.5122	5.5000e-004	0.0105	71.6574

Turlock Dam Rehabilitation - Stanislaus County, Annual

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

3.2 Grading - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.7144	0.0000	0.7144	0.2289	0.0000	0.2289	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2845	2.6099	2.0529	6.1300e-003		0.1007	0.1007		0.0927	0.0927	0.0000	538.0838	538.0838	0.1736	0.0000	542.4247
Total	0.2845	2.6099	2.0529	6.1300e-003	0.7144	0.1007	0.8150	0.2289	0.0927	0.3215	0.0000	538.0838	538.0838	0.1736	0.0000	542.4247

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.9400e-003	0.2054	0.0972	6.9000e-004	0.0165	1.1600e-003	0.0177	4.5500e-003	1.1100e-003	5.6600e-003	0.0000	66.4219	66.4219	4.8000e-004	0.0105	69.5469
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0700e-003	6.9000e-004	8.5100e-003	2.0000e-005	2.6000e-003	1.0000e-005	2.6100e-003	6.9000e-004	1.0000e-005	7.0000e-004	0.0000	2.0903	2.0903	7.0000e-005	6.0000e-005	2.1105
Total	8.0100e-003	0.2061	0.1057	7.1000e-004	0.0191	1.1700e-003	0.0203	5.2400e-003	1.1200e-003	6.3600e-003	0.0000	68.5122	68.5122	5.5000e-004	0.0105	71.6574

Turlock Dam Rehabilitation - Stanislaus County, Annual

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

3.2 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.7144	0.0000	0.7144	0.2289	0.0000	0.2289	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2781	2.4485	2.0246	6.1300e-003		0.0947	0.0947		0.0872	0.0872	0.0000	538.0593	538.0593	0.1736	0.0000	542.4000
Total	0.2781	2.4485	2.0246	6.1300e-003	0.7144	0.0947	0.8091	0.2289	0.0872	0.3160	0.0000	538.0593	538.0593	0.1736	0.0000	542.4000

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.8800e-003	0.2043	0.0965	6.8000e-004	0.0165	1.1700e-003	0.0177	4.5500e-003	1.1200e-003	5.6700e-003	0.0000	65.1728	65.1728	4.7000e-004	0.0103	68.2388
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.8000e-004	6.1000e-004	7.8500e-003	2.0000e-005	2.6000e-003	1.0000e-005	2.6100e-003	6.9000e-004	1.0000e-005	7.0000e-004	0.0000	2.0202	2.0202	6.0000e-005	6.0000e-005	2.0388
Total	7.8600e-003	0.2049	0.1043	7.0000e-004	0.0191	1.1800e-003	0.0203	5.2400e-003	1.1300e-003	6.3700e-003	0.0000	67.1930	67.1930	5.3000e-004	0.0103	70.2776

Turlock Dam Rehabilitation - Stanislaus County, Annual

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

3.2 Grading - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.7144	0.0000	0.7144	0.2289	0.0000	0.2289	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2781	2.4485	2.0246	6.1300e-003		0.0947	0.0947		0.0872	0.0872	0.0000	538.0587	538.0587	0.1736	0.0000	542.3994
Total	0.2781	2.4485	2.0246	6.1300e-003	0.7144	0.0947	0.8091	0.2289	0.0872	0.3160	0.0000	538.0587	538.0587	0.1736	0.0000	542.3994

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	6.8800e-003	0.2043	0.0965	6.8000e-004	0.0165	1.1700e-003	0.0177	4.5500e-003	1.1200e-003	5.6700e-003	0.0000	65.1728	65.1728	4.7000e-004	0.0103	68.2388
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.8000e-004	6.1000e-004	7.8500e-003	2.0000e-005	2.6000e-003	1.0000e-005	2.6100e-003	6.9000e-004	1.0000e-005	7.0000e-004	0.0000	2.0202	2.0202	6.0000e-005	6.0000e-005	2.0388
Total	7.8600e-003	0.2049	0.1043	7.0000e-004	0.0191	1.1800e-003	0.0203	5.2400e-003	1.1300e-003	6.3700e-003	0.0000	67.1930	67.1930	5.3000e-004	0.0103	70.2776

Turlock Dam Rehabilitation - Stanislaus County, Annual

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

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

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

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Recreational	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Recreational	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Recreational	0.530702	0.051956	0.166139	0.152700	0.030655	0.007634	0.013363	0.016357	0.000829	0.000302	0.024359	0.001347	0.003656

Turlock Dam Rehabilitation - Stanislaus County, Annual

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

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

6.0 Area Detail

6.1 Mitigation Measures Area

Turlock Dam Rehabilitation - Stanislaus County, Annual

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	7.6000e-004	7.0000e-005	8.2500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0171
Unmitigated	7.6000e-004	7.0000e-005	8.2500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0171

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.6000e-004	7.0000e-005	8.2500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0171
Total	7.6000e-004	7.0000e-005	8.2500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0171

Turlock Dam Rehabilitation - Stanislaus County, Annual

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

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.6000e-004	7.0000e-005	8.2500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0171
Total	7.6000e-004	7.0000e-005	8.2500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0161	0.0161	4.0000e-005	0.0000	0.0171

7.0 Water Detail

7.1 Mitigation Measures Water

Turlock Dam Rehabilitation - Stanislaus County, Annual

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

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

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Recreational	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Turlock Dam Rehabilitation - Stanislaus County, Annual

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

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Recreational	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

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

Turlock Dam Rehabilitation - Stanislaus County, Annual

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

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		0.0000	0.0000	0.0000	0.0000

9.0 Operational Offroad

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

Turlock Dam Rehabilitation - Stanislaus County, Annual

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

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

11.0 Vegetation

Appendix B

Biological Resources Search Results



IPaC resource list

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

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

Location

Stanislaus County, California



Local office

Sacramento Fish And Wildlife Office

(916) 414-6600

(916) 414-6713

Federal Building

2800 Cottage Way, Room W-2605

Sacramento, CA 95825-1846

Endangered species

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

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

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

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

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

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

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

-
1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
 2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

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

Mammals

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

Reptiles

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

Amphibians

NAME	STATUS
California Red-legged Frog <i>Rana draytonii</i> Wherever found There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander <i>Ambystoma californiense</i> There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt <i>Hypomesus transpacificus</i> Wherever found There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
Monarch Butterfly <i>Danaus plexippus</i> Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* **Threatened**
 Wherever found
 There is **final** critical habitat for this species. The location of the critical habitat is not available.
<https://ecos.fws.gov/ecp/species/7850>

Crustaceans

NAME	STATUS
<p>Conservancy Fairy Shrimp <i>Branchinecta conservatio</i> Wherever found There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/8246</p>	Endangered
<p>Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i> Wherever found There is final critical habitat for this species. Your location overlaps the critical habitat. https://ecos.fws.gov/ecp/species/498</p>	Threatened
<p>Vernal Pool Tadpole Shrimp <i>Lepidurus packardii</i> Wherever found There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/2246</p>	Endangered

Flowering Plants

NAME	STATUS
<p>Colusa Grass <i>Neostapfia colusana</i> Wherever found There is final critical habitat for this species. Your location overlaps the critical habitat. https://ecos.fws.gov/ecp/species/5690</p>	Threatened
<p>Fleshy Owl's-clover <i>Castilleja campestris</i> ssp. <i>succulenta</i> Wherever found There is final critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/8095</p>	Threatened

Greene's Tuctoria *Tuctoria greenei* Endangered

Wherever found

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

<https://ecos.fws.gov/ecp/species/1573>

Hairy Orcutt Grass *Orcuttia pilosa* Endangered

Wherever found

There is **final** critical habitat for this species. Your location overlaps the critical habitat.

<https://ecos.fws.gov/ecp/species/2262>

Hartweg's Golden Sunburst *Pseudobahia bahiifolia* Endangered

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/1704>

Hoover's Spurge *Chamaesyce hooveri* Threatened

Wherever found

There is **final** critical habitat for this species. Your location overlaps the critical habitat.

<https://ecos.fws.gov/ecp/species/3019>

Critical habitats

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

This location overlaps the critical habitat for the following species:

NAME	TYPE
Colusa Grass <i>Neostapfia colusana</i> https://ecos.fws.gov/ecp/species/5690#crithab	Final
Hairy Orcutt Grass <i>Orcuttia pilosa</i> https://ecos.fws.gov/ecp/species/2262#crithab	Final
Hoover's Spurge <i>Chamaesyce hooveri</i> https://ecos.fws.gov/ecp/species/3019#crithab	Final
Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i> https://ecos.fws.gov/ecp/species/498#crithab	Final

Migratory birds

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

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

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

Additional information can be found using the following links:

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

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

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

NAME

BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE

WHICH THE BIRD BREEDS
ACROSS ITS ENTIRE RANGE.
"BREEDS ELSEWHERE" INDICATES
THAT THE BIRD DOES NOT LIKELY
BREED IN YOUR PROJECT AREA.)

Bald Eagle *Haliaeetus leucocephalus*

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

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

Breeds Jan 1 to Aug 31

Black Tern *Chlidonias niger*

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

<https://ecos.fws.gov/ecp/species/3093>

Breeds May 15 to Aug 20

Clark's Grebe *Aechmophorus clarkii*

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

Breeds Jun 1 to Aug 31

Common Yellowthroat *Geothlypis trichas sinuosa*

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

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

Breeds May 20 to Jul 31

Golden Eagle *Aquila chrysaetos*

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

<https://ecos.fws.gov/ecp/species/1680>

Breeds Jan 1 to Aug 31

Lawrence's Goldfinch *Carduelis lawrencei*

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

<https://ecos.fws.gov/ecp/species/9464>

Breeds Mar 20 to Sep 20

Nuttall's Woodpecker *Picoides nuttallii*

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

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

Breeds Apr 1 to Jul 20

Oak Titmouse *Baeolophus inornatus*

Breeds Mar 15 to Jul 15

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

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

Tricolored Blackbird *Agelaius tricolor*

Breeds Mar 15 to Aug 10

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

<https://ecos.fws.gov/ecp/species/3910>

Yellow-billed Magpie *Pica nuttalli*

Breeds Apr 1 to Jul 31

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

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

Probability of Presence Summary

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

Probability of Presence

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

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

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

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

Breeding Season (🟡)

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

Survey Effort (|)

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

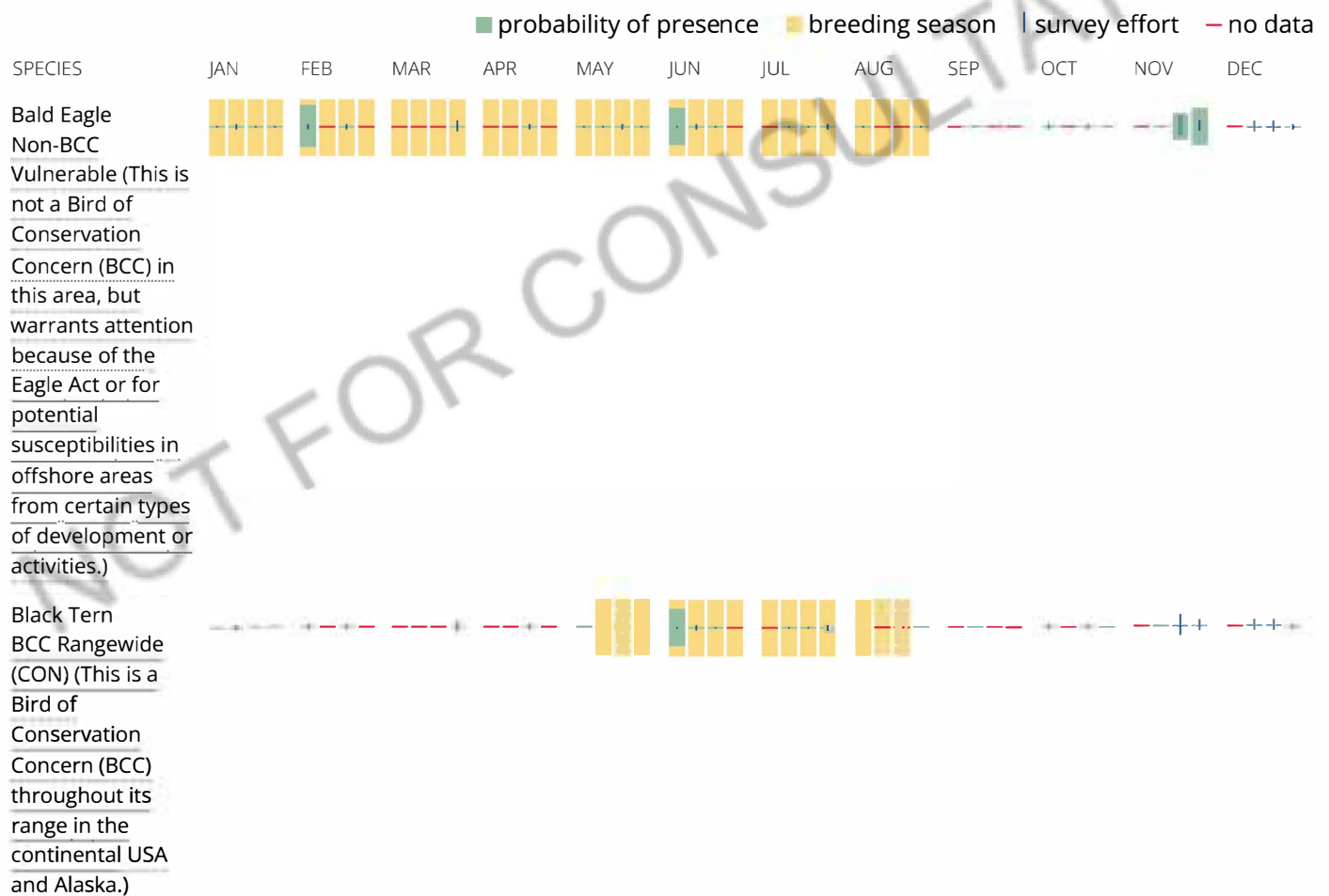
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (—)

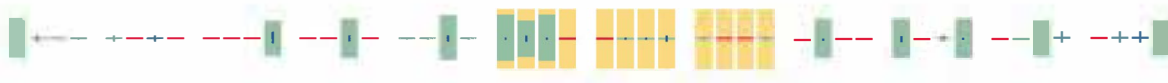
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe

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



Clark's Grebe
BCC Rangewide
(CON) (This is a
Bird of
Conservation
Concern (BCC)
throughout its
range in the
continental USA
and Alaska.)



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



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



Lawrence's
Goldfinch
BCC Rangewide
(CON) (This is a
Bird of
Conservation
Concern (BCC)
throughout its
range in the
continental USA
and Alaska.)



Nuttall's
Woodpecker
BCC - BCR (This is a
Bird of
Conservation
Concern (BCC) only
in particular Bird
Conservation
Regions (BCRs) in
the continental
USA)



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



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



Yellow-billed
Magpie
BCC Rangewide
(CON) (This is a
Bird of
Conservation
Concern (BCC)
throughout its
range in the
continental USA
and Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

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

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

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

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

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

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

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

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

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

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

What are the levels of concern for migratory birds?

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

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

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

Details about birds that are potentially affected by offshore projects

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

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

What if I have eagles on my list?

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

Proper Interpretation and Use of Your Migratory Bird Report

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

Facilities

National Wildlife Refuge lands

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

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

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

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

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

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

Data limitations

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

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

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

Data exclusions

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

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in

activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION



Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: Quad< IS > (Paulsell (3712066)< OR < Cooperstown (3712065)< OR < La Grange (3712064)< OR < Montpelier (3712056)< OR < Turlock Lake (3712055)< OR < Snelling (3712054)< OR < Cressey (3712046)< OR < Winton (3712045)< OR < Yosemite Lake (3712044)

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Agelaius tricolor</i> tricolored blackbird	G1G2 S2	None Threatened	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_EN-Endangered USFWS_BCC-Birds of Conservation Concern	120 270	957 S:11	0	0	0	0	5	6	9	2	6	5	0
<i>Agrostis hendersonii</i> Henderson's bent grass	G2Q S2	None None	Rare Plant Rank - 3.2	225 225	26 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Ambystoma californiense pop. 1</i> California tiger salamander - central California DPS	G2G3T3 S3	Threatened Threatened	CDFW_WL-Watch List IUCN_VU-Vulnerable	0 1,004	1325 S:39	0	1	2	2	1	33	34	5	38	1	0
<i>Antrozous pallidus</i> pallid bat	G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive	200 300	420 S:5	0	0	0	0	0	5	5	0	5	0	0
<i>Athene cucicularia</i> burrowing owl	G4 S2	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	181 450	2011 S:3	1	0	1	0	0	1	1	2	3	0	0
<i>Bombus morrisoni</i> Morrison bumble bee	G3 S1S2	None None	IUCN_VU-Vulnerable	200 200	86 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Bombus pensylvanicus</i> American bumble bee	G3G4 S2	None None	IUCN_VU-Vulnerable	129 350	285 S:5	0	0	0	0	0	5	5	0	5	0	0
<i>Branchinecta lynchi</i> vernal pool fairy shrimp	G3 S3	Threatened None	IUCN_VU-Vulnerable	177 660	796 S:76	60	4	0	0	0	12	62	14	76	0	0
<i>Branchinecta mesovallensis</i> midvalley fairy shrimp	G2 S2S3	None None		205 350	144 S:17	2	0	0	0	0	15	15	2	17	0	0



Summary Table Report

California Department of Fish and Wildlife California Natural Diversity Database



Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Buteo swainsoni</i> Swainson's hawk	G5 S4	None Threatened	BLM_S-Sensitive IUCN_LC-Least Concern	100 250	2561 S:6	0	3	0	0	0	3	4	2	6	0	0
<i>Calycadenia hooveri</i> Hoover's calycadenia	G2 S2	None None	Rare Plant Rank - 1B.3	200 400	37 S:11	2	2	0	0	1	6	9	2	10	1	0
<i>Castilleja campestris var. succulenta</i> succulent owl's-clover	G4?T2T3 S2S3	Threatened Endangered	Rare Plant Rank - 1B.2	175 700	99 S:27	5	3	0	2	0	17	20	7	27	0	0
<i>Charadrius montanus</i> mountain plover	G3 S2	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_NT-Near Threatened USFWS_BCC-Birds of Conservation Concern	250 250	90 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Circus hudsonius</i> northern harrier	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	350 350	54 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Clarkia rostrata</i> beaked clarkia	G2G3 S2S3	None None	Rare Plant Rank - 1B.3 BLM_S-Sensitive SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden SB_UCBG-UC Botanical Garden at Berkeley	200 375	74 S:10	1	1	2	0	0	6	10	0	10	0	0
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	G4 S2	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive	350 350	635 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Cryptantha hooveri</i> Hoover's cryptantha	GH SH	None None	Rare Plant Rank - 1A	250 250	4 S:1	0	0	0	0	1	0	1	0	0	1	0
<i>Cryptantha mariposae</i> Mariposa cryptantha	G2G3 S2S3	None None	Rare Plant Rank - 1B.3 BLM_S-Sensitive	300 300	9 S:1	0	0	0	0	0	1	1	0	1	0	0



Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database



Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Cuscuta obtusiflora</i> var. <i>glandulosa</i> Peruvian dodder	G5T4? SH	None None	Rare Plant Rank - 2B.2		6 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Desmocerus californicus dimorphus</i> valley elderberry longhorn beetle	G3T3 S3	Threatened None		100 110	271 S:3	0	0	0	0	1	2	3	0	2	1	0
<i>Dipodomys heermanni dixonii</i> Merced kangaroo rat	G4T2T3 S2	None None		200 600	21 S:11	0	1	0	0	0	10	10	1	11	0	0
<i>Downingia pusilla</i> dwarf downingia	GU S2	None None	Rare Plant Rank - 2B.2	230 630	132 S:25	2	5	1	0	0	17	18	7	25	0	0
<i>Emys marmorata</i> western pond turtle	G3G4 S3	Proposed Threatened None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable USFS_S-Sensitive	139 317	1522 S:4	0	1	0	0	0	3	3	1	4	0	0
<i>Eremophila alpestris actia</i> California horned lark	G5T4Q S4	None None	CDFW_WL-Watch List IUCN_LC-Least Concern	239 239	94 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Eryngium racemosum</i> Delta button-celery	G1 S1	None Endangered	Rare Plant Rank - 1B.1	240 240	26 S:1	0	1	0	0	0	0	1	0	1	0	0
<i>Eryngium spinosepalum</i> spiny-sepaled button-celery	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_SBBG-Santa Barbara Botanic Garden	320 500	108 S:8	0	0	1	0	0	7	8	0	8	0	0
<i>Eumops perotis californicus</i> western mastiff bat	G4G5T4 S3S4	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern	200 200	296 S:3	0	0	0	0	0	3	3	0	3	0	0
<i>Euphorbia hooveri</i> Hoover's spurge	G1 S1	Threatened None	Rare Plant Rank - 1B.2	190 250	29 S:2	0	1	0	0	0	1	1	1	2	0	0
<i>Falco columbarius</i> merlin	G5 S3S4	None None	CDFW_WL-Watch List IUCN_LC-Least Concern	410 410	37 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Haliaeetus leucocephalus</i> bald eagle	G5 S3	Delisted Endangered	BLM_S-Sensitive CDF_S-Sensitive CDFW_FP-Fully Protected IUCN_LC-Least Concern USFS_S-Sensitive	250 420	333 S:3	1	0	1	0	0	1	3	0	3	0	0



Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database



Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Icteria virens</i> yellow-breasted chat	G5 S4	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	250 250	101 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Lagophylla dichotoma</i> forked hare-leaf	G2 S2	None None	Rare Plant Rank - 1B.1		7 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Lasiurus cinereus</i> hoary bat	G3G4 S4	None None	IUCN_LC-Least Concern	200 300	238 S:5	0	0	0	0	0	5	5	0	5	0	0
<i>Lasiurus frantzii</i> western red bat	G4 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	200 300	128 S:4	0	0	0	0	0	4	4	0	4	0	0
<i>Lepidurus packardii</i> vernal pool tadpole shrimp	G3 S3	Endangered None	IUCN_EN-Endangered	195 200	330 S:3	0	0	0	0	0	3	3	0	3	0	0
<i>Linderiella occidentalis</i> California linderiella	G2G3 S2S3	None None	IUCN_NT-Near Threatened	182 590	508 S:29	1	2	1	0	1	24	26	3	28	1	0
<i>Lytta molesta</i> molestan blister beetle	G2 S2	None None		230 230	17 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Monardella leucocephala</i> Merced monardella	GX SX	None None	Rare Plant Rank - 1A	180 200	3 S:2	0	0	0	0	2	0	2	0	0	0	2
<i>Mylopharodon conocephalus</i> hardhead	G3 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive	70 260	33 S:5	0	0	0	0	0	5	1	4	5	0	0
<i>Myotis yumanensis</i> Yuma myotis	G5 S4	None None	BLM_S-Sensitive IUCN_LC-Least Concern	200 200	265 S:3	0	0	0	0	0	3	3	0	3	0	0
<i>Navarretia nigelliformis ssp. radians</i> shining navarretia	G4T2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	275 380	102 S:11	2	5	0	0	0	4	9	2	11	0	0
<i>Neostapfia colusana</i> Colusa grass	G1 S1	Threatened Endangered	Rare Plant Rank - 1B.1	170 380	66 S:26	1	0	8	1	14	2	15	11	12	3	11
<i>Northern Hardpan Vernal Pool</i> Northern Hardpan Vernal Pool	G3 S3.1	None None		160 675	126 S:5	0	0	0	0	0	5	5	0	5	0	0



Summary Table Report

California Department of Fish and Wildlife California Natural Diversity Database



Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Oncorhynchus mykiss irideus</i> pop. 11 steelhead - Central Valley DPS	G5T2Q S2	Threatened None	AFS_TH-Threatened		31 S:2	0	0	0	0	0	2	0	2	2	0	0
<i>Orcuttia inaequalis</i> San Joaquin Valley Orcutt grass	G1 S1	Threatened Endangered	Rare Plant Rank - 1B.1	180 340	47 S:6	0	0	0	0	5	1	6	0	1	0	5
<i>Orcuttia pilosa</i> hairy Orcutt grass	G1 S1	Endangered Endangered	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	190 309	35 S:7	0	0	1	0	6	0	6	1	1	1	5
<i>Pandion haliaetus</i> osprey	G5 S4	None None	CDF_S-Sensitive CDFW_WL-Watch List IUCN_LC-Least Concern	280 280	504 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Perognathus inornatus</i> San Joaquin pocket mouse	G2G3 S2S3	None None	BLM_S-Sensitive IUCN_LC-Least Concern	310 490	140 S:5	0	0	0	0	0	5	5	0	5	0	0
<i>Pseudobahia bahiifolia</i> Hartweg's golden sunburst	G1 S1	Endangered Endangered	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	240 390	27 S:17	2	13	0	1	1	0	6	11	16	1	0
<i>Sagittaria sanfordii</i> Sanford's arrowhead	G3 S3	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	350 350	143 S:1	0	1	0	0	0	0	0	1	1	0	0
<i>Sidalcea keckii</i> Keck's checkerbloom	G2 S2	Endangered None	Rare Plant Rank - 1B.1 SB_CalBG/RSABG-California/Rancho Santa Ana Botanic Garden	280 280	50 S:1	0	0	0	0	0	1	0	1	1	0	0
<i>Spea hammondii</i> western spadefoot	G2G3 S3S4	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_NT-Near Threatened	195 375	1444 S:15	0	1	1	1	1	11	13	2	14	1	0
<i>Taxidea taxus</i> American badger	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	400 400	645 S:1	0	0	0	0	0	1	1	0	1	0	0
<i>Tuctoria greenei</i> Greene's tuctoria	G1 S1	Endangered Rare	Rare Plant Rank - 1B.1	180 240	50 S:4	0	0	0	0	4	0	4	0	0	1	3



Summary Table Report

California Department of Fish and Wildlife California Natural Diversity Database









Name (Scientific/Common)	CNDDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
<i>Vireo bellii pusillus</i> least Bell's vireo	G5T2 S3	Endangered Endangered		180 250	505 S:2	0	0	0	0	2	0	2	0	0	2	0
<i>Vulpes macrotis mutica</i> San Joaquin kit fox	G4T2 S3	Endangered Threatened		300 300	1020 S:1	0	0	0	0	0	1	1	0	1	0	0



Search Results

26 matches found. Click on scientific name for details

Search Criteria: Quad is one of [3712066:3712065:3712064:3712054:3712055:3712056:3712046:3712045:3712044]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	PHOTO
<u><i>Agrostis hendersonii</i></u>	Henderson's bent grass	Poaceae	annual herb	Apr-Jun	None	None	G2Q	S2	3.2	 ©2005 Steve Matson
<u><i>Calycadenia hooveri</i></u>	Hoover's calycadenia	Asteraceae	annual herb	Jul-Sep	None	None	G2	S2	1B.3	No Photo Available
<u><i>Castilleja campestris</i> var. <i>succulenta</i></u>	succulent owl's-clover	Orobanchaceae	annual herb (hemiparasitic)	(Mar)Apr-May	FT	CE	G4? T2T3	S2S3	1B.2	No Photo Available
<u><i>Clarkia rostrata</i></u>	beaked clarkia	Onagraceae	annual herb	Apr-May	None	None	G2G3	S2S3	1B.3	No Photo Available
<u><i>Cryptantha hooveri</i></u>	Hoover's cryptantha	Boraginaceae	annual herb	Apr-May	None	None	GH	SH	1A	No Photo Available
<u><i>Cryptantha mariposae</i></u>	Mariposa cryptantha	Boraginaceae	annual herb	Apr-Jun	None	None	G2G3	S2S3	1B.3	No Photo Available
<u><i>Cuscuta obtusiflora</i> var. <i>glandulosa</i></u>	Peruvian dodder	Convolvulaceae	annual vine (parasitic)	Jul-Oct	None	None	G5T4?	SH	2B.2	No Photo Available
<u><i>Delphinium hansenii</i> ssp. <i>ewanianum</i></u>	Ewan's larkspur	Ranunculaceae	perennial herb	Mar-May	None	None	G4T3	S3	4.2	No Photo Available
<u><i>Downingia pusilla</i></u>	dwarf downingia	Campanulaceae	annual herb	Mar-May	None	None	GU	S2	2B.2	No Photo Available
<u><i>Eryngium racemosum</i></u>	Delta button-celery	Apiaceae	annual/perennial herb	(May)Jun-Oct	None	CE	G1	S1	1B.1	No Photo Available
<u><i>Eryngium spinosepalum</i></u>	spiny-sepaled button-celery	Apiaceae	annual/perennial herb	Apr-Jun	None	None	G2	S2	1B.2	No Photo Available
<u><i>Euphorbia hooveri</i></u>	Hoover's spurge	Euphorbiaceae	annual herb	Jul-Sep(Oct)	FT	None	G1	S1	1B.2	No Photo Available

<u><i>Fritillaria agrestis</i></u>	stinkbells	Liliaceae	perennial bulbiferous herb	Mar-Jun	None	None	G3	S3	4.2	 © 2016 Aaron Schusteff
<u><i>Hesperis matronalis</i></u>	hogwallow starfish	Asteraceae	annual herb	Mar-Jun	None	None	G3	S3	4.2	 © 2017 John Doyen
<u><i>Jepsonia heterandra</i></u>	foothill jepsonia	Saxifragaceae	perennial herb	Aug-Dec	None	None	G3	S3	4.3	 © 2014 Belinda Lo
<u><i>Lagophylla dichotoma</i></u>	forked hare-leaf	Asteraceae	annual herb	Apr-May	None	None	G2	S2	1B.1	 © 2010 Chris Winchell
<u><i>Monardella leucocephala</i></u>	Merced monardella	Lamiaceae	annual herb	May-Aug	None	None	GX	SX	1A	No Photo Available
<u><i>Navarretia nigelliformis</i> ssp. <i>radians</i></u>	shining navarretia	Polemoniaceae	annual herb	(Mar)Apr-Jul	None	None	G4T2	S2	1B.2	No Photo Available
<u><i>Neostapfia colusana</i></u>	Colusa grass	Poaceae	annual herb	May-Aug	FT	CE	G1	S1	1B.1	No Photo Available
<u><i>Orcuttia inaequalis</i></u>	San Joaquin Valley Orcutt grass	Poaceae	annual herb	Apr-Sep	FT	CE	G1	S1	1B.1	No Photo Available
<u><i>Orcuttia pilosa</i></u>	hairy Orcutt grass	Poaceae	annual herb	May-Sep	FE	CE	G1	S1	1B.1	 © 2003 George W. Hartwell
<u><i>Pseudobahia bahiifolia</i></u>	Hartweg's golden sunburst	Asteraceae	annual herb	Mar-Apr	FE	CE	G1	S1	1B.1	No Photo Available
<u><i>Sagittaria sanfordii</i></u>	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb (emergent)	May-Oct(Nov)	None	None	G3	S3	1B.2	 ©2013 Debra L.

<i>Sidalcea keckii</i>	Keck's checkerbloom	Malvaceae	annual herb	Apr-May(Jun)	FE	None	G2	S2	1B.1	No Photo Available
<i>Tuctoria greenei</i>	Greene's tuctoria	Poaceae	annual herb	May-Jul(Sep)	FE	CR	G1	S1	1B.1	 ©2008 F. Gauna
<i>Wolffia brasiliensis</i>	Brazilian watermeal	Araceae	perennial herb (aquatic)	Apr-Dec	None	None	G5	S2	2B.3	 © 2021 Scot Loring

Showing 1 to 26 of 26 entries

Suggested Citation:

California Native Plant Society, Rare Plant Program. 2022. Rare Plant Inventory (online edition, v9-01 1.5). Website <https://www.rareplants.cnps.org> [accessed 30 March 2022].

CONTACT US

Send questions and comments to rareplants@cnps.org.

 Developed by
Rincon Consultants, Inc.

ABOUT THIS WEBSITE

[About the Inventory](#)
[Release Notes](#)
[Advanced Search](#)
[Glossary](#)

ABOUT CNPS

[About the Rare Plant Program](#)
[CNPS Home Page](#)
[About CNPS](#)
[Join CNPS](#)

CONTRIBUTORS

[The Calflora Database](#)
[The California Lichen Society](#)
[California Natural Diversity Database](#)
[The Jepson Flora Project](#)
[The Consortium of California Herbaria](#)
[CalPhotos](#)

Appendix C
**Special-Status Species
Potential to Occur**



Scientific Name	Common Name	Listing Status: Federal/State/Other	Habitat Description	Potential for Occurrence at the Project Site
Invertebrates				
<i>Branchinecta conservatio</i>	Conservancy fairy shrimp	FE, CH/--/--	Occurs in swales in grassland communities and in large turbid vernal pools, where rooted vegetation is absent. Known from eight populations in CA: Vina Plains, Butte and Tehama counties; Sacramento National Wildlife Refuge, Glenn County; Yolo Bypass Wildlife Area, Yolo County; Jepson Prairie, Solano County; Mapes Ranch, Stanislaus County; University of CA, Merced, Merced County; Grasslands Ecological Area, Merced County; and Los Padres National Forest, Ventura County.	Unlikely. There are no large vernal pools in the project site. There is no habitat for this species in the project site. No occurrences within 20 miles.
<i>Branchinecta lynchi</i>	Vernal pool fairy shrimp	FT, CH/--/--	Endemic to the grasslands of the central valley, central coast mountains, and south coast mountains, in astatic rain-filled pools. Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	Medium: Wetlands and ponded water on the site provide potential habitat for this species.
<i>Danaus plexippus plexippus</i> pop. 1	Monarch butterfly – California overwintering population	FC/--/--	Overwinters within wind-protected groves of trees (primarily Monterey pine [<i>Pinus radiata</i>], Monterey cypress [<i>Hesperocyparis macrocarpa</i>], and eucalyptus [<i>Eucalyptus</i> spp.]) along California coast from northern Mendocino County south to Baja California typically near water and nectar sources. During the breeding season, the required host plant is milkweed (<i>Asclepias</i> spp.) for development, egg deposition, and nectar.	Unlikely. The study area occurs outside the range of the overwintering population. The project will not impact habitat suitable for this species.
<i>Desmocerus californicus dimorphus</i>	Valley elderberry longhorn beetle	FT, CH/--/--	Breeds and forages exclusively on elderberry (<i>Sambucus</i>) shrubs typically associated with riparian forests, riparian woodlands, elderberry savannas, and other Central Valley habitats. Occurs only in the Central Valley of California.	Medium: Elderberry shrubs on the project site provide potential habitat for this species.
<i>Lepidurus packardii</i>	Vernal pool tadpole shrimp	FE, CH/--/--	Typically occurs in large, deep vernal pools, but can also make use of smaller pools within larger vernal pool complexes.	Medium: Wetlands and ponded water on the site provide potential habitat for this species.
Fish				
<i>Hypomesus transpacificus</i>	Delta smelt	FT/ >	Occurs in open surface waters in the Sacramento/San Joaquin Delta. Occurs seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay. Found in Delta estuaries with dense aquatic vegetation and low occurrence of predators. May be affected by downstream sedimentation.	Unlikely. There is no habitat for this species in the project site. The project site is outside the range of this species.
<i>Mylopharodon conocephalus</i>	Hardhead	—/SSC/—	Low to mid-elevation streams in the Sacramento-San Joaquin drainage. Also present in the Russian River. Clear, deep pools with sand-gravel-boulder bottoms and slow water velocity. Not found where exotic centrarchids predominate.	Unlikely. There is no habitat for this species in the project site. The project site is outside the range of this species.

Scientific Name	Common Name	Listing Status: Federal/State/Other	Habitat Description	Potential for Occurrence at the Project Site
<i>Oncorhynchus mykiss irideus</i> pop. 11	Steelhead - Central Valley DPS	FT/—/—	Requires cold, freshwater streams with suitable gravel for spawning; rears in seasonally inundated floodplains, rivers, tributaries, and the Delta. Spawning occurs from December to March in upper watershed streams with cool, well-oxygenated water. Juveniles likely use the edges of rivers and sloughs for foraging and rearing as they emigrate, during late winter and early spring (March through June).	Unlikely. There is no habitat for this species in the project site. The project site is outside the range of this species.
Amphibians				
<i>Ambystoma californiense</i> pop. 1	California tiger salamander – central California DPS	FT, CH/ST/--	Frequents grassland, oak savannah, and edges of mixed woodland and lower elevation coniferous forest. Spends much time underground in mammal burrows. Usually breeds in temporary ponds such as vernal pools, but may also breed in slower parts of streams and some permanent waters. Ponds with large populations of California tiger salamander larvae usually contain very few larvae of other amphibian species. Requires long-lasting vernal pools to complete larval development of a minimum of approximately 10 weeks. Adults can migrate up to 1.5 mi from breeding ponds in upland habitat.	Medium. Habitat for, and records of, this species occur in and around the project sites. Seasonal wetlands and ponded water in the project site provide potential breeding habitat for this species. Additionally, California tiger salamander could use mammal burrows in the project site or migrate through the project site during the breeding season.
<i>Rana draytonii</i>	California red-legged frog	FT, CH/--/SSC	Inhabits ponds, quiet pools of streams, marshes, and riparian areas with dense, shrubby, or emergent vegetation. Requires permanent or nearly permanent pools for larval development. May use ephemeral water bodies for breeding if permanent water is nearby. Occurs from near sea level to approximately 5,200 ft, though nearly all sightings have occurred below 3,500 feet. Probably extirpated from the floor of the Central Valley before 1960.	Unlikely. There is no habitat for this species in the project site. Largely extirpated from the Central Valley floor; no records within 20 miles.
<i>Spea hammondi</i>	Western spadefoot	PT/SSC/--	Ranges throughout the Central Valley and adjacent foothills, and is usually quite common where it occurs. Occurs primarily in grasslands, but may occur in valley-foothill hardwood woodlands. Some populations persist for a few years in orchard or vineyard habitats. Rarely found on the surface; most of the year is spent in underground burrows up to 36 inches deep, which they construct themselves. Some individuals also use mammal burrows. They are active on the surface nocturnally during rains or periods of high humidity. Breeding and egg laying occur from late winter to the end of march and breed almost exclusively in shallow, temporary pools formed by heavy winter rains. Recently metamorphosed juveniles seek refuge in the immediate vicinities of breeding ponds for up to several days after transformation. They hide in drying mud cracks, under boards and other surface objects including decomposing cow dung.	Moderate. Seasonal wetlands and ponded water in the project site could provide potential breeding habitat for this species. Additionally, western spadefoot could burrow in undeveloped areas in the project sites or migrate through the project site during the breeding season. Records within 1 mile of project area.

Scientific Name	Common Name	Listing Status: Federal/State/Other	Habitat Description	Potential for Occurrence at the Project Site
Reptiles				
<i>Emys marmorata</i>	Western pond turtle	PT/SSC/--	Highly aquatic species found in a broad range of aquatic habitats including rivers and streams, permanent lakes, ponds, reservoirs, settling ponds, marshes, and other inundated wetlands. May use brackish, semi-permanent, or ephemeral features when inundated. Requires basking sites and loose soil in surrounding uplands suitable for nest excavation. Occurs throughout non-desert CA from 0 to 6,700 feet. Isolated populations are known from the Mojave River, Susan River, Truckee River, Carson River, and Klamath Basin	Moderate. Turlock Lake provides potential habitat for western pond turtle. No records within 10 miles of the project site.
<i>Thamnophis gigas</i>	Giant garter snake	FT/ST/--	Endemic to the wetlands of the Sacramento and San Joaquin valleys, inhabiting the tule marshes and seasonal wetlands created by overbank flooding of the rivers and streams. Requires 1) freshwater aquatic habitat with protective emergent vegetative cover that allows foraging; 2) upland habitat near the aquatic habitat that can be used for thermoregulation and summer shelter in burrows; and 3) upland refugia that serve as winter hibernacula.	Unlikely. There is no habitat for this species in the project site.
Birds				
<i>Agelaius tricolor</i>	tricolored blackbird	--/ST, SSC/--	Forages on ground in cropland and grassland. Nests near or over freshwater. Prefers emergent marsh of dense cattails or tules for nesting, but also nests in thickets of willow, blackberry, wild rose, and tall herbs. Nesting area must be large enough to support a minimum colony of about 50 pairs. Occurs primarily in the Central Valley and in coastal areas south of Sonoma County.	Low. There are no stands of marsh or riparian areas large enough to support breeding for this species.
<i>Athene cunicularia</i>	burrowing owl	--/SSC/--	Nests and forages in grasslands, agricultural fields, and low scrub habitats, especially where ground squirrel burrows are present; occasionally inhabits artificial structures and small patches of disturbed habitat.	Moderate. Burrows in and around the project provide could be used by burrowing owl. Grassland in the project site provides potential nesting habitat.
<i>Buteo swainsoni</i>	Swainson's hawk	--/ST/--	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	Moderate. Trees in and adjacent to the project site provide suitable nesting habitat
<i>Charadrius montanus</i>	Mountain plover	--/SSC/--	This species does not nest in California. It is a winter resident from September through March in the Central Valley from Sutter and Yuba counties southward into Mexico at elevations below 3,200 feet. Also found in foothill valleys west of the San Joaquin Valley, the Imperial Valley, and plowed fields of Los Angeles and western San Bernardino counties. Mountain plover forage in short and open grasslands, plowed fields with little vegetation, and open sagebrush areas.	Low. The project site occurs outside the range of the species as mapped by CDFW. Marginal habitat may occur for this species in grassland habitat when mowed or grazed short.

Scientific Name	Common Name	Listing Status: Federal/State/Other	Habitat Description	Potential for Occurrence at the Project Site
<i>Circus hudsonius</i>	Northern harrier	--/SSC/--	Occurs in annual grassland up to lodgepole pine and alpine meadow habitat as high as 10,000 feet. Breeds from sea level to 5,700 feet in the Central Valley and Sierra Nevada Mountains, and up to 3,600 feet in northeastern California. Frequents meadows, grasslands, open rangelands, desert sinks, fresh and saltwater emergent wetland, though seldom found in wooded areas. Uses tall grasses and forbs in wetlands, or at the wetland/field border, for cover. Roosts and nests on the ground in shrubby vegetation, usually at marsh edges. Mostly nests in emergent wetlands or along rivers or lakes, but may nest in grasslands, grain fields, or on sagebrush flats several miles from water.	Low. There is no marsh habitat in the project site suitable for breeding for this species.
<i>Haliaeetus leucocephalus</i>	Bald eagle	FD/SE, FP/--	Occurs along coasts, rivers, and large, deep lakes and reservoirs in California. Nests mostly in Butte, Lake, Lassen, Modoc, Plumas, Shasta, Siskiyou, and Trinity counties. More widespread as a winter migrant. Requires large bodies of water or free flowing rivers with abundant fish and perching sites. Nests in large old growth and dominant live trees with open branchwork. Favors ponderosa pine.	Moderate. Trees around Turlock Lake may provide suitable nesting habitat. No potential bald eagle nests were observed during surveys. Turlock Lake provides suitable foraging habitat.
<i>Icteria virens</i>	Yellow-breasted chat	--/SSC/--	Uncommon summer resident and migrant in coastal California and in the foothills of the Sierra Nevada. Found up to about 4,800 ft in valley foothill riparian, and up to 6,500 ft east of the Sierra Nevada in desert riparian habitats. Although still widely distributed, the yellow-breasted chat is now rare or absent as a breeder in much of the Central Valley and parts of the southern coastal slopes. They occupy early successional riparian habitats with a well-developed shrub layer and an open canopy. Vegetation structure, more than age, appears to be the important factor in nest-site selection. Nesting habitat is usually restricted to the narrow border of streams, creeks, sloughs, and rivers and seldom forms extensive tracts. Blackberry, wild grape, willow, and other plants that form dense thickets and tangles are frequently selected as nesting strata. Taller trees such as cottonwood and alder are required for song perches.	Unlikely. The project site does not provide suitable nesting habitat for this species.
<i>Vireo bellii pusillus</i>	Least Bell's vireo	FE/SE/--	Inhabits thickets of willows and other low, dense shrubs in foothill riparian habitat below approximately 2,000 feet. Currently known from canyons in San Benito and Monterey counties, coastal areas from Santa Barbara County south, and the western edges of southern California deserts. Usually found near water or intermittent streams. Winters in Mexico from September through the end of March.	Unlikely. The project site is outside the known range of this species. The project site does not provide suitable nesting habitat for this species.
Mammals				

Scientific Name	Common Name	Listing Status: Federal/State/Other	Habitat Description	Potential for Occurrence at the Project Site
<i>Antrozous pallidus</i>	Pallid bat	--/SSC/--	Locally common at low elevations in a wide variety of habitats, including grasslands, shrub lands, woodlands, and forests – from sea level up through mixed conifer forests. Most common in open, dry habitats with rocky areas for roosting. A yearlong resident in most of California, feeding on a wide variety of insects and arachnids and foraging over open ground. Many prey items are taken on the ground. Roosts in crevices in rock outcrops, mines, caves, tree hollows, buildings, and bridges. Maternity colonies are formed around April and usually consist of 20 to 100 individuals.	Low. There are no rock outcrops, mines, or caves suitable for roosting in the project site.
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	--/SSC/--	Found throughout California in all but subalpine and alpine habitats, and may be found at any season throughout its range. Most abundant in mesic habitats. Requires caves, mines, tunnels, buildings, or other human-made structures for roosting. May use separate sites for night, day, hibernation, and maternity roosts. Hibernation sites are located in cold, but not freezing, environments. Maternity roosts are located in warm environments. Gleans from brush and trees, or feeds along habitat edges. Extremely sensitive to disturbance of roosting sites. Shows high site fidelity if undisturbed.	Low. There are no caves, mines, tunnels, or structures suitable for roosting in the project site.
<i>Eumops perotis californicus</i>	Western mastiff bat	--/SSC/--	Uncommon resident in southeastern San Joaquin Valley and Coastal Ranges from Monterey County south through southern California. Colonial species that occurs in many open, semi-arid to arid habitats, including deciduous woodlands, annual and perennial grasslands, and urban areas. Also occurs in ponderosa pine and mid-elevation conifer belts. Primarily a crevice-dwelling animal that only occurs where there are significant rock features offering suitable roosting habitat such as cliff faces, large boulders, exfoliating granite, sandstone, or columnar basalt. Also roosts in buildings. Roosts are generally high above the ground, usually allowing for a 10 feet vertical drop below the top of the entrance for taking flight.	Low. There are no significant rock features suitable for roosting in the project site.
<i>Lasiurus frantzii</i>	Western red bat	--/SSC/--	Tree bat associated with cottonwoods in riparian areas at elevations below 6,500 feet. Favors roosts where leaves form a dense canopy and branches do not obstruct their flyway. Known to roost in orchards, especially in the Sacramento Valley. Typically feeds along forest edges, in small clearings, and around street lights where they hunt moths. Day roosts are typically in edge habitats adjacent to streams or open fields, in orchards, and sometimes urban areas. Occasionally uses caves.	Low. Riparian areas in the project site are narrow and consist of only scattered trees, providing marginal habitat for this species.
<i>Taxidea taxus</i>	American badger	--/SSC/--	Found throughout most of California except the northern North Coast. Abundant in drier open stages of many shrub, forest, and herbaceous habitats with friable soils. Feeds on fossorial rodents, some reptiles, insects, earthworms, bird eggs, and carrion. Friable soils are required to dig burrows for refugia and rearing young.	Low. While suitable habitat may occur in the project site in grassland habitats, no sign of this species was observed during surveys.

Scientific Name	Common Name	Listing Status: Federal/State/Other	Habitat Description	Potential for Occurrence at the Project Site
<i>Vulpes macrotis mutica</i>	San Joaquin kit fox	FE/ST/--	Found in grasslands, saltbush scrub, open woodlands, foothills, and alkaline sink valley floor habitats. Typically occurs in desert-like habitats characterized by sparse to absent shrub cover, sparse ground cover, and short vegetative structure. Uses underground dens, which may extend to 6 feet or more below the ground surface, for shelter and reproduction.	Low. Grasslands in the project site do not provide the desert-like habitat typically used by this species. The project site is outside the typical range of this species. No fox dens were observed during surveys.
Plants				
<i>Agrostis hendersonii</i>	Henderson's bent grass	--/--/3.2	Annual herb found in mesic valley and foothill grasslands and vernal pools from 230 to 1,000 feet. Known from Butte, Calaveras, Merced, Napa, Shasta, Tehama, and Tuolumne counties. Blooms April through June.	Low. There are no vernal pools in the project site.
<i>Calycadenia hooveri</i>	Hoover's calycadenia	--/--/1B.3	Annual herb found in rocky soils of cismontane woodland and valley and foothill grassland from 215 to 985 feet. Known from Calaveras, Madera, Merced, Mariposa, and Stanislaus counties. Blooms July through September.	Low. While grassland occurs in the project site, suitable substrates are nearly absent.
<i>Castilleja campestris</i> var. <i>succulenta</i>	Succulent (=Fleshy) owl's-clover	FT, CH/SE/1B.2	Annual hemiparasitic herb found in often acidic vernal pools from 165 to 2,460 feet. Known from Fresno, Madera, Merced, Mariposa, San Joaquin, and Stanislaus counties. Blooms April (sometimes March) through May.	Low. There are no vernal pools in the project site.
<i>Chamaesyce</i> (=Euphorbia) <i>hooveri</i>	Hoover's spurge	FT, CH/-/1B.2	Annual herb found in vernal pools from 80 to 820 feet. Known from Butte, Glenn, Merced, Stanislaus, Tehama, and Tulare counties. Blooms July through September, sometimes October.	Low. There are no vernal pools in the project site.
<i>Clarkia rostrata</i>	Beaked clarkia	--/--/1B.3	Annual herb found in cismontane woodland and valley and foothill grasslands from 195 to 1,640 feet. Known from Calaveras, Madera, Mariposa, Merced, Stanislaus, and Tuolumne counties. Blooms April through May.	Low. In this region, the species is primarily associated with rock outcrops and bluffs that are not present at the project sites.
<i>Cryptantha hooveri</i>	Hoover's cryptantha	--/--/1A	Annual herb found in inland dunes and sandy valley and foothill grasslands from 30 to 490 feet. Blooms April through May. Known from 4 occurrences in Sacramento County. Presumed extirpated in Contra Costa, Madera, and Stanislaus counties. Last seen in 1939. Recent surveys unsuccessful; additional fieldwork needed.	Unlikely. Although grassland occurs in the project site, suitable substrates are nearly absent. Additionally, this species has not been observed anywhere since 1939.
<i>Cryptantha mariposae</i>	Mariposa cryptantha	--/--/1B.3	Annual herb found in rocky, serpentinite chaparral from 655 to 2,135 feet. Blooms April through June. This species is known from 9 occurrences in Calaveras, Mariposa, Stanislaus, and Tuolumne counties.	Unlikely. Suitable soils are not present in the project site.

Scientific Name	Common Name	Listing Status: Federal/State/Other	Habitat Description	Potential for Occurrence at the Project Site
<i>Cuscuta obtusiflora</i> var. <i>glandulosa</i>	Peruvian dodder	--/--/2B.2	Annual parasitic vine found in freshwater marshes and swamps from 50 to 920 feet. Blooms July through October. Known from 6 occurrences in Los Angeles, Merced, Sonoma, and Sutter counties. Presumed extirpated or possibly extirpated from Sacramento and San Bernardino counties.	Unlikely. There are no marshes and swamps in the project site.
<i>Downingia pusilla</i>	Dwarf downingia	--/--/2B.2	Annual herb found in mesic valley and foothill grassland and vernal pools from 3 to 1,460 feet. Known from the north Coast Ranges, Central Valley, and Bay Area. Blooms March through May.	Low. There are no vernal pools in the project site.
<i>Eryngium racemosum</i>	Delta button-celery	--/SE/1B.1	Annual to perennial herb found in vernal mesic, clay depressions in riparian scrub from 10 to 100 feet. Known from Calaveras, Contra Costa, Merced, and Stanislaus counties. Presumed extirpated from San Joaquin County. Blooms June (sometimes May) through October.	Low. There is no habitat for this species in the project site.
<i>Eryngium spinosepalum</i>	Spiny-sepaled button-celery	--/--/1B.2	Annual to perennial herb found in valley and foothill grassland, vernal pools, swales, and roadside ditches from 260 to 4,170 feet (Baldwin et al. 2012). Known from Calaveras, Contra Costa, Fresno, Kern, Madera, Mariposa, Merced, San Luis Obispo, Stanislaus, Tulare, and Tuolumne counties. Blooms April through June.	Low. There are no vernal pools in the project site.
<i>Lagophylla dichotoma</i>	Forked hare-leaf	--/--/1B.1	Annual herb found in sometimes clay soils of cismontane woodland and valley and foothill grasslands from 150 to 1,100 feet. Known from Calaveras, Fresno, and Stanislaus counties. Presumed extirpated from Merced County. Blooms April through May.	Low. No woodland or clay soils occur in the project site. There are no recent nearby records around the project site.
<i>Monardella leucocephala</i>	Merced monardella	--/--/1A	Annual herb found in mesic, sandy soils of valley and foothill grassland from 115 to 330 feet. Known from Merced and Stanislaus counties, but may be extirpated. Last seen in 1941. May have been extirpated by agriculture. Blooms May through August.	Unlikely. There are no sandy soils in the project site and this species has not been observed anywhere since 1941 and may be extinct.
<i>Navarretia nigelliformis</i> ssp. <i>radians</i>	Shining navarretia	--/--/1B.2	Annual herb found on sometimes clay soils of cismontane woodland, valley and foothill grassland, and vernal pools from 215 to 3,280 feet. Known from Alameda, Colusa, Contra Costa, Fresno, Madera, Merced, Monterey, San Benito, San Joaquin, San Luis Obispo, Stanislaus, and Tulare counties. Blooms April (sometimes March) through July.	Low. No woodland, vernal pools, or clay soils occur in the project site.
<i>Neostapfia colusana</i>	Colusa grass	FT, CH/SE/1B.1	Annual herb found in adobe clay vernal pools from 15 to 655 feet. Known from Glenn, Merced, Solano, Stanislaus, and Yolo counties. Presumed extirpated from Colusa County. Blooms May through August. Members of the Orcuttieae tribe inhabit large vernal pools or playas with inundation lasting until May or June, in areas of the pools where other plants are almost entirely absent. In the Sacramento Valley Colusa grass is known from the rim of alkaline basins.	Low. There are no adobe clay vernal pools in the project site.

Scientific Name	Common Name	Listing Status: Federal/State/Other	Habitat Description	Potential for Occurrence at the Project Site
<i>Orcuttia inaequalis</i>	San Joaquin Valley Orcutt grass	FT, CH/SE/1B.1	Annual herb found in vernal pools from 35 to 2,475 feet. Known from Fresno, Madera, Merced, Solano, and Tulare counties. Presumed extirpated in Stanislaus County. Blooms April through September. Members of the Orcuttieae tribe inhabit large vernal pools or playas with inundation lasting until May or June, in areas of the pools where other plants are almost entirely absent. Nearly all occurrences of San Joaquin Valley Orcutt grass are on the east side of the San Joaquin Valley.	Low. There are no vernal pools in the project site.
<i>Orcuttia pilosa</i>	Hairy Orcutt grass	FE, CH/SE/1B.1	Annual herb found in vernal pools from 150 to 655 feet. Known from Glenn, Madera, Merced, Stanislaus and Tehama counties. Blooms from May through September (Baldwin et al. 2012; CNPS 2023).	Low. There are no vernal pools in the project site.
<i>Pseudobahia bahiifolia</i>	Hartweg's golden sunburst	FE/SE/1B.1	Annual herb found in clay, often acidic soils; and loam, sandy loam and high pumice content soils, in cismontane woodland and valley and foothill grassland from 50 to 490 feet. It occurs almost entirely in nonnative grasslands, primarily those associated with Mima mound topography. Plants are nearly always found on the upper, northeast-facing slopes of Mima mounds where grass cover is minimal. Optimal habitat also includes the north to northeast-facing slopes of small hills associated with the upland portion of vernal pool habitats. Known from Fresno, Madera, Merced, Stanislaus, Sutter, and Tuolumne counties. Many occurrences are very small. Presumed extirpated in Yuba County. Blooms March through April.	Low. There are no suitable soils in the project site and no Mima mounds or vernal pools in the project site. Additionally, the range of this species is to the east of the project site.
<i>Sagittaria sanfordii</i>	Sanford's arrowhead	--/1B.2	Emergent perennial rhizomatous herb found in shallow freshwater marshes, swamps, ponds, and ditches from 0 to 2,135 feet. Known from the Klamath Ranges, north and south coasts, Cascade Range foothills, and Central Valley. Blooms May through October, and sometimes into November.	Low. There are no freshwater marshes or swamps in the project site.
<i>Sidalcea keckii</i>	Keck's checkerbloom	FE/--/1B.1	Annual herb found in serpentinite, clay soils of cismontane woodland and valley and foothill grassland from 245 to 2,135 feet. Known from Fresno, Glenn, Lake, Merced, and Tulare counties. Possibly extirpated from Colusa, Napa, Solano, and Yolo counties. Known from only three occurrences. Blooms April through May, sometimes June.	Unlikely. There are no serpentine clay soils in the project site.
<i>Tuctoria greenei</i>	Greene's tuctoria	FE, CH/SR/1B.1	Annual herb found in vernal pools from 100 to 3,5010 feet. Known from Butte, Glenn, Merced, Modoc, Shasta and Tehama counties. Presumed extirpated in Fresno, Madera, San Joaquin, Stanislaus, and Tulare counties. Blooms May through July, sometimes September.	Low. There are no vernal pools in the project site. Additionally, this species is presumed extirpated in Stanislaus County.
<i>Wolffia brasiliensis</i>	Brazilian watermeal	--/2B.3	Aquatic perennial herb found in shallow freshwater marshes and swamps from 65 to 330 feet. Known from 6 occurrences in Butte, Glenn, Sutter, and Yuba counties.	Unlikely. There are no freshwater marshes and swamps in the project site. Additionally, this species is not known from Stanislaus County.

Scientific Name	Common Name	Listing Status: Federal/State/Other	Habitat Description	Potential for Occurrence at the Project Site
Sensitive Natural Communities				
Northern Hardpan Vernal Pool	--	--	A low emergent wetland community dominated by annual herbs and grasses on very acidic soils with an iron-silicon cemented hardpan. Evaporation (not runoff) dries pools in spring creating concentric bands of vegetation. Occurs primarily on old alluvial terraces on the east side of the Great Valley from Tulare or Fresno County north to Shasta County.	Unlikely. There are no vernal pools or acidic soils in the project site.

